ADMINISTRATIVE ACTION
DRAFT ENVIRONMENTAL IMPACT STATEMENT

U.S. Department of Transportation, Federal Highway Administration
North Carolina Department of Transportation

US 70, Havelock Bypass
Craven County, North Carolina

Federal Aid Project No. NHF-70(49)
WBS No. 34360
S.T.I.P. ID No. R-1015

Submitted Pursuant to the National Environmental Policy Act 42 USC 4332(2)(C)

Cooperating Agencies:
U. S. Department of the Army, Corps of Engineers
U. S. Department of Agriculture, Forest Service

8/22/11
Date

FOR Gregory J. Thorpe, PhD
Manager
Project Development & Environmental Analysis Branch
North Carolina Department of Transportation

9/6/11
Date

for John F. Sullivan, III, P.E.
Division Administrator
Federal Highway Administration

The following persons may be contacted for additional information concerning this document.

John F. Sullivan, III, P.E.
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601
(919) 856-4356

Gregory J. Thorpe, PhD,
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548
(919) 707-6000

The proposed action is the construction of a US 70 bypass of the City of Havelock in Craven County, North Carolina. This statement documents the need for improvements to the existing US 70 corridor and evaluates alternatives with respect to cost, and social, economic, and environmental consequences. Current and projected future traffic conditions in the study area are described. A preferred alternative is recommended.

Comments on the Draft EIS are due by _____ and should be sent to Dr. Thorpe at the above address.

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CRAVEN COUNTY, NORTH CAROLINA

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S.T.I.P. ID No. R-1015

Documentation Prepared By:
TGS ENGINEERS

8/19/2011
Date

J. Kenneth Burleson, P.E.
Project Manager

NORTH CAROLINA PROFESSIONAL SEAL 14032 ENGINEER J. KENNETH BURLESON

For the:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

8/22/11
Date

Robert P. Hanson, P.E.
Eastern Project Development Engineer

8/22/11
Date

Brian F. Yamamoto, P.E.
Eastern Project Engineer

8/22/2011
Date

Mark Pierce, P.E.
Project Planning Engineer

PROJECT COMMITMENTS

US 70, Havelock Bypass
Craven County
Federal Aid Project No. NHF-70(49)
WBS No. 34360
STIP ID No. R-1015

Project Development and Environmental Analysis Branch (PDEA)

1. Prior to construction, NCDOT will coordinate with the U. S. Forest Service to collect spring flowering goldenrod seeds from areas to be affected by the project and distribute them in an area of the Croatan National Forest (CNF) where there is appropriate habitat but the species does not currently occur such as proposed in the Recommended mitigation plan for *Solidago verna* in Craven Co., North Carolina prepared by Dr. John Stucky for NCDOT in 2006.

2. After the selection of the Least Environmentally Damaging Practicable Alternative (LEDPA), NCDOT will refine the preliminary design for the selected alternative and complete a Biological Assessment (BA) concerning the red-cockaded woodpecker (RCW). The BA will be submitted to the USFWS to initiate formal consultation regarding Section 7 of the Endangered Species Act. The USFWS may request additional information and/or subsequent surveys to amend the BA before issuing their Biological Opinion (BO) to conclude formal consultation under Section 7. If an Incidental Take occurs, the USFWS will also issue an initial take statement, indicating terms and conditions, and/or reasonable and prudent measures it believes necessary to minimize the impacts to RCWs. Any such terms and conditions, and/or reasonable and prudent measures to minimize impacts to RCWs will be included in the Final Environmental Impact Statement (FEIS).

3. A mitigation plan for unavoidable impacts to streams and wetlands will be developed in consultation with the USACE. The Croatan Wetland Mitigation Bank will provide mitigation for the unavoidable wetland and stream impacts.

PDEA & Roadway Design & Construction & Division 2

1. Two known archaeological sites (31CV170** and 31CV302), both eligible for the NRHP, are located within or near the alignment of the Preferred Alternative. Based on current design plans, Site 31CV170** and Site 31CV302 will be avoided; however, if design plans change and avoidance is not possible, then mitigation efforts will be conducted prior to construction activities. A duration of at least nine months prior to construction will be required in order to conduct data recovery investigations.

2. The majority of the bypass, except in the vicinity of the interchanges and grade separations, will have construction limits not to exceed 200 feet in width, to minimize the fragmentation of the Red-cockaded woodpecker (RCW) habitat.

3. The North Carolina Wildlife Resources Commission (NCWRC) has requested an in-water work moratorium for February 15 to June 15 for East Prong and Southwest Prong Slocum Creek throughout the project area. Goodwin Creek and Tucker Creek upstream of the existing US 70 crossings will not require a moratorium; however, if the current structures are replaced or extended downstream, a February 15 to June 15 moratorium will apply. The unnamed tributaries within the project study alignments are not considered anadromous fish habitat and are not subject to anadromous fish moratoria.

4. Prior to construction, NCDOT will coordinate with the U. S. Forest Service to identify other species of rare plants on the CNF occurring near the construction limits and put up protective orange fencing to be removed after completion of construction.

Geotechnical Engineering Unit

1. The impacted area of the former landfill site at the northwestern terminus of the project will be assessed to determine the presence, and if necessary, the levels of contamination. If contamination is found, options to remediate the contamination will be evaluated. Resolution of problems associated with any contamination will be coordinated with appropriate regulatory agencies and the U.S. Forest Service.

Roadside Environmental Unit

1. In consultation with the U. S. Forest Service, native seeding mixes will be used on Croatan National Forest property for erosion control.

Hydraulics Unit

1. The NCDOT Hydraulics Unit will coordinate with the N.C. Floodplain Mapping Program (FMP), to determine the status of the project with regard to applicability of NCDOT's Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

Hydraulics Unit & Construction & Division 2

1. As this project involves construction activities on or adjacent to FEMA-regulated streams, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon the completion of project construction, certifying that the drainage structures and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

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SUMMARY

SUMMARY

S.1. FEDERAL HIGHWAY ADMINISTRATION

(X) Draft ( ) Final

S.2. CONTACTS

The following individuals may be contacted for additional information concerning this Draft Environmental Impact Statement (DEIS):

Federal Highway Administration (FHWA)

John F. Sullivan, III, P.E., Division Administrator
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

Telephone: (919) 747-7000

North Carolina Department of Transportation (NCDOT)

Gregory Thorpe, Ph.D., Manager
North Carolina Department of Transportation
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Telephone: (919) 733-3141

S.3. PROPOSED ACTION

S.3.1. DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the construction of a new location, 10-mile, four-lane divided, controlled-access freeway for US 70 around the southwest side of the City of Havelock and

Note: Endnotes are presented at the end of this Summary

the Cherry Point United States (U.S.) Marine Corps Air Station (MCAS) in Craven County, North Carolina (See Figure 1-1). All of the detailed study alternatives will impact lands within the Croatan National Forest. The proposed project will provide a high-speed alternative to the heavily congested existing US 70 highway through the City of Havelock. The project is included in the NCDOT Draft 10-Year Program and Resource Plan (2015-2020)[1] as Project No. R-1015 with right-of-way acquisition anticipated to begin in Fiscal Year (FY) 2012 and construction currently anticipated to begin in FY 2015.

S.3.2. PURPOSE OF THE PROPOSED ACTION

US 70 from Raleigh to Morehead City has been designated as part of the National Highway System (NHS) by the Federal Highway Administration and is included in the Principal Arterial and Strategic Highway Network subsystems of the NHS. Classified as a principal arterial in the Federal Functional Classification System in North Carolina, US 70 between Raleigh and Morehead City is also part of the North Carolina Intrastate System created by the North Carolina General Assembly in 1989. This route is included as Corridor 46 in the Strategic Highway Corridors (SHC) Plan created by the North Carolina Department of Transportation in collaboration with the North Carolina Department of Commerce and the North Carolina Department of Environment and Natural Resources. The US 70 corridor from Morehead City to Raleigh has also been identified by the North Carolina Division of Emergency Management as a major hurricane evacuation route.

Existing US 70 is the only principal arterial through the City of Havelock, and is one of only three routes (including NC 101 and SR 1745) providing highway access into the City and the Cherry Point Marine Corps Air Station (MCAS). In Havelock, existing US 70 is a multilane urban arterial with a total of 14 signalized intersections concentrated along the route. Most of the commercial development in the area is situated along existing US 70. Each new traffic signal warranted by local traffic accessing and crossing US 70 delays through traffic and deteriorates the level of traffic service through Havelock. Several intersections along existing US 70 currently operate at an undesirable level of service. Without improvements to

accommodate traffic growth, the level of traffic service along US 70 will continue to deteriorate.

US 70 in the Havelock area is an important Intrastate Corridor link between the State Capital in Raleigh and the second largest port in North Carolina at Morehead City. This route is also the principal highway access for the coastal beaches in Carteret County and provides essential traffic service during hurricane evacuations. In the Strategic Highway Corridors (SHC)[2] Plan, it is recommended that US 70 ultimately function as a freeway. The current section of US 70 through Havelock is an urban arterial with numerous signalized intersections and access points at both public streets and private driveways. The proposed project will allow both commercial carriers and vacationers a means to avoid the traffic signals and the congestion along existing US 70 through the City of Havelock and also fulfill the recommendation in the SHC[2] Plan for a freeway.

S.4. STUDY ALTERNATIVES

A screening evaluation was conducted to identify the alternatives that could potentially fulfill the purpose and need for the proposed project.

S.4.1. Initial Alternatives

No-Build Alternative - A No-Build or "Do Nothing" Alternative would allow traffic congestion to increase leading to the eventual breakdown of traffic service along US 70. Therefore, the No-Build Alternative does not meet the purpose of and need for this project, and is retained only for comparison purposes.

Multi-Modal Alternatives - Highway transportation is the dominant mode of transportation in the study area. As a major east-west corridor for the state and region, US 70 serves a large volume of through traffic including a large percentage of truck traffic. This user group will not directly benefit from multi-modal alternatives to reduce the congestion along US 70.

These results are not compatible with either of the primary purposes for the project. Therefore, Multi-Modal Alternatives were eliminated from further study.

Transportation System Management (TSM) Alternatives - TSM operational and physical improvements will not reduce the traffic congestion enough to improve the levels of service on US 70 to an acceptable level. The existing mixture of through and local traffic along US 70 does not allow TSM measures to substantially improve traffic flow. Therefore, TSM improvements do not meet the purpose and need, and were eliminated from further consideration for this project.

S.4.2. Detailed Study Alternatives

The logical termini for this proposed action were determined to be approximately one-mile west of the existing US 70/SR 1760 (Hickman Hill Loop Road) intersection northwest of Havelock, and southeast of the US 70/SR 1824 (McCotter Boulevard) intersection southeast of Havelock. The increased traffic and lack of access control, with numerous street and driveway connections to the adjacent development in Havelock, substantially reduce the mobility of this corridor. Currently, 14 traffic signals prohibit uninterrupted service along the existing corridor through Havelock. The project termini extend beyond those signals and the commercially-developed areas within the city limits of Havelock.

Improve Existing US 70 Alternatives - To improve existing US 70 on the existing location, two preliminary build alternatives, a freeway alternate and an expressway alternate, were considered for the proposed project. Capacity analyses determined both of these alternatives would require six through lanes. Both of these alternatives removed the existing driveway connections which would require service roads along both sides of US 70 to provide driveway access to the properties adjacent to the route. As a result, both would result in substantial right-of-way damage and relocation impacts to adjacent residences and businesses.

In addition to the impacts to the residential and business communities, impacts to historic resources, streams, wetlands and natural areas were also considered. The Improve Existing US 70 Alternatives (both options) cannot avoid impacting the Needham B. White House, an eligible National Register property and/or City Park, a small city-owned park located along US 70 north of Cunningham Boulevard. Taking lands from either of these properties would result in impacts to a Section 4(f) property.

The six-lane Expressway Alternate removed the existing driveway connections, but retained the at-grade street intersections and traffic signals. Unlike the Freeway Alternate, the Expressway would not provide high-speed, continuous traffic service through Havelock, nor would it fulfill the Strategic Highway Corridors[2] Plan for US 70. The Expressway Alternate would maintain the existing fourteen signalized intersections resulting in slow average speeds for traffic through the City. The Expressway Alternate would provide limited traffic service improvements with substantial social impacts.

For the Freeway Alternate, interchanges were added at six thoroughfare crossings and grade separations at six other crossings. The remaining local roads were connected to existing or proposed parallel service roads to access the properties adjacent to US 70. The six-lane Freeway Alternate would reduce congestion and delay and would provide adequate traffic service for the substantial volume of through traffic. However, the Freeway Alternate would damage a substantial portion of the current development and result in the relocation of more than 51 residences and 59 businesses affecting over 320 employees.

Bypass Alternatives - The capacity analyses for the new location bypass alternatives indicated a median-divided, four-lane freeway with full control of access would accommodate the 2035 design year through traffic. An initial right-of-way width of 325 feet was used in the preliminary studies for a new freeway facility. As the study process continued and preliminary designs were further developed, a minimum, nominal right of way

width of approximately 250 feet was established with additional right of way required at interchanges and grade separations.

Due to the access restrictions through the Cherry Point MCAS, all of the bypass alternatives were located around the southwestern side of the City of Havelock and Cherry Point. Full interchanges were included on both ends of the bypass and at SR 1756 (Lake Road). The remaining local secondary roads and railroads were grade-separated from the bypass by means of bridges.

Land suitability mapping was developed to identify the locations of man-made and natural features. Areas with the least potential for adverse highway project impacts were connected to initially form six preliminary new location corridors for a bypass (See Figure 2-2). All of these preliminary corridors were located to avoid a federally-protected, red-cockaded woodpecker (RCW) cluster in the Croatan National Forest. Two alignments (Preliminary Corridors A and B) were developed as inside corridors between the cluster and the City of Havelock. The other four (C, D, E and F), were developed as outside corridors to avoid both the red-cockaded woodpecker cluster and the existing residential areas west of the City.

Three of the preliminary bypass corridors (B, D and F), which crossed to the north of existing US 70 near the northwestern terminus of the bypass, were eliminated from further consideration because of impacts to a large area of wetlands and to a recently upgraded military housing community. Another corridor (E), which was determined to impact the greatest acreage of Croatan National Forest (National Forest Service) lands and the second largest acreage of wetlands, was also eliminated. Two corridors (A and C) were retained for further study.

Corridor C, the outside corridor, would avoid most of the existing development in the study area. Corridor A, the inside corridor, would avoid more natural areas in the Croatan National Forest. After evaluating these two corridors, a third corridor, was developed to combine the

more desirable characteristics of both. The three detailed study corridors for the bypass alternatives are shown in Figure 2-3.

The estimated right-of-way cost for the Freeway Alternate along the existing route exceeded the estimated right-of-way cost for the Bypass Alternatives by more than $36,000,000. The construction costs for the freeway on existing location and the new location bypass alternatives were approximately the same. Based on the consideration of costs and impacts to residences and businesses, it was determined a new location bypass around the southwest side of the City of Havelock would reduce the traffic congestion on existing US 70 more cost effectively than a freeway along the existing corridor.

The preliminary alternatives that could not fulfill the purpose of and need for the project, had excessive undesirable impacts, or were considered impractical, were eliminated from further consideration. Based on this screening, the only the build alternatives determined to meet the goals of the proposed project and minimize the collective human and natural environment impacts were Bypass Alternatives.

S.4.3. Preferred Alternative

Although all three bypass alternatives are still under consideration, Alternate 3 was identified as the Least Environmentally Damaging Practicable Alternative (LEDPA) by the project steering committee consisting of Federal and State review agencies including the U.S. Forest Service. In August 1998, the NCDOT Corridor Selection Committee approved the selection of Alternate 3 as the LEDPA. Alternate 3 is estimated to cost approximately $4.9 million dollars less than Alternate 1 and fragments a smaller area of the Croatan National Forest. Although Alternate 3 is further from the City of Havelock and fragments a larger area of the Croatan National Forest than Alternate 2, Alternate 3 is estimated to cost almost $7.5 million dollars less than Alternate 2 and requires 124 fewer residential/business relocations. Alternate 3 also has fewer stream impacts than Alternate 1 or Alternate 2.

However, Alternate 3 impacts 5.9 acres more wetlands than Alternate 1, and 36.9 acres more than the more-developed Alternate 2. Although Alternate 3 has been identified as the preferred alternative, a final decision on the alternative selection will not be made until comments received on the Draft EIS and at the corridor public hearing have been fully evaluated.

S.5. SUMMARY OF IMPACTS

Land Use - Most of the lands in the detailed study corridors are undeveloped. A large portion of these lands are contained within the boundaries of the Croatan National Forest (CNF). In the City of Havelock 2030 Comprehensive Plan[3], the lands in the detailed study corridors and not within the CNF are shown as agriculture use. With the exception of a residential area along SR 1747 (Sunset Drive), all of the lands west of the bypass are shown as agriculture or National Forest. Although the land use plan anticipates the US 70 Havelock Bypass will stimulate growth in these areas, the Indirect and Cumulative Effects study conducted for the project concludes the bypass will have a low to moderate potential to cause land use changes or accelerate growth and development in these areas.

The lands contained within the boundaries of the CNF are subject to the CNF's Land and Resource Management Plan[4] (December 2002). The construction of the US 70 Bypass is specifically mentioned in this Plan as an activity that would provide public benefit and would require a special use permit in order to transfer the project right of way. The U.S. Forest Service (USFS) has coordinated with NCDOT to assess the anticipated impacts of the proposed Havelock Bypass on the management of wildlife habitat and recreational land uses within the CNF portions of the project study area. Impacts to a majority of the wildlife habitat and recreational opportunities will be mitigated with the transfer of the adjacent Croatan Wetland Mitigation Bank property to the USFS.

Relocations – According to the relocation reports, it is anticipated that adequate relocation replacement facilities are available for any of the considered bypass alternatives. The Craven County

Waste Transfer facility is located near the northwestern terminus of the project within an area on National Forest System lands common to all three bypass alternatives. This non-profit facility has three employees and will be impacted by all of the bypass alternatives.

Alternate 1 which is farthest from the City would relocate an estimated 13 residences. Five of these are owners and eight are tenants. None of these are minority residences. Eight (62 percent) are estimated to make between $35,000 and $50,000 annually. None are estimated to make less than $25,000. One small business affecting two employees will also be displaced.

Alternate 2 would relocate an estimated 133 residences. Of these, 58 are owner occupied and 75 are rented. Most of these relocations are located along Lake Road. Eighteen (13.5 percent) are minority residences. Sixty-six (49 percent) are estimated to make between $35,000 and $50,000. None are estimated to make less than $25,000. Three small businesses affecting seven employees will also be displaced.

Alternate 3 would relocate an estimated 16 residences. Five of these are owners and eleven are tenants. None of these are minority residences. Eight (50 percent) are estimated to make more than $50,000. None are estimated to make less than $25,000. One small business affecting two employees will also be displaced.

Community Facilities - Other than the Craven County Waste Transfer facility which will be displaced by all three bypass alternatives, no other community facilities such as schools, parks or recreation facilities are located within any of the project alternatives. One church, the Lake Road Baptist Church (formerly Crystal Pines Baptist Church), is in close proximity to Alternate 2.

Community Cohesion - Areas with significant widespread community cohesion are not prevalent in the City of Havelock. Due to the principally rural character of the study area consisting mostly of forested government lands, the community cohesion impacts of the Havelock Bypass will be limited to the areas surrounding the few existing routes that cross the detailed study corridors.

Environmental Justice - In compliance with Title VI[5], and Executive Order 12898[6], an analysis was completed to determine whether minority and/or low income populations would receive disproportionately high and adverse human health or environmental effects from the proposed project. The proposed project is not located in a high population area for these social groups; therefore, the project will not have a disproportionately high impact on any minority or low-income population. Representatives of the affected community have had several public involvement opportunities to provide input regarding the impact of the proposed project. Two Citizens Informational Workshops and a Corridor Public Hearing have been conducted as well as several small group informational meetings.

Indirect Effects - Most of the residential growth resulting from any of the three bypass alternatives would be located along the Lake Road, Greenfield Heights Boulevard, Miller Road, and Hollywood Boulevard corridors. This project may accelerate growth in already developing subdivisions along Carolina Pines Boulevard and Lewis Farm Road. Most of the commercial growth resulting from any of the proposed alternatives would be surrounding the proposed interchange at Lake Road, along Lake Road itself, and near the northern terminus of the project along US 70. Infill commercial development along US 70 between the termini is expected with or without the Havelock Bypass, while new commercial development along US 70 and Chatham Street in Newport (Carteret County) should become more likely as a result of the bypass.

Cumulative Effects - Most of the future growth and development within the study area is dependent upon Cherry Point Marine Corps Air Station (MCAS) activity, and the amount of growth occurring at Cherry Point MCAS is unrelated to the Havelock Bypass. The proximity to New Bern and the North Carolina beaches is also a factor in attracting growth to this portion of eastern North Carolina. These trends, in addition to this project, may cumulatively increase the attractiveness for growth and development within the study area. Havelock has plans to annex the land between its current city limits and the Havelock Bypass, which may result in an expansion of sewer coverage within the area, making the area to the west of Havelock's current city limits more attractive for growth.

However, additional capacity must be achieved and expansion of utilities across the railroad corridors is difficult. The completion of this project combined with the potential extension of Havelock's extraterritorial jurisdiction (ETJ) to the north could increase development opportunities within the area.

Cultural Resources and Section 106 of the National Historic Preservation Act of 1966 - Based on the results of the historic architectural resources survey conducted for this project, no properties listed in or eligible for listing in the National Register of Historic Places[7] will be impacted by the bypass alternatives.

An archaeological and historical background study prepared for the project demonstrated that all alternatives had some potential to include archaeological sites (Smith 1997[8]). The Deputy State Historic Preservation Officer, in a letter dated May 15, 1997, and the U.S. Forest Service, National Forests in North Carolina's Heritage Resources Staff Director, in a letter dated June 11, 1997, concurred with the study recommendation to conduct an intensive terrestrial survey of high probability soils within the area of potential effect for the Preferred Alternative. The selection of survey areas was made in consultation with the State Historic Preservation Office (SHPO) and the U.S. Forest Service.

As a result of the terrestrial survey, two previously recorded archaeological sites (31CV164** and 31CV170** located on National Forest System lands) were found and evaluated during the course of the intensive survey. Site 31CV164** was investigated and recommended as not eligible for the NRHP. Site 31CV170** was not fully assessed because its location was considered outside the project limits; however, it was recommended as eligible for the NRHP per Criterion A according to its archaeological site form on file at the Office of State Archaeology. Another site, Site 31CV302, (located on National Forest System lands) was found to contain intact subsurface deposits that have the potential to contribute new information regarding regional prehistory; therefore, Site 31CV302 is recommended as eligible for the NRHP per Criterion D. In a letter dated December 22, 2004, the SHPO concurred with these findings.

Based on current design plans, Site 31CV302 will not be impacted. However, since the location is close to the preliminary alignment, the site will be evaluated after the completion of the final plans. If the site is affected, mitigation efforts will be conducted prior to construction activities in order to lessen the impact the proposed project may have on Site 31CV302. If Site 31CV302 cannot be avoided, then data recovery investigations will be conducted once right of way has been acquired and prior to any construction activities.

Section 4(f) and Section 6 (f) – As noted in Chapter 4 (Section 4.3), the proposed project will not require any lands subject to either the United States Code (USC) Title 23 in Section 138 (Section 4(f)), or 16 USC 460, the Land and Water Conservation Fund Act (Section 6(f)).

Utilities - In addition to the frequently encountered electric service lines located along existing routes, there are several Progress Energy high-voltage electric power transmission lines traversing the study area. In the common areas near the northwestern and southeastern termini of the project, all three corridors cross high-voltage electric power transmission lines at four locations. In addition, Corridors 2 and 3 cross high-voltage electric power transmission lines at three more locations. However, no disruption in service is expected. If relocations or upgrading of these facilities is required as a result of this project, coordination with the U.S. Forest Service and Progress Energy will be required.

Water and sewer service by the City of Havelock does not currently extend into the City's extraterritorial jurisdiction. The County's water and sewer systems do not extend into the project study area. Therefore, none of the proposed bypass corridors will impact these services.

Since there are no natural gas lines within the project study area, the proposed bypass will not have any impact on natural gas service.

Water Quality - Long-term water quality impacts associated with the project include increased stormwater runoff and the potential for highway pollutants such as grease and oil to enter streams with the stormwater runoff. Short-term impacts to water quality associated with project construction include siltation and erosion. Short-term water quality impacts will be minimal with the implementation of appropriate sedimentation and erosion control measures. The NCDOT Best Management Practices for Protection of Surface Waters[9] will be implemented, as applicable, to ensure water quality is protected.

Alternate 2, the bypass alternative closest to the City of Havelock, poses a more immediate threat from surface runoff to the water quality of Slocum Creek and the Neuse River than Alternates 1 and 3 due to the proximity to the main watercourses of these resources.

The City of Havelock's water supply is taken from wells that draw from the Castle-Hayne Aquia aquifer. Therefore, stormwater runoff should not directly affect the quality of the local water supply.

Air Quality - Automobiles are not generally regarded as significant sources of particulate matter and sulfur dioxide. Nationwide, highway sources account for less than seven percent of particulate matter emissions and less than two percent of sulfur dioxide emissions. Particulate matter and sulfur dioxide emissions are predominantly the result of non-highway sources (e.g., industrial, commercial, and agricultural). Because emissions of particulate matter and sulfur dioxide from automobiles are very low, there is no reason to suspect that traffic on the proposed project will cause air quality standards for particulate matter and sulfur dioxide to be exceeded.

The project is located in Craven County, which has been determined to comply with the National Ambient Air Quality Standards since it is designated as an attainment area. As such, 40 CFR, Parts 51 and 93 are not applicable. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

Noise - With the construction of any of the bypass alternatives, a total of 30 residences and one

business are predicted to approach or exceed the FHWA noise abatement criteria (NAC). These residential receptors are located along existing US 70 near the northwestern terminus of the bypass, an area common to all three corridors. The impacted business is at the south end of the project and is common to all three alternatives. It is not considered reasonable or feasible to install a noise barrier for the bypass since the impacted receptors are located along existing US 70 and are subject to noise impacts from that facility. A barrier at this location would also restrict their access to existing US 70. Additionally, the background noise created by the military aircraft from the Cherry Point MCAS routinely flying over the area is considerably higher than the predicted traffic noise. Therefore, traffic noise abatement devices are not considered feasible or reasonable for any of the bypass alternatives and are not recommended for this project.

Potentially-Contaminated Properties - A search of records at the N.C. Department of Environment and Natural Resources (DENR), Division of Solid Waste Management, indicated that there are no known hazardous waste sites or underground storage tanks along the bypass corridors. The bypass alternatives may impact one former Craven County solid waste landfill site located near the northwestern terminus of the project on National Forest System lands in the Croatan National Forest (CNF) behind the Craven County Waste Transfer Station. This site is common to all three bypass alternatives.

The U.S. Forest Service has indicated a potential contamination issue at the Craven County Waste Transfer Station on National Forest System (NFS) lands. They have directed the County to clean spills, repair containers for hazardous waste, and install secondary containment systems for all containers intended for liquid or hazardous waste.

If the necessary right of way requires portions of the Transfer Station and/or the former landfill property, an assessment will be conducted to determine the presence and, if necessary, the levels of contamination of the involved property. If contamination is found, options to remediate the contamination will be evaluated and coordinated with the NFS.

Mineral Resources - One inactive mine is located in the project study area. The former sand and gravel mine is located on National Forest System lands in the Croatan National Forest (CNF) behind the Craven County Waste Transfer Station. A Craven County solid waste landfill was operated at this site in the 1970's to fill the mine pit. Being on National Forest System lands and under the landfill, this former mine is not likely to reopen. No other mining sites are located in the project area. Therefore, the project should have no impact on the availability of mineral resources in the Havelock area.

Biotic Communities - The proposed project will replace currently vegetated areas with grassed and impervious surface covers. This will fragment some plant communities and reduce plant growing area. All three corridors are characterized by a predominance of forest or shrub-dominated systems, including Pine Flatwoods, Pine/Hardwood Forest, Streamhead Pocosin, Swamp Forest, and Pine Plantation. Within the alignment, approximately 74.2 percent of Alternate 1 (337 acres), 62.3 percent of Alternate 2 (267 acres), and 73.9 percent of Alternate 3 (344 acres) are forest or successional systems. On National Forest System (NFS) Lands, approximately 76.9 percent of Alternate 1 (183 acres), 75.8 percent of Alternate 2 (206 acres), and 79.9 percent of Alternate 3 (236 acres) are forest or successional systems.

Similar impacts are expected within all three corridors to early successional and maintained (Powerline Corridors, Succesional/Ruderal Habitats, and Rural/Urban Modifications) systems.
The combination of early successional and maintained systems is greater in Alternate 2 than in Alternate 1 and Alternate 3. Alternate 2 has a higher component of Rural/Urban Modifications than Alternates 1 and 3, primarily due to the proximity of Alternate 2 to the City of Havelock. On NFS lands the combination of these types is greater in Alternate 2 than in Alternate 1 and Alternate 3. Alternate 2 has a higher component of Rural Residential/Commercial and Agricultural Land than Alternates 1 and 3, primarily due to the proximity of Alternate 2 to the City of Havelock.

In addition, fragmentation may affect the use of prescribed burning as a management tool on NFS lands. The USFS has previously stated that the US 70 Havelock Bypass will need to be closed in

order to maintain prescribed burning for NFS lands between the US 70 Havelock Bypass and existing US 70. NCDOT conceptually agrees to close the US 70 Havelock Bypass to accommodate prescribed burning.

Wildlife Community - Alternate 2 contains a higher proportion of disturbed habitats than Alternates 1 and 3. Alternate 2 includes more roadways and residential lots. Due to the proximity of Alternate 2 to the more-disturbed landscape surrounding Havelock, the impacts of constructing Alternate 2 should be less detrimental to wildlife than Alternates 1 or 3.

Aquatic Habitat - The North Carolina Wildlife Resources Commission (NCWRC) has requested an in-water work moratorium for February 15 to June 15 for East Prong and Southwest Prong Slocum Creek throughout the project area. Goodwin Creek and Tucker Creek upstream of the US 70 structure will not require a moratorium; however, if the current structures are replaced or extended downstream, a February 15 to June 15 moratorium will apply. The unnamed tributaries within the project study alignments are not considered anadromous fish habitat and are not subject to anadromous fish moratoria.

Protected Species - The federally-protected species listed in Craven or Carteret County and inhabiting community types found within the bypass corridors include American alligator, rough-leaved loosestrife, and Red-cockaded woodpecker (RCW). The Natural Resources Technical Reports for the proposed project include biological conclusions of "not required" for American alligator (due to similarity of appearance), “not likely to adversely affect” for rough-leaved loosestrife, and "unresolved" for the RCW. Surveys for rough-leaved loosestrife were conducted in 2010 and did not document this species in any of the study corridors. The corridors were located to avoid direct impacts to two active RCW clusters (CNF 58 and 902). The U.S. Fish and Wildlife Service (USFWS) previously stated in a letter dated November 13, 1996 that the requirements of Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543), appear to have been satisfied for project alternatives for the evaluated federal species (see Appendix A-1 USFWS). Guidance issued by the USFWS on 4 May 2005 (USFWS 2005[10]) further defined the

methods on conducting analyses of project impacts on the RCW by describing 5 levels of analysis: 1) foraging partition, 2) group, 3) neighborhood, 4) population and 5) recovery unit (the latter analysis is conducted by the USFWS). Dr. J. H. Carter III & Associates, Inc. (JCA) submitted the Biological Alternatives Analysis for Red-Cockaded Woodpecker and Bald Eagle Impacts, US Highway 70 Bypass (R-1015), Craven County, North Carolina (Final Biological Alternatives Analysis)[11] in December 2007, which determined there would be no incidental "take" due to RCW foraging habitat removals within two active RCW clusters and there would be no "take" at the group, neighborhood, or population level. Subsequent to submittal of the Final Biological Alternatives Analysis, JCA found no active RCW clusters in the project area following the 2008 nesting season, but three active RCW clusters in project area in October 2010[12].

Although the surveys and alternatives analysis have provided substantial additional information regarding the project effects to the RCW, once a Least Environmentally Damaging Practicable Alternative (LEPDA) is chosen, completion of a Biological Assessment (BA) by NCDOT, and a Biological Opinion (BO) by the USFWS regarding the BA are needed to initiate and conclude formal consultation under Section 7 of the Endangered Species Act.

The Bald Eagle is federally-protected by the Bald and Golden Eagle Protection Act. No bald eagle nests were found within the 660-foot radius survey corridor and no bald eagles are likely to be directly affected by the project. Additionally, construction activities for the proposed Havelock Bypass will not occur within 330 feet of, or be visible from, any known nest trees. This biological conclusion will be provided to the U.S. Fish and Wildlife Service for concurrence.

Farmland Impacts - The proposed project will impact lands that are designated as prime farmlands by the U.S. Natural Resource Conservation Service. The approximate area of prime farmland soils within the proposed right-of-way is 66 acres in Alternate 1, an estimated 112 acres in Alternate 2, and 71 acres in Alternate 3. Alternate 3 contains the lowest land evaluation and site assessment score for prime farmlands in the bypass alternatives. The total score for the land evaluation and site

assessment for Alternates 1, 2, and 3 was 138.0, 118.4, and 116.8 respectively. For alternatives with low scores (less than 160), the U.S. Department of Agriculture recommends a minimal level of farmland protection. The farmland rating for Alternate 3 (the Preferred Alternative) is the lowest of the bypass alternatives, and no additional alternatives need to be evaluated to protect farmlands.

Wetland and Stream Impacts - The proposed project will require placing fill material in wetland areas. Using an estimated fill consisting of slope stake limits plus 25 feet, the approximate wetland area within Alternate 1 is 109 acres. Alternate 2 requires approximately 78 acres and Alternate 3, approximately 115 acres. On National Forest System (NFS) Lands, the approximate wetland area within Alternate 1 is 81 acres while Alternate 2 requires approximately 67 acres and Alternate 3, approximately 88 acres. Needle-leaved evergreen (pine dominated) wetlands are the most prevalent type in the three corridors, with a substantial amount of these systems occurring at the southeastern end of the project. Alternate 1 (the outside corridor) will fragment the most wetland/upland forest complexes. Therefore, the wetland impacts associated with Alternate 1 may be considered more substantial than Alternates 2 and 3 due to secondary effects on contiguous wetland communities. For direct impacts, Alternate 2 involves the fewest wetland impacts of the detailed study alternatives. Wetland impacts on NFS Lands are similar for each of the alternatives with Alternate 2 having the fewest wetland impacts of the detailed study alternatives. The estimated stream impacts (consisting of slope stake limits plus 25 feet) for Alternate 1 are 2,581 linear feet. Alternate 2 has 3,094 linear feet, and Alternate3 has 2,505 linear feet of stream impacts. For direct stream impacts, Alternate 3 requires the fewest with a slight advantage over Alternate 1. On NFS Lands, the estimated stream impacts (consisting of slope stake limits plus 25 feet) for Alternate 1 are 1,012 linear feet. Alternate 2 has 1,764 linear feet, and Alternate 3 has 1,387 linear feet of stream impacts. Alternate 1 requires the fewest impacts to streams on NFS Lands.

Cost Estimates - Preliminary cost estimates were prepared for each of the detailed study alternatives. Alternate 3 is 0.8 miles shorter than Alternate 1 and does not require a grade separation at SR 1746 (Gray Road) like Alternate 2. Therefore, the estimated construction cost of Alternate 3 is less than Alternates 1 and 2. Alternate 3 also requires substantially fewer relocations than

Alternate 2, resulting in less right-of-way costs and impacts. The total estimated construction and right-of-way costs for Alternates 1, 2 and 3 are $167,900,000, $170,600,000, and $163,000,000 respectively. Overall, Alternate 3 is the most economical of the bypass alternatives.

The following table summarizes the potential impacts for Alternates 1, 2 and 3.

Table No. S.1. Updated Comparison of Bypass Alternatives (2011)

	Alternate 1 (Outside)	Alternate 2 (Inside)	Alternate 3 (Combined)
Length(miles)	10.85	9.91	10.31
Costs (year dollars)			
Construction (08)	$156,400,000	$138,800,000	$149,600,000
Utility Relocation (07)	1,649,280	2,773,680	2,773,680
Right of Way (09)	9,800,000	28,975,000	10,625,000
TOTAL	$167,849,280	$170,548,680	$162,998,680
Relocations (2009)			
Residences (minorities)	13 (0)	133 (18)	16 (0)
Churches (members)	0	0	0
Businesses (employees)	1 (2)	3 (9)	1 (2)
Non-profit	1 (3)	1 (3)	1 (3)
TOTAL	13	137	18
Physical Environment			
Croatan National Forest (acres)	189	225	240
Potentially-Contaminated Sites	1	1	1
Major Stream Crossings	3	3	3
Natural Resources (Acres)			
Prime Farmland by Soils in R/W	66	112	71
Jurisdictional Areas			
Wetlands (acres)	109	78	115
Streams (lin. ft.)	2,581	3,094	2,505
Neuse River Riparian Buffers (sq. ft.)	69,534	142,025	106,647
RCW (June 2008 Evaluation, JCA)			
Active clusters	0	0	0
Inactive clusters	1 N, 4 R*	1 N, 3 R*	1 N, 4 R*
Future Recruitment clusters	1	1	1
Habitat management areas	3	3	3

* N=Natural, R= Recruitment

S.6 UNRESOLVED ISSUES

Major unresolved issues to be addressed prior to publication of the FEIS include:

Federal and state regulatory and resource agency confirmation of the previously identified Least Environmentally Damaging Practicable Alternative (LEDPA)/Preferred Alternative and concurrence with avoidance and minimization efforts within the corridor of the selected alternative.

Preparation of a conceptual mitigation plan for unavoidable wetland and stream impacts. The Croatan Wetland Mitigation Bank will provide mitigation for the unavoidable wetland and stream impacts.

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

Permits

A Section 404 Dredge and Fill permit from the U.S. Army Corps of Engineers (USACE) will be required for the encroachment into wetland communities as a result of the proposed project. A Section 401 Water Quality Certification from the N.C. Department of Environment and Natural Resources (DENR), Division of Water Quality will also be required prior to issuance of the Section 404 permit.

The N.C. Coastal Area Management Act (CAMA) provides for jurisdictional review of impacts affecting Areas of Environmental Concern (AEC) in 20 designated coastal counties, including Craven County (GS 113A-113). The wetlands and waters in the project area do not constitute AEC resources for CAMA permitting purposes; however, a CAMA consistency determination will be required as part of the permit process.

Lands owned by the National Forest System required for right-of-way for the Havelock Bypass will be transferred to the North Carolina Department of Transportation under the provisions of 23 U.S.C. Section 107 (d) or Section 317. The Federal Highway Administration (FHWA), pursuant to the process set forth in 23 CFR 710.601, will effectuate this transfer. Mitigation for these lands is required as a condition of the land transfer under the provisions of 23 U.S.C. Section 317(b). The Croatan Wetland Mitigation Bank will provide mitigation for these lands.

S.8. SUBSEQUENT ACTIONS

The approval of this DEIS does not complete the project implementation process. The following is a summary of actions, events, and studies to be completed prior to project construction. Coordination with resource agencies will be maintained throughout the entire process. The DEIS will be circulated to environmental agencies and the public for review. Then, the following studies and actions will be completed to advance the project through the planning process:

A Corridor Public Hearing will be held to present the alternative corridors and solicit public comments.

The comments received through the DEIS review and public hearing processes will be thoroughly considered in the final selection of the preferred alternative by the FHWA and the North Carolina Department of Transportation.

The preliminary designs for the preferred alternative will be refined and will include efforts to further minimize impacts to the human and natural environments.

A mitigation plan for unavoidable impacts to streams and wetlands will be developed in consultation with the USACE. The Croatan Wetland Mitigation Bank will provide mitigation for the unavoidable wetland and stream impacts.

The Final Environmental Impact Statement (FEIS) will be prepared based on the results of the items listed above. The FEIS will be circulated for public and agency review. After approval of the FEIS and Record of Decision (ROD), a public involvement event will be held to receive public comments on the refined preliminary design for the preferred alternative.

The final roadway design plans will be prepared based on comments received.

Other actions that must be completed prior to the start of project construction include, but are not limited to, the following:

Preparation of sedimentation and erosion control plans incorporating NCDOT's Best Management Practices for Protection of Surface Waters[9].

Coordination with the City of Havelock and Craven County for relocation and reconfiguration of utility systems.

Implementation of the Relocation Assistance Program.

Approval of all required permits and certifications.

[1] North Carolina Department of Transportation. Draft 10-Year Program and Resource Plan (2015-2020), March 2010
[2] North Carolina Department of Transportation, Transportation Planning Branch. Strategic Highway Corridors. Available:http://www.ncdot.org/doh/preconstruct/tpb/SHC/ Accessed: 09 January 2009
[3] Urban Resources Group (URG), City of Havelock 2030 Comprehensive Plan, June 15, 2009. City of Havelock, Planning Department
[4] [USDA] U.S. Department of Agriculture, 2002. 2002 Final Environmental Impact Statement for the Revised Land and Resource Management Plan for the Croatan National Forest, December 2002, U.S. Forest Service Southern Region. Atlanta, GA. December 2002.
[5] Title VI of the Civil Rights Act of 1964, 42 USC 2000(d)-2000(d)(1) Section 601 to 603, (Pub.L. 88-352, 78 Stat. 241, July 2, 1964
[6] Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations., Federal Register Vol. 59, No. 32, February 16, 1994
[7] National Park Service, National Register of Historic Places, Washington, D.C. >http:nps.gov/nr
[8] Smith, Greg C. 1997 Archaeological Background Report US 70 Havelock Bypass Craven County, North Carolina prepared for NC Department of Transportation, Division of Highways, Project Development and Environmental Analysis Branch, Human Environment Unit, Raleigh, N.C. January 1997
[9] North Carolina Department of Transportation, Division of Highways 1997. Best Management Practices for the Protection of Surface Waters, March 1997
[10] [USFWS] U.S. Fish and Wildlife Service. 2005. Implementation procedures for use of foraging habitat guidelines and analysis of project impacts under the red-cockaded woodpecker (*Picoides borealis*) recovery plan: Second revision. R. Costa, USFWS, unpublished memorandum.
[11] Dr. J.H. Carter III & Associates, Inc. 2007. Final Biological Alternatives Analysis, for Red-Cockaded Woodpecker and Bald Eagle Impacts, US Highway 70 Bypass (R-1015), Craven County, North Carolina, December 11, 2007. for the N.C. Department of Transportation, Division of Highways, Project Development and Environmental Analysis Branch, Natural Environment Unit, Raleigh, N.C.
[12] Dr. J.H. Carter III & Associates, Inc. 2011. In preparation. Addendum to the Final Biological Alternatives Analysis, for Red-Cockaded Woodpecker and Bald Eagle Impacts, US Highway 70 Bypass (R-1015), Craven County, North Carolina, May 2011. for NC Department of Transportation, Division of Highways, Project Development and Environmental Analysis Branch, Natural Environment Unit, Raleigh, N.C.

CHAPTER 1
PURPOSE OF AND NEED FOR PROJECT

CHAPTER 1. PURPOSE OF AND NEED FOR PROJECT

1.1. INTRODUCTION / PROJECT HISTORY

This Draft Environmental Impact Statement (DEIS) was prepared in accordance with the requirements set forth in the National Environmental Policy Act (NEPA) of 1969, as amended, and the North Carolina (State) Environmental Policy Act (SEPA). This DEIS 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 other study alternatives.

This DEIS conforms with the Council on Environmental Quality (CEQ) guidelines, which provide direction regarding implementation of the procedural provisions of NEPA, and with the Federal Highway Administration (FHWA) Guidance for Preparing and Processing Environmental and Section 4(f) Documents 1987[1].

In 1979, the project was included as a potential bypass around the southwestern side of the City in the approved thoroughfare plan for the City of Havelock. In November 1983, the proposed project was first included in the North Carolina Department of Transportation, Transportation Improvement Program[2] as Project R-1015.

In 1989, the General Assembly of North Carolina enacted the North Carolina Highway Trust Fund Act. The Act funded the North Carolina Intrastate System, a network of major, multilane, arterial highways established to provide high-speed, safe travel service to the motoring citizens of the State. The North Carolina Intrastate System connects major population centers both inside and outside North Carolina and was designed to support statewide growth and development objectives, to connect North Carolina highways to major highways in adjoining states, and to provide fast, safe,

Note: Endnotes are presented at the end of this Chapter

and convenient through-travel corridors for motorists. US 70 between Raleigh and Morehead City is part of the North Carolina Intrastate System. The General Assembly recognized the importance of improvements to US 70 in the vicinity of Havelock to the continuity of the US 70 corridor and included the project as one of five along US 70 listed in the trust fund legislation. The other US 70 projects listed are the Clayton, Smithfield-Selma, Goldsboro bypasses, as well as improvements to the US 70 corridor in Kinston.

In the summer of 1992, initial project scoping studies indicated that significant impacts on the environment were likely to be caused by the proposed action due to the proximity of development along the existing route, the Croatan National Forest, and the Cherry Point U.S. Marine Corps Air Station (MCAS). Therefore, in compliance with Section 771.123 of the Code of Federal Regulations for National Environmental Policy Act implementation, a Draft and Final Environmental Impact Statement was initiated for this project. In September of 1992, a Notice of Intent to prepare an Environmental Impact Statement was published in the Federal Register.

In 1992, project studies were initiated and coordination with State and Federal review agencies was conducted through correspondence and Steering Committee meetings to determine the environmental impacts of the project. In 1997, after the initiation of the Merger Process, the Steering Committee became the project Merger Process Team. In early 1997, the North Carolina Department of Transportation purchased what was to become the Croatan Wetland Mitigation Bank in order to mitigate numerous project impacts to the natural environment. In mid-1997, after substantial environmental review by the State and Federal review agencies, it was determined to modify the Draft Environmental Impact Statement, and process the environmental documentation as an Environmental Assessment to be followed by a Mitigated Finding of No Significant Impact to reduce the project review and approval timeframe.

After approval and circulation of the Environmental Assessment in January, 1998[3], an initial corridor public hearing was conducted on May 26, 1998, and Alternate 3 was selected as the Least Environmentally Damaging Practicable Alternative (LEDPA) on August 27, 1998. During the

subsequent preparation of the Mitigated Finding of No Significant Impact, additional natural environment studies, environmental regulation considerations, and negotiations concerning the management of the Croatan Wetland Mitigation Bank resulted in the decision to abandon the circulation of a Mitigated Finding of No Significant Impact and pursuant to 23 CFR 771.123 to prepare a Draft and Final Environmental Impact Statement for the project under the initial Notice of Intent. Since the original Environmental Assessment approved in January, 1998[3] had been initially developed as an Environmental Impact Statement, it was determined that much of the documentation developed in the preparation only required updating for this Draft Environmental Impact Statement. These determinations were fully coordinated with the State and Federal review agencies who have remained involved in the reviews of the updated information summarized in this Draft Environmental Impact Statement.

In 2004, US 70 from Raleigh to Morehead City was included in the Strategic Highway Corridors[4] (SHC) Plan. In an effort to enhance and preserve the backbone of the state's highway system, the North Carolina Department of Transportation (NCDOT) in collaboration with the North Carolina Department of Commerce (NCDOC) and the North Carolina Department of Environment and Natural Resources (NCDENR) created the SHC Plan. The SHC Plan was adopted by the Board of Transportation on September 2, 2004, as a part of North Carolina's Long-Range, Multimodal Statewide Transportation Plan. Following adoption, a formal policy statement on the plan was endorsed by NCDOT, NCDOC, NCDENR, and the Governor's Office. This plan identifies the US 70 Corridor through Havelock as a facility with a functional purpose of high mobility and low access. The plan calls for this section of US 70 to be a freeway with full control of access, no traffic signals, no driveways, and a minimum of four travel lanes with a median.

Table 1.1 provides a brief synopsis of the project's chronological history.

Table 1.1. Project History/Milestones

1979	A southwest bypass of Havelock shown on City-approved Thoroughfare Plan
11/83	Project proposed in the NCDOT TIP
7/29/92	Formal Scoping Meeting for R-1015
8/5/92	Notice to proceed R-1015 Study
9/28/92	Notice of Intent to prepare an Environmental Impact Statement publication in Federal Register
3/26/93	Steering Committee Established
5/15/93	First Steering Committee Meeting
10/19/94	Second Steering Committee Meeting – Alternatives east of existing US 70 eliminated
1/15/95	First Citizens Information Workshop
12/19/95	Third Steering Committee Meeting – Feasible and Reasonable Alternatives
2/15/96	Interagency Meeting – Improvements to existing alignment removed from further consideration
12/18/96	Fourth Steering Committee Meeting – Alternate 3 presented as Preferred
1/28/97	NCDOT purchased Croatan Wetland Mitigation Bank (CWMB)
3/17/97	Second Citizens Information Workshop
8/97	Determination to publish environmental documentation as Environmental Assessment
1/27/98	Environmental Assessment approved
5/26/98	Corridor Public Hearing on Environmental Assessment
7/20/98	Post Hearing Meeting
8/27/98	Corridor Selection Committee – Alternate 3 chosen as Preferred and LEDPA
12/16/99	Merger Process Team Meeting - Preliminary Design Alignment approved
1/18/01	Concurrence Point 4A – Avoidance and Minimization approved
6/20/02	Concurrence Point 4B - Hydraulic Design Review
9/5/02	Memorandum of Understanding executed between USFS, NCDOT and USACE regarding long term CWMB management
12/8/03	FHWA determines a DEIS is appropriate NEPA Documentation
9/2/2004	Strategic Highway Corridors Plan including project was adopted by the NC Board of Transportation
5/29/07	Revised Natural Systems Technical Report completed for DEIS
12/11/07	Biological Alternatives Analysis for RCW and Bald Eagle Impacts completed for DEIS
5/14/08	US 70 Havelock PETS study completed for DEIS at the request of the U.S. Forest Service
7/15/08	Indirect and Cumulative Effects/Community Impact Assessment completed for DEIS
8/21/08	Merger Process Team Informational Meeting - Reinitiate the Merger Process

Chapter 1 of this DEIS discusses the purpose and need for this project. Chapter 2 provides a description of all the transportation alternatives considered as well as those retained for detailed study. It ends with the selection of a preferred study alternative that meets the purposes for the project while minimizing the impacts to the study area. Chapter 3 details the current existing social, cultural, economic, natural and physical environments within the study area. Chapter 4 outlines the

environmental consequences (impacts) that might be anticipated with the implementation of the alternatives chosen for detailed study. Chapter 5 provides a list of preparers of this document. Chapter 6 lists the agencies, organizations, and persons to whom copies of the document were distributed for review and comment. Chapter 7 discusses the agency coordination and public involvement efforts. Chapter 8 provides an index of important terms and the subsequent page number where the terms are discussed. Chapter 9 provides a list of references consulted in the preparation of this document as well as those used in the preparation of the Havelock Bypass Environmental Assessment approved in 1998[3], some portions of which are used directly in this Draft Environmental Impact Statement.

1.2. PROPOSED ACTION

The North Carolina Department of Transportation (NCDOT) proposes to improve US 70 in the vicinity of the City of Havelock in Craven County, North Carolina. This DEIS documents a study, which began in the Spring of 1992, to determine the most desirable improvements. The project study involved the evaluation of environmental, economic, and social characteristics of the project area and the impacts the proposed project alternatives will have on these characteristics. The general location of this proposed project is shown in Figure 1-1. This transportation improvement project is identified in the NCDOT 2009-2015 State Transportation Improvement Program[5] and the Draft 10-Year Program and Resource Plan (2015-2020)[6] as Project No. R-1015.

1.3. SUMMARY OF NEED FOR THE PROPOSED ACTION

The need for improvements to the US 70 corridor through the City of Havelock is demonstrated by the following summary of existing and projected conditions.

- Continued commercial, institutional, and residential growth in the City of Havelock and the increasing regional use of US 70 has lead to a deterioration of traffic operations along existing US 70, causing undesirable levels of traffic service. The capacity of this route with numerous existing signalized intersections is dominated by

the operational characteristics of the signalized intersections.

- In 2008, the level of service of two of the major existing signalized intersections along US 70 (at NC 101 and SR 1765, Catawba Road) was already undesirable.
- By the design year 2035, none of the major existing signalized intersections will operate at an acceptable level of service without substantial improvements.

- Increased traffic demand has diminished the ability of US 70 between Morehead City and Raleigh to function as envisioned in the Strategic Highway Corridors Plan[4].

  - The Strategic Highway Corridors (SHC) Plan[4] calls for US 70 (Corridor 46) to be upgraded to a freeway through the City of Havelock. The Strategic Highway Corridors initiative identifies highway corridors that play a critical role in regional or statewide mobility and seeks to protect and improve these routes in an effort to enhance transportation, economic development, and environmental stewardship. The corridors are chosen based on traffic volumes and relative importance to the state and/or region, whether they provide a connection between major activity centers or between existing and/or planned interstates, and if they serve as reliever routes to an existing interstate facility. The US 70 corridor connects the cities/towns of Raleigh, Smithfield, Goldsboro, Kinston, New Bern, Havelock and Morehead City, a length of approximately 148 miles. The project corridor is ultimately envisioned as a controlled access, median-divided freeway based on the SHC Plan.
  - The lack of access control, with numerous street and driveway connections to the adjacent development, substantially reduces the mobility of this corridor. Currently 14 traffic signals prohibit uninterrupted service along the existing corridor through Havelock. The US 70 corridor needs to be upgraded to meet the goals and long-term visions of the Strategic Highway Corridors Plan.

1.4. PURPOSE OF PROPOSED ACTION

- To improve the traffic operations for regional and statewide traffic along the US 70 corridor.
- To enhance the ability of US 70 to serve the regional transportation function in accordance with the Strategic Highway Corridors Plan[4].

1.4.1. Secondary Benefits

- By altering the existing state of the corridor in this area containing numerous at-grade intersections and driveway connections, the project will enhance the safety of long-distance motorists. Crash rates along the studied section of US 70 through the City of Havelock were 208 crashes per 100 million vehicle miles of travel (100mvm). During the period 2005-2007 in North Carolina, the accident rate on US routes with four or more lanes divided with partial control of access was 152 per 100mvm and 114 per 100mvm on US routes with four or more lanes divided with full control of access.
- The US 70 corridor from Morehead City to Raleigh has been identified by the North Carolina Division of Emergency Management as a major hurricane evacuation route. The proposed project will improve the area's hurricane evacuation ability by providing more capacity, especially during the summer vacation season when the demands are highest.
- US 70 from Raleigh to Morehead City has been designated as part of the National Highway System (NHS) by the Federal Highway Administration and is included in the Principal Arterial and Strategic Highway Network subsystems of the NHS. The US 70 corridor is part of the Department of Defense's Strategic Highway Network for moving military personnel and equipment. The project will improve the connection between the Cherry Point U.S. Marine Corps Air Station and the Port of Morehead City as well as Camp Lejeune in Jacksonville and will enhance the mobility of the Nation's armed forces.
- The project will reduce the travel time to the Carteret County beaches and the Port of Morehead City. Reducing the travel time to these major recreational and commercial areas could increase their attractiveness and enhance economic opportunities for the region.
- The project will improve access for area commuters to the Cherry Point U.S. Marine Corps

Air Station and Naval Aviation Depot, the principal employer for civilian as well as military personnel in Craven County and the City of Havelock.

1.5. PROJECT DESCRIPTION

The proposed project addresses improvements to the US 70 corridor in the vicinity of the City of Havelock in Craven County, North Carolina. The project will improve the corridor capacity and incrementally step toward the Strategic Highway Corridors Vision adopted by the NC Board of Transportation in 2004. This project is included in the NCDOT Draft 10-Year Program and Resource Plan (2015-2020)[6] as Project No. R-1015, with right-of-way acquisition anticipated to begin in FY 2012 and construction anticipated to begin in FY 2015.

1.5.1. Project Setting

The proposed project is located in the southeastern portion of Craven County, North Carolina. Set in the eastern coastal plain region of the State, approximately 30 miles west of the Atlantic coast, the general topography of the study area is nearly level with slight relief along the stream terraces. The Neuse River provides the primary drainage for the study area. Goodwin Creek, Daniels Branch, Southwest Prong of Slocum Creek, East Prong of Slocum Creek, and Black Swamp all drain into Slocum Creek, a tributary of the Neuse River.

Existing US 70 is the only principal arterial that passes through the City of Havelock. The project begins along existing US 70 approximately 3.5 miles northwest of the City and extends approximately 10 miles to the southeast of the City near the Craven-Carteret County line. Within the project vicinity, existing US 70 is a multilane arterial with a total of fourteen signalized intersections concentrated along the route. The route serves a majority of the commercial businesses in Havelock.

The City of Havelock is the home of the Cherry Point U.S. Marine Corps Air Station (MCAS) that covers more than 12,000 acres at its primary complex. The Cherry Point MCAS is located on the northeast side of the City of Havelock and is bounded on the north by the Neuse River and on the

southwest by existing US 70. Much of the region southwest of Havelock is part of the Croatan National Forest (CNF). Currently, this National Forest contains approximately 159,886 acres. Most of this acreage is located to the south and west of Havelock.

The land use in the project study area is a mixture of residential, commercial, industrial, silvicultural, and agricultural development. Away from existing US 70, the dominant land use in this section of Craven County is silviculture production, primarily associated with the CNF. The project vicinity is shown in Figure 1-1.

1.6. SYSTEM LINKAGE

1.6.1. Existing Road Network

Existing US 70 is a primary east-west arterial route from the State of Tennessee through the center of the State of North Carolina to the Atlantic Coast. The route generally parallels Interstate 40 from Asheville, in the western part of the State, to the State Capital in Raleigh. East of Raleigh, US 70 provides the only direct principal arterial connection to the coastal port at Morehead City and thus serves a substantial volume of commercial traffic. This section of US 70 is designated as a North Carolina Strategic Highway Corridor and is part of the North Carolina Intrastate System and the Department of Defense's Strategic Highway Network. US 70 has also been identified by the North Carolina Division of Emergency Management as a major hurricane evacuation route.

Regionally, US 70 provides the principal connection from the City of Havelock to the Craven County seat in New Bern. US 70 also provides the principal access to the beaches of Carteret County serving large volumes of seasonal tourist traffic and providing the area's primary hurricane evacuation route during the summer vacation season when the demands on the route are highest. Locally, US 70 is the main roadway corridor through the City of Havelock's commercial district.

US 70 is one of only three routes providing highway access into the City of Havelock and the Cherry Point MCAS. The other two are NC 101 and SR 1756 (Lake Road), both of which terminate in the

City. Other than NC 101, which provides access from the southeast, and SR 1756, which provides access from the southwest, only local routes serve the study area.

The State-maintained secondary roads that intersect existing US 70 or cross the study area include:

SR 1733 (Hollywood Boulevard)	SR 1735 (Cunningham Boulevard)
SR 1737 (Roosevelt Boulevard)	SR 1739 (Belltown Road)
SR 1746 (Gray Road)	SR 1746 (Greenfield Heights Boulevard)
SR 1747 (Sunset Drive)	SR 1756 (Lake Road)
SR 1757 (Ketner Drive)	SR 1760 (Hickman Hill Loop Road)
SR 1763 (Miller Boulevard/Church Road)	SR 1765 (Catawba Road)
SR 1781 Slocum Road	SR 1800 (Manila Street)
SR 1824 (McCotter Boulevard)	SR 1826 (Gurganus School Road)

There are several other local City streets that are also mentioned in this document. These include:

Stonebridge Trail	Stratford Road
Chadwick Avenue	Holly Drive
Trader Avenue	Jackson Drive
Forest Hill Drive	Nunn Street
Shepard Street	E. Stirrup Lane

1.6.2. Modal Interrelationships

1.6.2.1. Railroads

There are two railroads serving the project area, but neither provides public passenger service. The Norfolk Southern Corporation operates the North Carolina Railroad that serves coastal North Carolina from New Bern, through the City of Havelock to the Port of Morehead City. This line generally parallels US 70 and serves an average of eight freight train movements per day. The Camp Lejeune Railroad is a government-owned railroad also operated by Norfolk Southern. This line runs from the Camp Lejeune Marine Base in Jacksonville, North Carolina, to the North Carolina Railroad in Havelock. According to Camp Lejeune officials, an average of one train per day uses this route, but usage can be heavier during periods of increased military activity. Since the abandonment of the CSX

railroad into Jacksonville from New Bern, this line provides the only railroad access to Camp Lejeune.

1.6.2.2. Airports

Commercial air service is not available in the City of Havelock. The closest available commercial airport is the Coastal Carolina Regional Airport in New Bern. This airport offers commercial freight and passenger service through Delta Atlantic Southeast Airlines (ASA) Connection and US Airways Express with ten flights daily. Other regional airports include the Kinston Regional Jetport in Lenoir County and the Albert J. Ellis Airport in Jacksonville. A private landing strip northwest of Havelock is located approximately 1,300 feet northeast of existing US 70.

1.6.2.3. Transit

Currently, public transportation in the City of Havelock is provided by the Craven Area Regional Transit Services (CARTS). CARTS provides transportation services to the general public with special priority to paratransit services to the elderly and/or handicapped residents of Craven, Jones, and Pamlico Counties. Currently the system operates a fleet of 32 vehicles, including 12 specially-modified vans to accommodate the elderly and/or handicapped, 12 standard vans, four mini-buses, and four sedans. This system is based in New Bern, approximately 20 miles northwest of Havelock. CARTS provides a daily subscription service with morning and evening trips along US 70 between New Bern and Havelock with fares ranging from $1.00 to $6.75, according to zoned distances. They also provide a subscription service for dialysis patients in Havelock three times a week, on Mondays, Wednesdays and Fridays. An appointment service between Havelock and New Bern is also available on Wednesdays.

1.7. LAND USE PLANNING

Commercial development is attracted to the roadside of frequently traveled highways, especially in populated areas with limited or no access control. US 70 is a well-traveled route between the urban

areas of Raleigh and the coastal port and beaches near Morehead City. In the project area, a large number of commercial developments (shopping, local business and personal services) that provide services to the surrounding populated area, and have direct driveway access to this route. Existing US 70 in Havelock provides access to numerous businesses that attract and serve the traveling public as well as the Marine Base population. As the commercial district along US 70 in Havelock generates more business, more traffic signals become warranted to safely allow access to and across the route. In fact, of the fourteen existing traffic signals along US 70 through Havelock, five have been added since 1990. Each new signal delays through traffic and deteriorates the level of traffic service along the route. Without improvements to accommodate the anticipated increases in traffic, the level of traffic service along US 70 will continue to deteriorate (see Section 1.9 for Traffic Operations Analyses).

1.7.1. Population Trends

With the exception of three, all of the twenty North Carolina counties regulated by the Coastal Area Management Act (CAMA) experienced a net permanent population growth from 1990 to 2006. In general, the greatest population growth occurred in the oceanfront coastal counties. However, Craven County experienced the fifth fastest growth rate of the twelve non-oceanfront CAMA-regulated counties. Counties experiencing greater growth rates were Camden, Pasquotank, Gates, and Perquimans. Some of Craven County's growth was due to the accessible estuarine resources afforded by the Neuse and Trent Rivers. However, several other factors also influenced this growth including increased military presence, industrial development, and development of recreation and retirement centers.

Census data was investigated to determine the residential and employment characteristics of the City of Havelock and Craven County. In 1980, the U.S. Census reported a total population of 71,043 for Craven County. In 1990, this population had increased 14.9 percent to 81,613. By year 2000, the Craven County population reached 91,436, a 12.0 percent increase since 1990. About two-thirds of the County's population lives in and around New Bern, the County seat, and Havelock, which includes the Cherry Point MCAS. The total population of Havelock grew 14.4 percent from

17,718 to 20,268 from 1980 to 1990, and 10.7 percent from 20,268 to 22,442 from 1990 to 2000.

The principal employer in Craven County and the City of Havelock is the Cherry Point U.S. Marine Corps Air Station and Naval Aviation Depot, which provides employment for civilian as well as military personnel. In 2007, the total employment at the Cherry Point facilities was approximately 15,600. Of this total, approximately 10,200 were military personnel, and 5,400 were civilians.

In 1980, Craven County had a labor force of 32,163 workers of which 8,640 or 26.8 percent were military personnel. In 1990, the County had a labor force of 38,688 workers of which 7,383 or 19 percent were military personnel. For the year 2000, these numbers were 44,830 workers of which 7,097 or 15.9 percent were military. While the overall workforce increased by more than 39.4 percent from 1980 to 2000, the military workforce decreased by 18 percent.

1.7.2. Land Use Plans and Zoning

Both the 2009 Craven County CAMA Core Land Use Plan[7], and the City of Havelock 2030 Comprehensive Plan[8] were certified by the North Carolina Coastal Resources Commission in October 2009. Both plans indicate a predicted overall population growth in the County. Although the City of Havelock was not a participant in the Craven County plan, this plan notes the County's support for projects which will improve hurricane evacuation routes and improve access to the Marine Corps Air Station Cherry Point. County policy supports the implementation of the 2009-2015 State Transportation Improvement Program[5] and lists the US 70 Havelock Bypass as one of several transportation improvements in the County. Craven County does not have a County-wide zoning ordinance to regulate the location of land uses. There is a zoning ordinance, for sound attenuation and not land use control, affecting an area east of the Cherry Point Marine Corps Air Station. Craven County is also preparing a Zoning Ordinance for the New Bern to Havelock US 70 corridor area to aide in controlling future growth and development along the route.

The City of Havelock 2030 Comprehensive Plan[8] was developed with the assumption that the proposed project will be a bypass around the southwestern side of the City and will provide the

opportunity to establish land use controls for protecting investment in the proposed bypass and to transform Main Street (the existing US 70 corridor) back into a community asset once the proposed bypass is completed. This plan recognizes the direct connections to the bypass will be limited to proposed interchanges and suggests Havelock should consider developing a small area plan for the proposed interchange at Lake Road. It also suggests that land use preservation and access management restrictions should be in place before interchanges are constructed. The plan states "The City of Havelock strongly supports construction of the US 70 Bypass to relieve congestion along existing US 70." The City of Havelock 2030 Comprehensive Plan[8] follows previous land use plans in continuing to stress the importance of constructing a US 70 Havelock Bypass in order to relieve congestion along existing US 70.

The Draft Havelock Comprehensive Transportation/Land Use Plan[9] includes a proposed US 70 Bypass southwest of the City. According to the plan, "wide-spread community support exists for preserving the integrity of established neighborhoods. This momentum allows city officials opportunities to promote Havelock as a vibrant urban landscape with an identifiable city center, *establish land use controls for protecting investment in the proposed bypass, and set a new vision for the US 70 Corridor that will transform Main Street back into a community asset once the proposed bypass is completed* (emphasis added)."

1.7.3. Economic Benefits

Most of the traffic generated by the Carteret County beaches and the Port of Morehead City use existing US 70 through the City of Havelock. Reducing the travel time to these major commercial and recreational areas will increase their attractiveness and likely create substantial economic benefits for the regional and local economy.

1.7.4. Other Plans

There are a number of other plans that guide development in the City of Havelock and Craven County. The following list denotes the major plans:

East Carolina Joint Land Use Study
Croatan National Forest Land and Resource Management Plan[10] (December 2002)
Havelock Zoning Ordinance
Craven County Flood Damage Prevention Ordinance
Cherry Point MCAS Zoning Ordinance
Thoroughfare Plan for the City of Havelock[11] (1993)
Down East RPO Draft Bicycle Routes Map[12] (May 2005)

1.8. TRANSPORTATION PLANNING

1.8.1. NCDOT State Transportation Improvement Program

The proposed US 70 improvement, (Project No. R-1015) has been included in the NCDOT State Transportation Improvement Program (STIP) since 1983 and will strengthen an important link in the North Carolina Intrastate System. This project is one of five US 70 projects east of Raleigh planned to improve the US 70 corridor and to enhance statewide travel. These US 70 improvements listed in the NCDOT 2009-2015 State Transportation Improvement Program (STIP) included the completed US 70 Clayton Bypass (Project No. R-2552); the completed US 70 Smithfield-Selma Bypass (Project No. R-84); the US 70 Goldsboro Bypass (Project No. R-2554), a portion of which is currently under construction, and the US 70 Kinston Bypass (Project No. R-2553) which is currently in the project planning stage. Each of these bypasses is located between the State Capital in Raleigh and the second largest port in North Carolina at Morehead City. Another proposed US 70 improvement east of Morehead City is Project No. R-3307. This improvement is the construction of a multilane facility from the existing four-lane section at Radio Island east of Morehead City to north of Beaufort near SR 1429 (Olga Road).

There are three other NCDOT projects located in the vicinity of this project. The Northern Carteret Bypass (Project No. R-4431) from Havelock to Beaufort paralleling the NC 101 corridor is programmed for a feasibility study only. Improvements to SR 1763 (Miller Boulevard), NC 101 and Lake Road (Project No.U-3431) is an unfunded highway project in Havelock. B-4488, the replacement of Craven County Bridge No. 176 along SR 1763 (Church Road) is a funded bridge

replacement project in Havelock. No National Environmental Policy Act studies are currently underway for these projects.

1.8.2. Transportation Plans

The City of Havelock Thoroughfare Plan[11] is the principal transportation planning document for the project area. This plan indicates existing and proposed major and minor thoroughfares that are important to the circulation of traffic in the City of Havelock. A US 70 Havelock Bypass is included in this plan as a proposed major thoroughfare. The current thoroughfare plan was adopted by the NCDOT and the City of Havelock in 1993. Prior to the current plan, a proposed Havelock Bypass was also included in the 1979 Havelock Thoroughfare Plan.

The Draft Havelock Comprehensive Transportation/Land Use Plan[9] is the latest transportation planning document for the project area. This document is currently under review prior to adoption by the City of Havelock. This plan also indicates existing and proposed major and minor thoroughfares that are important to the circulation of traffic in the City of Havelock. A US 70 Havelock Bypass is included in this plan as a recommended freeway facility on new location. Thus a major facility to serve as a bypass to US 70 through the City of Havelock has been a part of the City's long range highway planning for over 30 years.

As noted in Chapter 3 (Sections 3.2.1. and 3.2.2.), the Draft Havelock Comprehensive Transportation/Land Use Plan[9] shows a US 70 Havelock Bypass around the southwest side of the City, through the Croatan National Forest, with an interchange at Lake Road (shown in Figure 3-5). The plan highway map shows the bypass beginning to the north of Hickman Hill Road at an interchange with US 70 and ending south of McCotter Boulevard, again tying to US 70 with an interchange. The plan identifies the US 70 bypass as a freeway, which is by definition an access-controlled highway facility. The only intermediate public access to the bypass would be via the proposed interchange at Lake Road.

The plan identifies US 70 (Main Street), NC 101 (Fontana Boulevard), and SR 1756 (Lake Road) as

Boulevards. As defined in the plan, a boulevard would be a two/four-lane median-divided facility. Church Road is included as an Other Major Thoroughfare. Minor Thoroughfares include Greenfield Heights Boulevard, Belltown Road, Hollywood Boulevard, Webb Boulevard, Nunn Street, Cunningham Boulevard and McCotter Boulevard.

1.9. TRAFFIC OPERATIONS ANALYSES

1.9.1. Existing Roadway Characteristics

US 70 through the City of Havelock is relatively straight and flat with approximately 30 local or state intersecting roadways. Currently, fourteen of these intersections are signalized. On the northwest end of the project area, service roads are provided along both sides of the four-lane divided section of existing US 70 from Slocum Road to NC 101 (Miller Boulevard) to carry traffic from adjacent properties to the intersecting streets. From NC 101 southeastward to Forest Hill Drive, existing US 70 generally consists of a five-lane undivided roadway. Southeast of Forest Hill Drive, US 70 returns to a four-lane divided section without service roads. Adjacent properties south of NC 101 have direct access to US 70 from driveways.

1.9.2 Existing No-Build Traffic Conditions

The average daily traffic volumes (ADT) for the base year 2008 are shown in Figure 1-2. These ADT volumes along US 70 range from a low of 23,400 vehicles per day (vpd) between Nunn Street (a City Street) and SR 1824 (McCotter Boulevard) on the south end of the project, to a high of 34,800 vpd between SR 1735 (Cunningham Boulevard) and Hollywood Boulevard (a City Street) in the center of the City of Havelock.

The traffic carrying capacity of a roadway is described by a concept known as "level of service." The concept of level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and how motorists perceive these conditions. The LOS is the effect of a number of factors such as speed, travel time, traffic interruptions, freedom to maneuver, driving

comfort, convenience and safety. Six levels are defined, A to F, to describe operating conditions for each type of facility for which capacity analysis procedures are available. The LOS "A" designation represents the most desirable operating conditions and the LOS "F" designation represents forced or breakdown operating conditions with heavy traffic congestion. LOS "D" or better is considered acceptable operating conditions for routes in urban areas. Table 1.2 provides a more detailed description of LOS.

Table 1.2. Description of Levels of Service

Level of Service	Signalized Intersections	Road Segment/Ramps
A	Very low delay (<10.0 seconds per vehicle). Most vehicles do not have to stop at all.	Free flow. Individuals are unaffected by other vehicles and operations are constrained only by roadway geometry and driver preferences. Maneuverability within traffic stream is good. Comfort level and convenience are excellent.
B	10.0-20.0 second delay. Good progression and short cycle length.	Free flow, but the presence of other vehicles begins to be noticeable. Average travel speeds are the same as in LOS A, but there is a slight decline in freedom to maneuver and level of comfort.
C	20.1 to 35.0 second delay. Fair progression and/or longer cycles. The number of vehicles stopping is significant.	Influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles. Multi-lane highways with a free flow speed (FFS) above 50 miles per hour (mph), the speeds reduce somewhat. Minor disruptions can cause serious local deteriorations and queues will form behind any significant traffic disruption.
D	35.1 to 55.0 second delay. Many vehicles stop. Individual cycle failures are noticeable.	The ability to maneuver is severely restricted due to traffic congestion. Travel speed is reduced by the increasing volume. Only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	55.1 to 80.0 second delay. Individual cycle failures are frequent.	Operating conditions at or near the capacity level, usually unstable. The densities vary, depending on the FFS. Vehicles are operating with the minimum spacing for maintaining uniform flow. Disruptions cannot be dissipated readily. Most multilane highways with FFS between 45 and 60 mph vehicle mean speeds at capacity range from 42 to 55 mph, but are highly variable and unpredictable.
F	Delay in excess of 80.0 seconds. Considered unacceptable to most drivers.	Breakdown flow. Traffic is over capacity at points. Queues form behind such locations, which are characterized by extremely unstable stop-and-go waves. Travel speed within queues are generally less than 30 mph.

Source: Transportation Research Board, 2000[13].

The capacity of an arterial with numerous signalized intersections is dominated by the capacity of the signalized intersections. There are currently 14 traffic signals along US 70 in Havelock. Each new signal further delays through traffic and deteriorates the level of traffic service along the route.

A capacity analysis was conducted utilizing the procedures outlined in the Highway Capacity Manual 2000 (HCM)[13]. Table 1.3 shows the intersection LOS with the 2008 base year traffic for four selected signalized intersections along existing US 70 through Havelock. These signalized intersections are spread along the project corridor and influence the operation of the entire route through the City of Havelock.

Table 1.3. Existing US 70 Intersection Level of Service (HCM), 2008 Traffic

Intersection	LOS AM/PM
Slocum Road (SR 1781)	C/C
Catawba Road (SR 1765) and Greenfield Heights Blvd. (SR 1746)	E/D
NC 101 and Miller Boulevard (SR 1763)	F/E
McCotter Boulevard (SR 1824)	C/B

The poorer LOS can be attributed to the heavy left-turn demand during the morning and afternoon peak traffic periods.

1.9.3 2035 No-Build Traffic Projections

The forecasted 2035 design year traffic volumes along the existing section of US 70 were used to determine if the existing route would accommodate future traffic at an acceptable LOS. The average daily traffic volumes (ADT) for the 2035 design year are shown in Figure 1-3. The anticipated high and low volumes are predicted to be in the same locations as the 2008 high and low volumes. The design year ADT volumes range from a low of 39,900 vehicles per day (vpd) between NC 101 and SR 1737 (Roosevelt Boulevard) to a high of 59,600 vpd between SR 1735 (Cunningham Boulevard) and Hollywood Boulevard (a City Street). Both of these locations are south of NC 101 in the

commercial portion of Havelock.

1.9.4. 2035 No-Build Capacity Analysis

Existing US 70 (No-Build)

A LOS analysis was conducted on the same signalized intersections along existing US 70 in the City of Havelock with the 2035 design year no-build traffic. The overall intersection LOS with the 2035 design year no-build traffic for the studied signalized intersections along existing US 70 through Havelock is shown in Table 1.4.

Table 1.4. Existing US 70 Intersection Level of Service (HCM), 2035 No-Build Traffic

Intersection	LOS AM/PM
Slocum Road (SR 1781)	E/F
Catawba Road (SR 1765) and Greenfield Heights Blvd. (SR 1746)	F/F
NC 101 and Miller Boulevard (SR 1763)	F/F
McCotter Boulevard (SR 1824)	F/F

None of the existing signalized intersections shown in Table 1.4 will accommodate the forecasted design year 2035 design hour traffic at an acceptable level of service. Again, the heavy left turn demand coupled with increased morning and afternoon peak traffic contributes to the undesirable level of service.

1.10 ACCIDENT ANALYSIS

An accident study of US 70 through the project area was conducted to determine the future accident potential and relative safety of the existing roadway. A total of 530 reported accidents occurred along the studied portion of US 70 during the period between December 1, 2005 and November 30, 2008. No crashes involved fatal injuries, 147 (28 percent) involved non-fatal injury crashes, and 383 (72 percent) resulted in property damage only crashes. The 530 reported accidents resulted in an

estimated $ 2,157,965 loss in property damage. Table 1.5 is a summary of the recorded accident types along the studied roadway during this period.

Table 1.5. Accident Types as a Percentage of Total, US 70, Havelock, NC.

Accident Type	Number/Percent of Total
Rear-end	237/44.7%
Turning movements	85/16.0%
Angle	69/13.0%
Sideswipe	45/8.5%
Other	94/17.7%

A comparison of the accidents along the studied route shows the most frequent single type of accident (45 percent) involved a rear-end collision. The large percentage of rear-end collisions indicates a congested roadway with numerous driveway access points and at-grade intersections.

Over 54 percent (287) of the 530 total accidents occurred within 200 feet of signalized intersections. These 287 accidents occurred at the following signalized intersections. These locations are listed from northeast to southwest along the studied portion of US 70:

Location	Accidents
Hickman Hill Road (SR 1760)	6
Slocum Road	34
Greenfield Heights Blvd (SR 1746) and Catawba Road (SR 1765)	37
Ketner Drive (SR 1757) and Manila Street (SR 1800)	17
Stonebridge Trail	10
Chadwick Avenue	18
Trader Avenue and Holly Drive	35
Jackson Drive	25
NC 101 and Miller Boulevard (SR 1763)	39
Roosevelt Boulevard (SR 1737)	10
Cunningham Boulevard (SR 1735)	17
Hollywood Boulevard	11
Nunn Street	13
McCotter Boulevard (SR 1824)	15

The most accidents (39) occurred at the US 70 intersection with NC 101 and Miller Boulevard (SR 1763). Of note, 23 accidents occurred at the US 70 intersection with Shepard Street, an unsignalized intersection immediately north of McCotter Boulevard.

Average statewide accident rates are categorized according to the type of facility. For comparison to statewide rates, existing US 70 through Havelock is compared to urban US routes with four or more lanes. From west of Havelock to NC 101 (Miller Boulevard), US 70 is a four-lane divided facility with partial control of access (at-grade intersections and service roads). From NC 101 eastward through the intersections with SR 1737 (Roosevelt Boulevard) and SR 1735 (Cunningham Boulevard), the existing roadway is a five-lane undivided roadway with no control of access. Further east near Forest Hill Drive, US 70 transitions to a four-lane divided section also with no control of access.

Accident rates are determined by the length, average daily traffic, and number of reported accidents along a route in a specific time frame. These rates are listed as accidents per 100 million vehicle miles (per 100MVM). The total accident rate for the stated time period along the studied portion of US 70 is 208.41 per 100MVM.

The total accident rates along the studied portion of US 70 are lower than the North Carolina Statewide average rates for undivided US routes and divided US routes with four or more lanes and no control of access. However, the total accident rate along the studied portion of US 70 is higher than the North Carolina Statewide average rates for divided US routes with four or more lanes containing partial or full control of access.

Table 1.6 shows a comparison of the accident rates for the studied portion of US 70 to the average North Carolina Statewide Accident rates. All-US-Route average accident rates are shown for routes with four or more lanes divided with no control of access, partial control of access, full control of access and four or more lanes undivided.

Table 1.6. Comparison of NC Statewide Accident Rates to US 70, Havelock, N.C.

LOCATION	TOTAL ACCIDENTS (Critical Rate)	FATAL ACCIDENTS (Critical Rate)	NON-FATAL INJURY ACCIDENTS (Critical Rate)
	per 100 MVM	per 100 MVM	per 100 MVM
US 70, Havelock NC	208.41	0.00	57.80
US Routes with 4+ lanes undivided*	361.83 (381.65)	1.53 (3.00)	123.86 (135.54)
US Routes with 4+ lanes divided with no control of access	216.15 (231.51)	1.08 (2.35)	71.55 (80.47)
US Routes with 4+ lanes divided with partial control of access*	152.65 (165.59)	1.10 (2.38)	49.31 (56.75)
US Routes with 4+ lanes divided with full control of access*	113.81 (125.01)	0.66 (1.69)	33.95 (40.16)

*Standard 2005-2007 Three Year Crash Rates, All United States Routes in NC

[1] United States Department of Transportation, Federal Highway Administration. FHWA Technical Advisory T6640.8A: Guidance for Preparing and Processing Environmental and Section 4(f) Documents. October 30, 1987.
[2] North Carolina Department of Transportation. 1984-1993 Transportation Improvement Program. November, 1983
[3] Federal Highway Administration (FHWA). 1998. USDOT and North Carolina Department of Transportation. US 70, Havelock Bypass, Craven County, NC T.I.P. No. R-1015, Environmental Assessment, January 27, 1998, Division of Highways, Project Development and Environmental Analysis Branch, Raleigh, N.C. (EA)
[4] North Carolina Department of Transportation, Transportation Planning Branch. Strategic Highway Corridors. Available:http://www.ncdot.org/doh/preconstruct/tpb/SHC/ Accessed: 09 January 2009
[5] North Carolina Department of Transportation. 2009-2015 State Transportation Improvement Program. June, 2008
[6] NCDOT Draft 10-Year Program and Resource Plan (2015-2020), March 2010.
[7] Holland Consulting Planners, Inc. 2009 CAMA Core Land Use Plan Craven County , Craven County Planning Department, New Bern, N.C.
[8] Urban Resources Group (URG), City of Havelock 2030 Comprehensive Plan, June 15, 2009. City of Havelock, Planning Department
[9] Kimley-Horn and Associates, Inc. 2007 Draft Havelock Comprehensive Transportation/Land Use Plan, April 9, 2007
[10] [USDA] U.S. Department of Agriculture, 2002. 2002 Final Environmental Impact Statement for the Revised Land and Resource Management Plan for the Croatan National Forest, December 2002, U.S. Forest Service Southern Region. Atlanta, GA. December 2002.
[11] North Carolina Department of Transportation, Transportation Planning Branch. 1993. City of Havelock Thoroughfare Plan, November, 1993
[12] Eastern Carolina Council. Down East Rural Planning Organization (RPO) Bicycle Routes Map, May 2005
[13] Transportation Research Board, National Research Council, 2000. Highway Capacity Manual 2000. Washington, D.C.

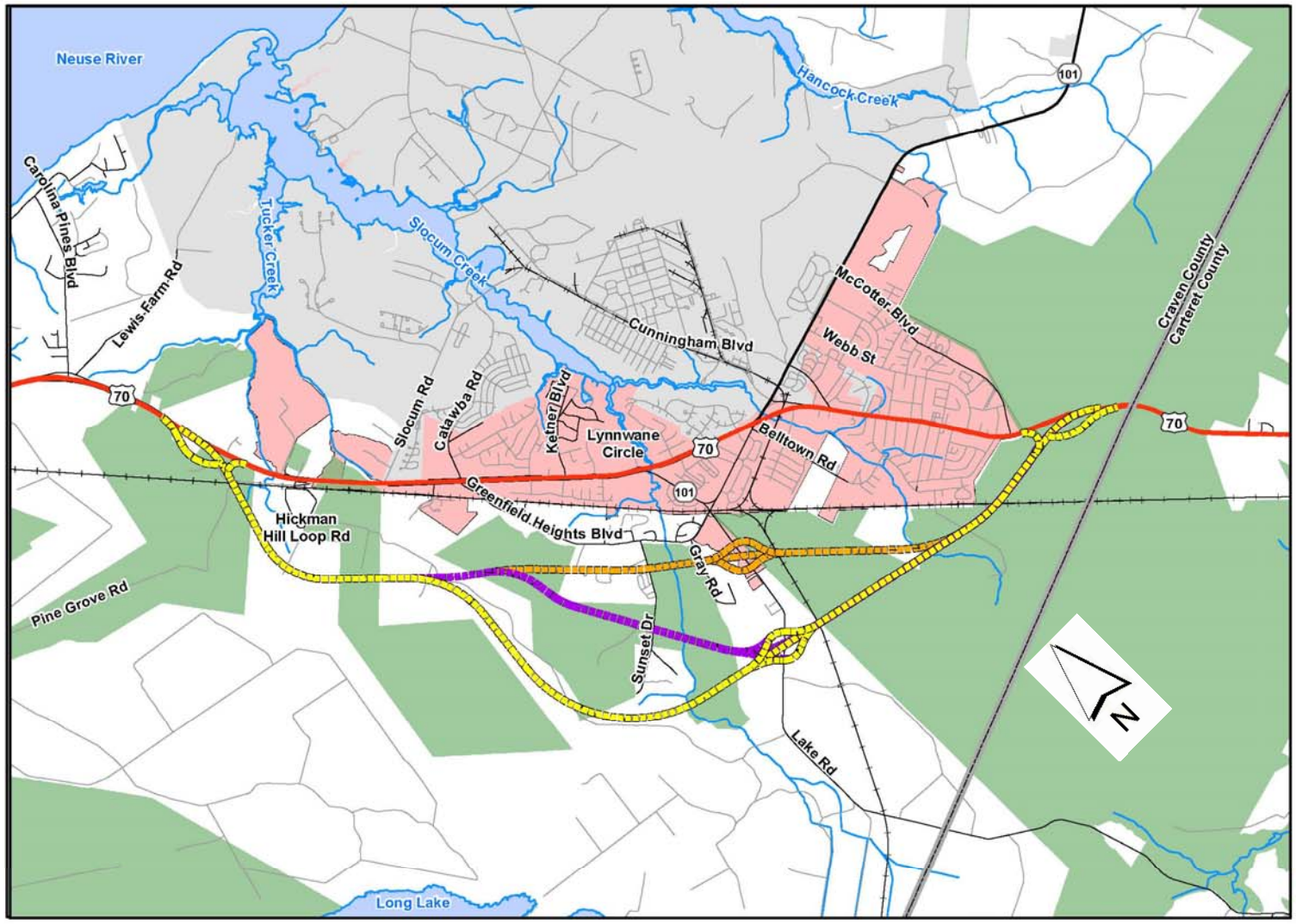
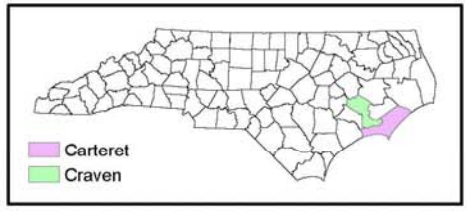


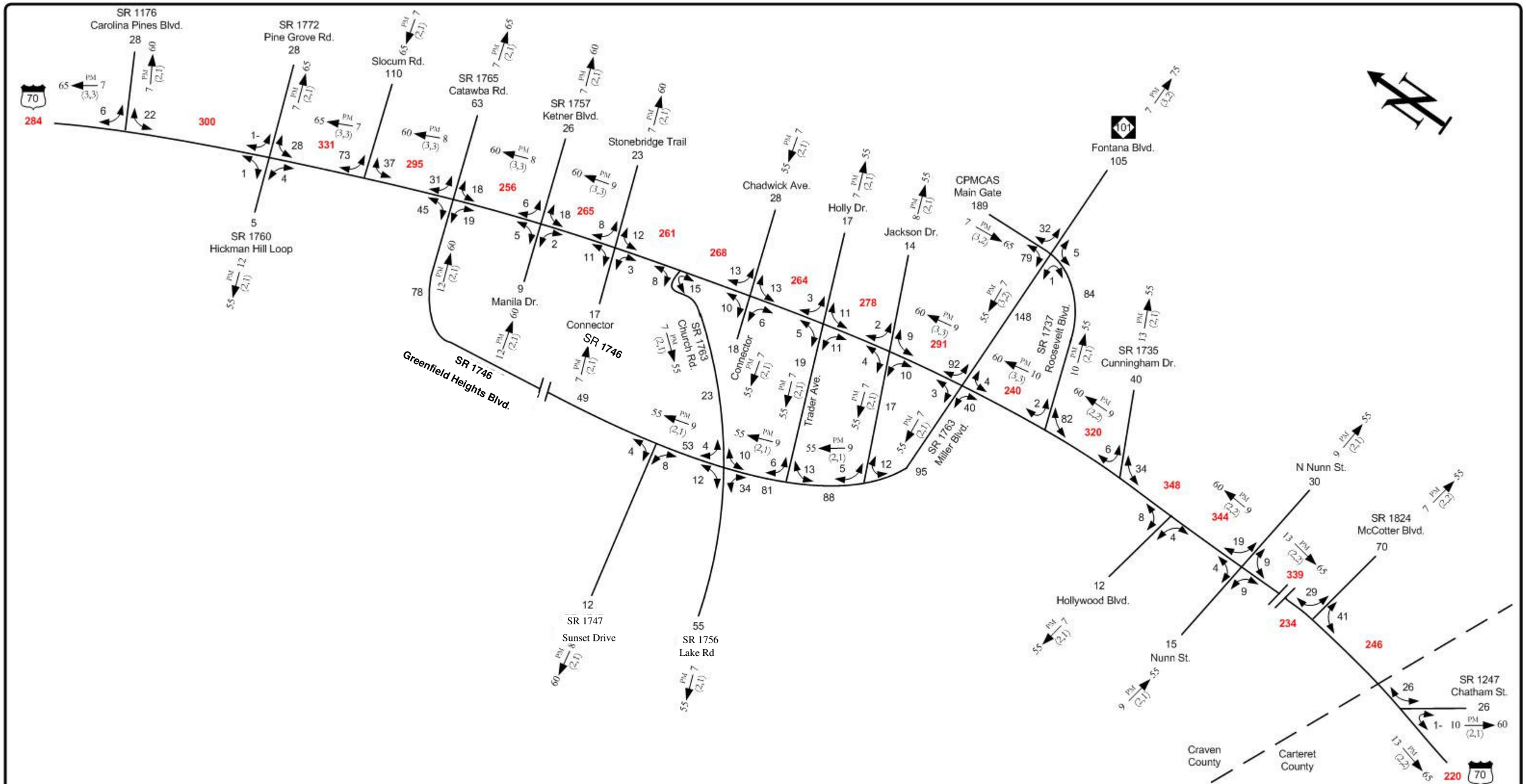
FIGURE 1-1 - ALTERNATIVES & PROJECT LOCATION

- Bypass Alternative 1
- Bypass Alternative 2
- Bypass Alternative 3
- US Route
- State Route
- Secondary Roads
- Local Roads
- Railroads
- Streams and Creeks
- Water Bodies
- Havelock
- Cherry Point MCAS
- Croatan National Forest
- County Boundary

0 1 2 Miles

MAP SOURCES:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE (ESRI
CITY OF HAVELOCK
CRAVEN COUNTY
CARTERET COUNTY
HNTB NORTH CAROLINA, P.C.





LEGEND

###	VPD----# OF VEHICLES PER DAY IN 100'S
1 -	MUCH LESS THAN 50 VPD
X	MOVEMENT PROHIBITED
→	ONE-WAY MOVEMENT
DHV PM (d, t) → D	
DHV	DESIGN HOURLY VOLUME (%) = K30
	K30 = 30'TH HIGHEST HOURLY VOLUME
PM	PM PEAK PERIOD
D	DIRECTIONAL SPLIT (%)
→	INDICATES DIRECTION OF D
REVERSE FLOW FOR AM PEAK	
(d,t)	DUALS, TT-ST'S (%)

Drawing Not To Scale

Fig. 1-2

Drawn by Darryl Austin

LOCATION:
US 70 from SR 1247 (Chatham St. in Carteret Co.)
To SR 1176 (Carolina Pines Blvd.)

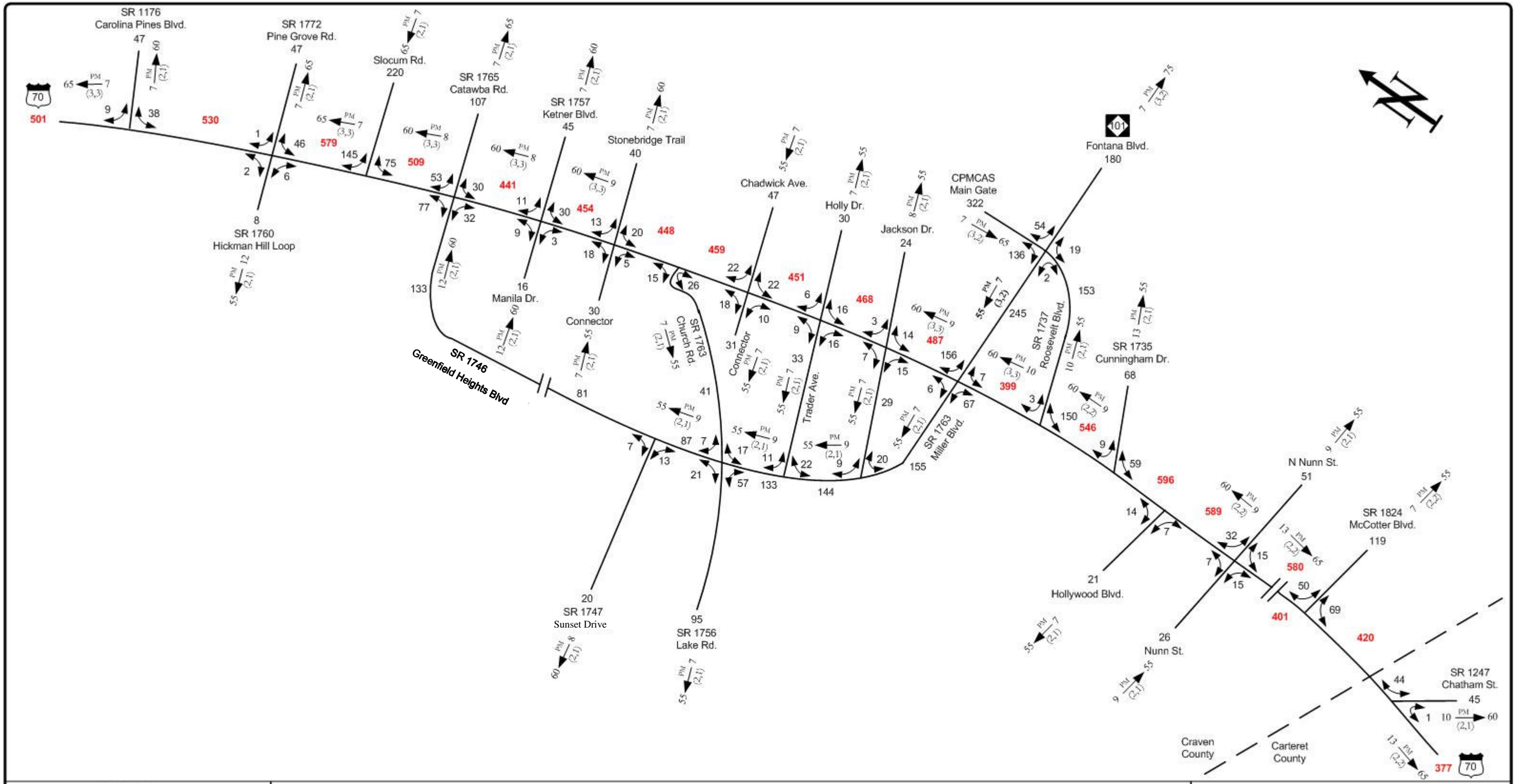
PROJECT:
US 70 Havelock Bypass on New Location

2008 ESTIMATED AADT
No Build

COUNTY: Craven

DIV. : 02 **DATE:** October 14, 2008

TIP # R-1015 **WBS#** 34360.1.1



LEGEND

###	VPD----# OF VEHICLES PER DAY IN 100'S
1 -	MUCH LESS THAN 50 VPD
X	MOVEMENT PROHIBITED
→	ONE-WAY MOVEMENT
DHV $\xrightarrow[(d,t)]{PM}$ D	
DHV	DESIGN HOURLY VOLUME (%) = K30
	K30 = 30'TH HIGHEST HOURLY VOLUME
PM	PM PEAK PERIOD
D	DIRECTIONAL SPLIT (%)
→	INDICATES DIRECTION OF D
REVERSE FLOW FOR AM PEAK	
(d,t)	DUALS, TT-ST'S (%)

Drawing Not To Scale

Fig. 1-3

Drawn by Darryl Austin

LOCATION:
US 70 from SR 1247 (Chatham St. in Carteret Co.)
To SR 1176 (Carolina Pines Blvd.)

PROJECT:
US 70 Havelock Bypass on New Location
2035 ESTIMATED AADT
No Build

COUNTY: Craven

DIV.: 02 **DATE:** October 14, 2008

TIP # R-1015 **WBS#** 34360.1.1

CHAPTER 2
DESCRIPTION OF ALTERNATIVES CONSIDERED

CHAPTER 2. DESCRIPTION OF ALTERNATIVES CONSIDERED

This section of this DEIS describes the alternatives considered as well as alternatives retained for detailed study. A number of preliminary alternatives were developed and evaluated during the early phases of the project development process, including the No-Build Alternative, the Multi-Modal Alternatives, the Transportation System Management Alternatives, the Improve-Existing Alternatives, and the Bypass Alternatives. The following provides a discussion of the alternatives considered for this action, the process of elimination of alternatives, the basis for the selection of the alternatives for detailed study, and the preferred alternative.

2.1. NO-BUILD ALTERNATIVE

The No-Build Alternative assumes that in the year 2035, the Craven County transportation system would evolve as currently planned, but without improvements to US 70 in the study area. With the exception of routine maintenance, no change would take place on the existing US 70 corridor.

All other funded projects included in the North Carolina Department of Transportation, Draft 10-Year Program and Resource Plan (2015-2020)[1] and city projects would be constructed. Other than Project No. B-4488, the replacement of Craven County Bridge No. 176 along SR 1763 (Church Road), the proposed project is the only funded highway project in the study area.

Since there would be no loss of land for highway purposes, the benefits of the No-Build Alternative would include no relocation of families or businesses and no loss of natural resources. In addition, there would be no impacts resulting from project construction and no expenditure of public funds for right-of-way and construction.

Note: Endnotes are presented at the end of this Chapter

Several intersections along existing US 70 through Havelock currently operate at an undesirable level of service. The No-Build Alternative would allow traffic congestion to increase leading to a greater breakdown of traffic service along this section of US 70. In addition, the goals of the project including improving the level of service for local, regional, and statewide traffic along the US 70 corridor and enhancing the ability of US 70 to serve the regional transportation function in accordance with the Strategic Highway Corridors[2] Plan would not be realized. A No-Build Alternative is not consistent with adopted local, regional, and State transportation plans.

Although the No-Build Alternative does not meet the purpose and need for this project, or alleviate the transportation needs, it will provide a baseline comparison with the Build Alternatives in accordance with NEPA (40 CFR 1502.14(d)) and with FHWA guidelines, (FHWA Technical Advisory T6640.8A, p15)[3].

2.2. TRANSPORTATION SYSTEM MANAGEMENT (TSM) ALTERNATIVES

Transportation System Management (TSM) alternatives are relatively low-cost improvements to an existing facility. TSM measures enhance the operations of a facility while minimizing capital outlay. TSM measures may include operational improvements such as traffic signal timing optimization, speed restrictions, access control, flexible work hours, and physical improvements such as turning lanes, high-occupancy vehicle (HOV) lanes, intersection realignments, or new traffic signals.

2.2.1. Operational Improvements

Examples of TSM operational improvements include traffic law enforcement, flexible work hours, turn prohibitions, access control, signal coordination, signal phasing/timing changes, and speed restrictions.

TSM operational measures usually can be implemented easily and require little capital investment. In this case, however, these improvements would not by themselves, acceptably rectify the operational deficiencies along existing US 70. There is currently adequate traffic law enforcement in

this developed area with no identifiable enforcement measures that would improve operations. With the exception of the Cherry Point U.S. Marine Corps Air Station, there is not a concentrated employment center in the study area. This lack of concentrated civilian employment centers, combined with the large volume of regional traffic, precludes the use of flexible work hours to effectively improve traffic service on existing US 70. Turn prohibitions and partial access control are currently in place along the section of US 70 from Slocum Road to NC 101, but do not eliminate the operational deficiencies caused by the signalized intersections along this section. Signal coordination and optimizing signal timing would improve traffic flow. However, the overall level-of-service would not change dramatically without the addition of through and turn lanes. The operating speed is currently restricted due to the number of traffic signals along the roadway.

TSM operational improvements will not substantially achieve the goals of the project by improving the level of service for local, regional, and statewide traffic along the US 70 corridor. These improvements would not enhance the ability of US 70 to serve the regional transportation function in accordance with the Strategic Highway Corridors[2] Plan. Therefore, TSM operational improvements do not meet the purpose and need, and were eliminated from further consideration for this project.

2.2.2. Physical Improvements

Examples of TSM physical improvements include the addition of turn lanes, intersection realignment, warning, and information signs, new signals, and high-occupancy vehicle (HOV) lanes. Physical improvements require greater capital investment than operational improvements; however, the benefits are more substantial. Existing US 70 through the study area is a four-lane, divided or five-lane, undivided section. Turn lanes are provided at most of the signalized intersections. Intersection realignment and HOV lanes are not feasible due to roadside development and limited right-of-way. Striping, warning devices, and improved signing may reduce accidents, but will not substantially improve traffic flow or the level of service.

TSM operational and physical improvements will not reduce the traffic congestion enough to improve the levels of service on US 70 to an acceptable level. The existing mixture of through and

local traffic along US 70 does not allow TSM measures to substantially improve traffic flow. Therefore, TSM improvements do not meet the purpose and need, and were eliminated from further consideration for this project.

2.3. TRANSPORTATION DEMAND MANAGEMENT (TDM) ALTERNATIVES

For TDM alternatives to provide viable traffic service, certain characteristics and conditions must exist such as concentrated employment centers, direct routes to desired destinations, and low automobile to household ratios. The only concentrated employment center in the study area is the Cherry Point U.S. Marine Corps Air Station (MCAS) which is spread over approximately 12,000 acres. Along existing US 70, there are no large shopping malls, office buildings, or industrial plants. Additionally, based on Census 2000 data, the study area has a high automobile to household ratio, with 78 percent of the commuters driving to work alone.

2.3.1. Ridesharing

Census 2000 data indicates that only 15.6 percent of work trips involve carpooling. The MCAS is the largest employer in Craven County. The MCAS Fleet Readiness Center draws civilian employees from a regional base with no identified work force concentration, minimizing the potential effectiveness of ridesharing to reduce travel demand along US 70. A percentage of the US 70 traffic is regional and/or statewide through traffic, particularly in the summer months as travelers seek coastal destinations. Ridesharing does not present a practicable solution to reduce the congestion currently experienced or expected with future traffic along US 70 through the City of Havelock.

2.3.2. Flexible Work Schedule

With exception of the MCAS, there is not a concentrated employment center in the study area. This lack of civilian concentrated employment centers combined with the large volume of regional through traffic precludes the use of flexible work hours to improve traffic service on existing US 70.

Also, the military sets the MCAS work schedules and the traditional notion of "flexible work schedule" does not apply.

2.3.3. Telecommuting

The nature of the work related to the MCAS makes telecommuting impracticable. Telecommuting works best in the development and transfer of technology, data bases, billing services, etc. There are no large technology centers in Havelock to make this a viable means of reducing the work trip demands on US 70.

2.3.4. Guaranteed Ride Home

With such diverse origins of work trips, with the exception of MCAS, the "guaranteed ride home" would need to be an identified public/private program such as a taxi service. In such a case, if the rider were responsible for the ride-home cost, the cost would be a further deterrent to ridesharing.

TDM alternatives will not substantially achieve the goals of the project by improving the level of service for local, regional, and statewide traffic along the US 70 corridor. These improvements would not enhance the ability of US 70 to serve the regional transportation function in accordance with the Strategic Highway Corridors[2] Plan. Since they do not meet the purpose and need for the project, TDM alternatives were eliminated from further consideration in this document.

2.4. MASS TRANSIT ALTERNATIVES

2.4.1. Multi-Modal Alternatives

Highway transportation is the dominant mode of transportation in the study area. As a major east-west corridor for the state and region, US 70 serves a large volume of through traffic including a large percentage of truck traffic. This user group will not directly benefit from multi-modal alternatives to reduce the congestion along US 70. These results are not compatible with either of the

primary purposes for the project. Therefore, Multi-Modal Alternatives were eliminated from further study.

2.4.2. Bus Alternatives

The most typical multi-modal transportation system in North Carolina involves a fixed-route, fixed-schedule bus system. For the regional and statewide users, the Carolina Trailways Bus System previously provided daily commercial bus service to the main gate of the Cherry Point U.S. Marine Corps Air Station. This service no longer exists and has been replaced with service from Raleigh to New Bern to Camp Lejeune. Although the Craven Area Regional Transit Services (CARTS) provides transportation services to the general public, this demand/response service is provided on a limited basis with an emphasis on the elderly and persons with disabilities. No local, fixed-route, fixed-schedule mass transit systems operate in the study area. This is due to the mixed local, regional and statewide transportation demand utilizing US 70, combined with the low population density in the study area.

Although the City of Havelock has identified an interest in bolstering bus services as mentioned in the Draft Havelock Comprehensive Transportation/Land Use Plan[4] , the overall vision states transit should be available to serve the needs of the transit dependent population, while also offering a competitive alternative to the automobile for “choice” customers. Buses are not envisioned as a "stand alone" alternative to reduce congestion on US 70. Even if the local traffic could be reduced by the introduction of a bus system along existing US 70, this would not be an effective means of reducing congestion. Numerous stops and/or turns to and from existing US 70 would introduce new delays to the through traffic along the route. These new delays would result in increased emergency response times as well as increased traffic congestion. These results are not compatible with either of the primary purposes for the project. Therefore, bus alternatives were eliminated from further consideration in this document.

2.4.3. Rail Alternatives

The North Carolina Railroad, operated by Norfolk Southern, provides only freight service from New Bern to the State port at Morehead City. No passenger service is available. The Camp Lejeune Railroad, owned by the U.S. Government and operated by Norfolk Southern, provides military service between the Cherry Point MCAS and Camp Lejeune.

2.4.4. Express Lane Alternatives

The Express Lane Alternative typically favors "the through-traffic" flow in an access-controlled environment. Limited opportunities of access to the highway facility make this alternative unfeasible. Peak hour traffic demand on US 70 is dominated by left-turn demand at a number of the key intersections, e.g., Slocum Road, NC 101, and McCotter Boulevard. US 70 provides limited access control between Slocum Road and NC 101, but has closely spaced intersections allowing access to and from frontage roads. The high left-turn demand and the free-flow nature of express lanes are not a compatible combination from a traffic management point of view.

2.5. BUILD ALTERNATIVES

Numerous Build Alternatives were developed to satisfy the purpose of and need for the proposed project, including improving existing US 70 and new location bypass alternatives. Mapping showing constraints such as existing residential and commercial developments, community and cultural centers, wetlands, and habitat for protected plant and animal species was compiled for use in developing preliminary study corridors. These corridors were modified, added, and deleted to avoid impacts to these known resources as much as practicable. Alternatives were carried forward for more detailed studies to determine social, economic, and environmental impacts, costs, and the number of anticipated relocations. These alternatives were also presented to environmental review agencies, local government officials, and the area citizens for comments. This cumulative information was used to select a preferred alternative for the project.

This diverse process was used to ensure the location and design of the alternatives would satisfy the purpose of and need for the project while avoiding or minimizing the impacts to the human and natural environment. The steps in this process included 1) establishing design criteria, 2) developing typical sections, 3) establishing preliminary corridors, 4) selecting detailed study corridors, 5) eliminating alternatives, and 6) selecting the Preferred Alternative.

2.5.1. Logical Termini/Independent Utility

To ensure a meaningful evaluation of alternatives and to avoid commitments to transportation improvements before they are fully evaluated, the proposed action 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 are made in the area; and
- Not restrict consideration of alternatives for other reasonably-foreseeable transportation improvements.

The logical termini for this proposed action were determined to be approximately one-mile west of the existing US 70/SR 1760 (Hickman Hill Loop Road) intersection northwest of Havelock, and southeast of the US 70/SR 1824 (McCotter Boulevard) intersection southeast of Havelock. The increased traffic and lack of access control, with numerous street and driveway connections to the adjacent development in Havelock, substantially reduce the mobility of this corridor. Currently, 14 traffic signals prohibit uninterrupted service along the existing corridor through Havelock. The project termini extend beyond those signals and the commercially-developed areas within the city limits of Havelock. The distance between the termini allows the consideration of various transportation improvements with a broad scope of environmental considerations to satisfy the purpose and need for the project. Since the project extends through the most congested portion of US 70, it will have independent utility and be a reasonable expenditure regardless of other transportation improvements in the area.

2.5.2. Design Features

The proposed project will provide a controlled-access (partial to full), median-divided facility with four or more lanes. The proposed project will feature free-flowing interchanges with US 70, and grade separations at some local routes and any railroad crossings along the selected corridor. The right-of-way width may be variable, increasing at interchanges, grade separations and any other areas where substantial fill is required.

2.5.2.1. Design Criteria

The design criteria for the proposed project were selected to provide safe and efficient traffic operations. Many of these design standards are related to design speed and type of facility.

The criteria used for the development of preliminary corridors within the study area also included the consideration of the physical and natural environment. Sensitive areas were avoided to the extent possible without compromising safety considerations and traffic service goals of the project.

2.5.2.1.1. Highway Design Criteria

The highway design criteria used to develop the functional and preliminary designs were based on the American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets (2004 edition)[5], and the North Carolina Department of Transportation Design Manual (2002 edition), and are listed below. Current highway design criteria will be used in the final design of the Preferred Alternative.

Table 2.1 Highway Design Criteria

DESIGN SPEED	1.	Mainline	- 70 miles per hour (mph))
	2.	Ramps	- 50 mph, (35 mph min.)
	3.	Loops	- 30 mph, (25 mph min.)
	4.	Y-Lines	- 35 to 50 mph

Table 2.1 Highway Design Criteria (cont.)

MEDIAN WIDTH	Improve Existing US 70		- 22 feet with Barrier
	New Location Bypass		- 46 feet (Depressed) NCDOT Design Manual
LANE WIDTHS	1.	Mainline	- 12 feet, (AASHTO 2004 pg. 504)
	2.	Ramps	- 14 to 16 feet, Part 1, 8-2
	3.	Loops	- Per AASHTO 2004 Exhibit 3-51
	4.	Y-Lines	- Based on projected traffic
BASIC NO. LANES			- Min. 4 Lanes (2 in each direction)
SHOULDER WIDTHS (w/ 46-foot Depressed)	1.	New Location Mainline	- Outside - 12 feet (10-foot usable) (Part 1, 1-4B, F-1A) - Outside paved - 10 feet (4 ft. full) - Median -6 feet - Median paved - 4 feet
	2.	Ramps	- Outside - 14 feet desirable 12 feet minimum - Inside - 12 feet desirable 10 feet minimum - Paved - 4 feet
	3.	Loops	- Left - 12 feet desirable 10 feet minimum - Right 2.5 feet curb & gutter
	4.	Y-Lines	- Based on projected traffic.
HORIZONTAL ALIGNMENT	1.	Mainline	-1630-foot minimum radius curve with 0.10 superelevation.
	2.	Ramps	-758-foot minimum radius curve with 0.08 superelevation.
	3.	Loops	-250-foot minimum radius curve with 0.08 superelevation.
	4.	Y-Lines	-758-foot minimum radius curve with 0.08 superelevation.
VERTICAL ALIGNMENT	1.	Mainline	- 3% maximum grade, K sag 181, K crest 274
	2.	Ramps	- 5% maximum grade (Des. Man. Part 1, 8-4)
	3.	Y-Lines	- AASHTO 2004, based on design speed, terrain and facility type.

2.5.2.1.2. Railroad Crossing Criteria

NCDOT's policy for horizontal and vertical clearances at railroad-highway crossings is in concert with the Federal Highway Administration Standards as presented in 23 CFR 646, Appendix to Subpart B (Effective Date: October 24, 1988), as excerpted below.

- For horizontal clearances, offset dimensions to the abutment slope of up to 20 feet from the centerline of tracks require no special justification for federal aid cost participation. Horizontal offsets in excess of 20 feet should be justified based on individual site conditions. An offset of 25 feet from the centerline of the track to the nearest bridge bent is used to justify elimination of crash walls on the bents.

- For vertical clearances, clearances up to 23 feet require no special justification for federal aid cost participation. Greater vertical clearances can be justified based upon special site conditions, state regulatory requirements, or needs to meet documented railroad electrification plans or other documented needs.

- Should a railroad desire additional clearances other than necessary to meet these crossing conditions, such additional costs are not eligible for federal-aid funding without proper justification and documentation.

Coordination with the North Carolina Railroad, and the Camp Lejeune Railroad, has indicated an interest in obtaining additional grade separation clearances for the project design. Current preliminary designs do not include the additional clearance at the Camp Lejeune Railroad crossing. If the on-going coordination results in providing additional clearance at this crossing, the preliminary design and resulting impacts will be updated to reflect this coordination.

Currently, no changes are proposed to the Camp Lejeune Railroad at the proposed crossings on National Forest System lands. NCDOT will coordinate with the U.S. Forest Service regarding the review of the preliminary design plans for this crossing.

2.5.2.1.3. Environmental Design Considerations

Since a large portion of the study area involves National Forest System lands in the Croatan National Forest (CNF), United States Forest Service (USFS) officials were involved early in the planning process to ensure the project would conform to the Croatan National Forest Land and Resource and Management Plan. The USFS conducted analyses of potential project impacts to aquatic species, wildlife, plants, soils, waterways, and wetlands. They also analyzed the recreational and visual impacts of the new location bypass options on the CNF. These analyses are included in Appendix A, of the US 70, Havelock Bypass Environmental Assessment (EA), January 27, 1998[6].

USFS officials provided valuable assistance, both in the preparation of the 1998 EA and this document, in the establishment of criteria to minimize project impacts to the wetlands, protected plant and animal species, and other natural systems in the entire project area. Potential impacts to other environmental resources such as air quality, noise, farmlands, mineral resources, and historic properties were also considered and minimized to the extent practicable.

Social and economic issues were also considered in the establishment of project criteria. Impacts to homes, neighborhoods, businesses, schools, churches and other elements of community cohesion were also minimized during the development of the project. Local officials were included early in the planning process to determine the perspective and sentiment of the public regarding the project. Public opinion was also obtained directly through the media, project newsletters, small group meetings and citizen workshops. Economic impacts such as the road user costs and benefits as well as the expenditure of public funds were given consideration also.

2.5.2.2. Typical Sections

Using the highway design criteria in Table 2.1, the typical sections shown in Figure 2-1 were developed for the Build Alternatives.

For the Improve Existing US 70 Alternatives initially studied, the existing roadway would be

widened by adding another through lane in each direction to provide six through lanes divided by a 22-foot median. With the adjacent two-way service roads, a right-of-way width of 360 feet was studied for these improvements.

For the new location Bypass Alternatives, a four-lane divided freeway with a 46-foot median would be constructed. A 46-foot median is deemed the minimum width that will provide adequate median drainage for the roadway subgrade. For these improvements, an initial right-of-way width of 325 feet was utilized in the preliminary studies. Once preliminary designs were further developed, a 250-foot right of way width was utilized.

2.5.2.3. Access Control

The proposed project will provide control of access along the entire length of the project. The Improve Existing US 70 Freeway Alternate and the Bypass Alternatives will provide full control of access while the Improve Existing US 70 Expressway Alternate will provide limited control of access by prohibiting direct driveway access to US 70 along the entire project.

2.5.2.4. Project Study Area

The proposed project is located in the southeastern portion of Craven County, North Carolina. Set in the eastern coastal plain region of the State, approximately 30 miles west of the Atlantic coast, the general topography of the study area is nearly level with slight relief along the stream terraces. The Neuse River provides the primary drainage for the study area. Goodwin Creek, Daniels Branch, Southwest Prong of Slocum Creek, East Prong of Slocum Creek, and Black Swamp all drain into Slocum Creek, a tributary of the Neuse River.

Existing US 70 is the only principal arterial that passes through the City of Havelock. The project study area begins along existing US 70 approximately 3.5 miles northwest of the City and extends approximately 10 miles to the southeast of the City near the Craven/Carteret County line. Through the project study area, existing US 70 is a multilane arterial with fourteen signalized intersections

concentrated along the route. It serves a majority of the commercial businesses in the City.

The City of Havelock is the home of the Cherry Point U.S. Marine Corps Air Station (MCAS) that covers more than 12,000 acres at its primary complex. The Cherry Point MCAS is located on the northeast side of the City of Havelock and is bounded on the north by the Neuse River and on the southwest by existing US 70. Much of the region southwest of Havelock is part of the Croatan National Forest (CNF). Currently, this National Forest contains approximately 160,000 acres. Most of this acreage is located to the south and west of Havelock.

The land use in the project study area is a mixture of residential, commercial, industrial, silvicultural, and agricultural development. However, the dominant land use in this section of Craven County is silviculture production, primarily associated with the CNF. The project location is shown in Figure 1-1.

2.5.3. Evaluation of Preliminary Corridors

Several Build Alternatives were considered for the proposed project, including improving existing US 70 and new location bypass alternatives. Both a partial control of access expressway and a full control of access freeway were developed to improve existing US 70. To accommodate the design year traffic at an acceptable level-of-service, both of these alternatives widen the existing roadway by adding another through lane in each direction to provide a minimum of six through lanes (three in each direction). For safety, the roadway would be divided by a 22-foot wide barrier median. With either of the improve-existing alternatives, two-way service roads would be provided along both sides of the highway to serve the adjacent properties currently served by driveways along US 70. A right-of-way width of 360 feet was anticipated with additional right-of-way needed at signalized intersections or interchanges for these improvements.

The new location bypass alternatives developed for the proposed project consist of constructing a new 46-foot median-divided, four-lane freeway with full control of access. Full interchanges would be provided on both ends of the project and at SR 1756 (Lake Road). The railroad crossings and

remaining local secondary roads would be grade-separated from the bypass by bridges. A right-of-way width of 325 feet was anticipated for the bypass alternatives with additional right-of-way needed at the interchanges for these improvements.

2.5.3.1. Description of Preliminary Corridors

Early in the planning process, preliminary study corridors were developed based on previous studies and on land suitability mapping. The corridors along new location were 1000 feet wide while the existing US 70 corridor was 500 feet wide. A conceptual centerline was drawn down the middle of each for planning purposes. However, this centerline has been shifted within the corridor depending on design factors or the need to avoid or minimize impacts to human and natural resources. The final centerline and construction limits will not be established until final design within the Preferred Alternative corridor is complete.

The preliminary study corridors included the existing US 70 corridor and six corridors on new location. To avoid substantially impacting the Cherry Point U.S. Marine Corps Air Station and the City of Havelock, all of the preliminary study corridors for a new location bypass were developed around the southwest side of the City.

Existing US 70

The Improve Existing US 70 Alternatives extend a distance of approximately six miles from the signalized Slocum Road intersection northwest of the City through the signalized McCotter Boulevard (SR 1824) intersection southeast of the City. Two preliminary build alternatives, a freeway alternate and an expressway alternate were considered to improve existing US 70.

The first Improve Existing US 70 Alternative, the Expressway Alternate, consists of adding a through lane in each direction and turn lanes at the major signalized intersections. Limited control of access would be provided by prohibiting direct driveway access to US 70 along the entire project. Street connections to US 70 would remain at-grade. New parallel two-way service roads would be

added to allow access to the adjacent properties currently served by US 70. Existing parallel service roads would be relocated further from US 70 at signalized intersections to improve intersection operations. For safety, a concrete barrier would be constructed in the center of the median.

A 360-foot right-of-way width was studied for these improvements; however additional right-of-way would be needed to offset the parallel service roads at the signalized intersections. The studied Expressway Alternate would relocate 59 existing businesses affecting more than 320 employees. Numerous other businesses would potentially relocate due to the lack of direct access to US 70 or because the necessary right of way would require a large portion of their parking area.

The capacity analysis of the Expressway Alternate determined the average speed along the route would be 22 to 25 miles per hour due to the delays at the signalized intersections. This average speed is not desirable for the substantial volume of regional and statewide through traffic on US 70 in Havelock.

The Expressway Alternate with signalized intersections does not meet the goal of the Strategic Highway Corridors[2] Plan which calls for US 70 to be upgraded to a freeway between Morehead City and Raleigh. The location of this alternative along existing US 70 is not consistent with the City of Havelock 2030 Comprehensive Plan[7]. Due to the failure to meet the project purpose and need with the undesirable slow average speeds for the regional and statewide through traffic, combined with the inconsistency with local planning efforts and substantial right-of-way damages required by this alternative, the Expressway Alternate with signalized intersections was eliminated from further consideration.

A second alternative to improve existing US 70, the Freeway Alternate, was developed to better achieve the primary purposes of the project. The Freeway Alternate consisted of removing the existing traffic signals and adding another lane in each direction to provide a six-lane divided highway. Access would be fully controlled by closing all direct street and driveway connections to US 70. Parallel two-way service roads would be added or upgraded along both sides of the existing route to allow access to the adjacent properties along US 70. Interchanges would be added at six

thoroughfare crossings. The remaining local roads would be grade-separated by means of bridges or end at the parallel service roads. A 360-foot right-of-way width was anticipated for these improvements with additional right-of-way needed at the interchanges.

The capacity analysis for the existing location Freeway Alternate indicated the facility would operate at an adequate level-of-service with a prevailing speed of 49.5 miles per hour. This option fulfills the Strategic Highway Corridors[2] Plan and was retained for functional impact assessment.

New Location Corridors

The development of preliminary new location study corridors for the proposed project was a two-phase process. First, land suitability mapping (LSM) was developed to show physical and natural characteristics that would influence the location of potential corridors. Then, the areas that minimized adverse impacts were connected to form highway corridors

The principal characteristics noted on the LSM included physical resources such as existing residential, commercial and industrial development, community facilities, cultural resources, and natural resources such as streams, wetlands, plant community patterns, and habitat for proposed endangered, threatened, or sensitive species. Since a portion of the study area is within the Croatan National Forest, the LSM was developed with the cooperation and assistance of the United States Forest Service (USFS).

The various LSM characteristics were used to identify specific areas that minimized adverse impacts. Using the highway design criteria, these areas were connected to form highway corridors. Six preliminary new location study corridors were evaluated to determine the combined social, economic and environmental impacts.

All of the preliminary new location corridors (see Figure 2-2) were developed to avoid known sensitive natural resource features, including a federally-protected, red-cockaded woodpecker (RCW) cluster in the Croatan National Forest. Two of these corridors, Corridors A and B, were

developed as inside corridors between the cluster and the City of Havelock. These corridors were located relatively close to the developed areas of Havelock and minimized impacts to the natural areas in the Croatan National Forest. The other four, Corridors C, D, E and F were developed as outside corridors to avoid both the red-cockaded woodpecker cluster and the existing residential areas south of the City. These outside corridors would place the proposed bypass outside the foraging habitat associated with the known RCW cluster.

To satisfy the objectives of a bypass, all of the preliminary new location corridors tie into existing US 70 far enough from the City of Havelock to avoid the strip development and the signalized intersections through the City. Each of the bypass corridors share common termini tying into existing US 70 just southeast of the intersection with SR 1824 (McCotter Boulevard) to the south, and just west of SR 1760 (Hickman Hill Loop Road) to the north. The southeastern terminus is located as close to the City limits as possible to avoid a large wetland area in the Croatan National Forest.

2.5.3.2. Preliminary Corridors Eliminated from Further Study

To provide access into Havelock and to the business district along existing US 70, each of the new location study corridors included an interchange with existing US 70 at both ends of the project. Each of the studied corridors included an interchange with SR 1756 (Lake Road) southwest of Havelock. Grade separations were planned at the remaining secondary route crossings and the three railroad crossings along the route.

The northwestern segment of Corridors A, C and E (Segment 1) (See Figure 2-2) was developed to provide sufficient distance between the proposed interchange with existing US 70 at the project terminus and the North Carolina Railroad to allow the bypass to be elevated over the railroad. The northwestern segment of Corridors B, D and F (Segment 2) diverges from existing US 70 to the northeast and crosses the existing route approximately 1.8 miles east of the northwestern project terminus. This segment was included in the adopted 1993 Havelock Thoroughfare Plan[8]. It was developed to improve access to the Cherry Point U.S. Marine Corps Air Station (MCAS) facility

from US 70 via a proposed interchange with Slocum Road.

A comparative evaluation of the preliminary new location corridors was conducted using impacts identified from the land suitability mapping. The ability of the corridors to satisfy the purpose of and need for the project and the conformance of the corridors with the long-range thoroughfare plan was evaluated. Since a substantial portion of these corridors is within the Croatan National Forest, the effect on the Forest management plan was also considered. Based on the results of this evaluation, several of the preliminary new location corridors for the bypass were revised or eliminated from further consideration (see Appendix B, 10/19/95 Steering Committee Minutes).

Among the preliminary corridors eliminated from further consideration were Alternates B, D and F. As previously discussed, these corridors were developed to improve the access to the Cherry Point MCAS northeast of town. LSM mapping revealed these corridors would impact a large area of wetlands and a recently upgraded military housing community, would require the relocation of a large power substation, and would substantially impact a relatively new elementary school. In addition, the location of a railroad spur for the transport of military ordinances seriously limited the possibilities for providing an interchange at Slocum Road to serve the Cherry Point MCAS. For these reasons, the preliminary Corridors B, D and F were eliminated from further consideration. Corridor E was also eliminated from further consideration. This corridor was determined to impact the greatest acreage of Croatan National Forest lands and the second largest acreage of wetlands of the preliminary alternatives under consideration. Based on preliminary evaluations and comments provided by the Federal and State resource agencies as well as the public, the remaining new location corridors, Corridors A and C, were revised to follow the existing cleared power transmission line corridors as closely as practicable in order to avoid additional fragmentation of wildlife habitat in the study area. These two bypass alternatives and the Improve Existing US 70 Freeway Alternate were retained for functional assessment.

2.5.3.3. Corridors Carried Forward for Functional Design

The Improve Existing US 70 Freeway Alternate retained for functional design provided a six-lane, controlled-access, median-divided freeway with interchanges at six locations. Interchanges were planned at Slocum Road, SR 1746 (Greenfield Heights Boulevard), NC 101 (Miller Boulevard), SR 1735 (Cunningham Boulevard), SR 1733 (Hollywood Boulevard) and SR 1824 (McCotter Boulevard). Grade separations by means of bridges would be provided at Shepard Street and Nunn Street to connect SR 1797 (Stratford Road) to SR 1802 (Rose Street), SR 1800 (Manilla Street) to SR 1757 (Ketner Drive), SR 1763 (Church Road) to SR 1781 (Slocum Road), and Holly Drive to Trader Avenue. The remaining local roads would end at service roads that would be added or improved along both sides of existing US 70 to access the adjacent properties.

This alternate would reduce congestion and delay, and provide adequate traffic service for the substantial volume of through traffic and meet the stated purpose of the project. However, the necessary right-of-way would require the relocation of many residences and businesses (110 per the 1998 Environmental Assessment[6]) adjacent to the route and the proposed interchanges. The remaining businesses along existing US 70 would be provided access from the parallel service roads. However, since many of the businesses depend on direct access to US 70, a substantial number of these remaining businesses would potentially close or relocate. To obtain another desirable location adjacent to US 70 with direct access, some of these businesses could relocate along US 70 outside the study area spreading traffic congestion further along the route.

A comparative evaluation was conducted on the bypass corridors and the Improve Existing US 70 Freeway Alternate. Characteristics including construction and right-of-way costs, necessary business and residential relocations, affected Croatan National Forest acreage, historic sites, air quality, noise impacts, potentially contaminated sites and wetlands acreage were considered. Table 2.2 displays the factors considered and quantified for this comparison.

A new location bypass around the southwest side of the City of Havelock will reduce the traffic congestion on existing US 70 more cost effectively than a freeway along the existing corridor.

Although the Improve Existing US 70 Freeway Alternate requires substantially less prime farmlands and wetlands than either bypass alternate, the human impacts are significantly greater for this alternate. Improvements along the existing corridor would damage a substantial portion of the current development and result in the relocation of more than 59 businesses and 51 families. This alternate cannot avoid impacting the Needham B. White House, an eligible National Register[9] property and/or City Park, a small city-owned park located along US 70 north of Cunningham Boulevard. Taking lands from either of these properties would result in a Section 4(f) impact. The intent of the Section 4(f) statute is to avoid the use of significant public parks, recreation areas, wildlife and waterfowl refuges, and historic sites, unless there is no feasible and prudent alternative to the use of such land. Under Section 4(f), if there is a feasible and prudent alternative that avoids the use of a 4(f) resource, among alternatives that use a 4(f) resource, the alternative that must be selected is the one that avoids the 4(f) resource. For the above stated reasons, the Improve Existing US 70 Freeway Alternate was eliminated from further consideration. On February 15, 1996, an interagency team of local, state and Federal environmental review, regulatory, and resource agencies concurred with the elimination of this alternate from further consideration.

Table 2.2. Comparison of Initial Detailed Study Alternatives (1998)

	EXISTING US 70	BYPASS Alternate 1 (Outside)	BYPASS Alternate 2 (Inside)
COSTS			
Construction	$77,500,000	$76,200,000	$74,300,000
Right of Way & Utility Relocation	$47,825,000	$4,390,500	$10,883,500
TOTAL (R/W + Construction)	$125,325,000	$80,590,500	$85,133,500
RELOCATIONS			
Residences	> 51	15	72
Churches [*# Affected Employees*]	0	0	1 [*2*]
Businesses [*# Affected Employees*]	> 59 [*323*]	1 [*1*]	2 [*2*]
TOTAL	110	16	75
PHYSICAL ENVIRONMENT			
Croatan National Forest (Acres)	22	237	304
Eligible National Register Properties	1	0	0
Public Parks and Recreation Areas	1	0	0
Air Quality One Hour CO Concentrations			
1997 (ppm)	5.0	2.2	2.2
2017 (ppm)	5.4	2.2	2.2
Noise Impacted Locations			
Residences	40	11	11
Businesses	4	0	0
Potentially Contaminated Sites	20	1	1
Major Stream Crossings	4	3	3
NATURAL RESOURCES (Acres)			
Prime Farmlands by Soils in R/W	13	93	115
Wetlands in R/W			
Privately Owned	1	37	25
Croatan National Forest	5	124	143
TOTAL	6	161	168

2.5.4. Description of Detailed Study Alternatives

With the elimination of the existing US 70 corridor, only new location corridors providing a controlled-access, four-lane divided freeway were carried forward for more detailed studies (See Figure 2-3). Alternate 1, the outside preliminary Corridor C, was developed to minimize impacts to the existing development. Alternate 2, the inside preliminary Corridor A, was developed to minimize impacts to the natural areas in the Croatan National Forest. Alternate 2 has more social and economic impacts than Alternate 1, which is further from the City of Havelock, requires 15 percent less wetlands acreage and is estimated to be more expensive than Alternate 1. Being closer to the City, Alternate 2 requires many more residential relocations, most in the vicinity of SR 1756 (Lake Road). Also, because it is closer to existing US 70, Alternate 2 fragments a much smaller portion of the Croatan National Forest than Alternate 1. Therefore, Alternate 3 was developed to balance impacts. Alternate 3 combines many of the advantages of Alternates 1 and 2. As with Alternates 1 and 2, the regulatory and resource agencies encouraged the placement of Alternate 3 as close to the existing cleared power transmission line easements as possible to avoid additional fragmentation of wildlife habitat. Therefore, Alternate 3 was located adjacent to an existing cleared power transmission line easement connecting Alternate 1 near SR 1756 (Lake Road) with Alternate 2 to the north. To reduce the fragmentation of the Croatan National Forest, Alternate 3 is closer to the City than Alternate 1. To reduce the residential relocations in the vicinity of SR 1756 (Lake Road), Alternate 3 is further from the City than Alternate 2. Alternates 1, 2 and 3 with their interchanges and grade separations are shown in Figure 2-3.

Each of these three bypass alternatives share common corridors at both ends of the project. At the southeastern terminus of the project, the alternatives interchange with existing US 70 southeast of SR 1824 (McCotter Boulevard). This location allows the bypass to extend beyond the developed areas of Havelock and to shadow an existing cleared power transmission line easement near existing US 70. It also avoids a large natural wetland area in the Croatan National Forest to the south. At the northwestern terminus of the project, the alternatives interchange with existing US 70 just west of SR 1760 (Hickman Hill Loop Road). This location allows this end of the bypass to extend beyond the developed areas of Havelock with sufficient distance between the proposed interchange with

existing US 70 and the North Carolina Railroad so the bypass can be elevated to cross over the railroad. The proposed bypass crosses the upper reaches of Tucker Creek approximately 4,400 feet south of the North Carolina Railroad. Here, the common corridor shared by Alternates 1, 2 and 3 turns east and continues approximately 6,000 feet to a Croatan National Forest (CNF) access road.

At the CNF access road, Alternate 1 turns to the southwest. Alternate 1 continues southward along the western side of the CNF access road approximately 7,500 feet before turning southeast and crossing the Southwest Prong of Slocum Creek approximately 1,400 feet south of the southern end of SR 1791 (Pulley Road). After crossing the Southwest Prong of Slocum Creek, Alternate 1 continues approximately 5,000 feet southeastward to the interchange with SR 1756 (Lake Road).

Alternate 1 rejoins Alternate 3 at the proposed interchange with SR 1756 (Lake Road). This interchange is located approximately 5,900 feet southwest of the Lake Road grade crossing of the North Carolina Railroad. From the proposed Lake Road interchange, Alternates 1 and 3 continue southeastward over a grade separation at the Camp Lejeune Railroad and continue along the south side of a cleared power transmission line easement before crossing over the East Prong of Slocum Creek. Approximately 3,000 feet east of the East Prong of Slocum Creek, the corridors turn further eastward to cross over the North Carolina Railroad and the power transmission line easement.

From the Alternate 1 departure near the CNF access road, Alternate 2 continues southeastward approximately 8,600 feet before crossing SR 1747 (Sunset Drive) at a proposed grade separation. Alternate 2 continues approximately 2,100 feet southeastward, crossing the Southwest Prong of Slocum Creek, before crossing SR 1746 (Gray Road) at another proposed grade separation. Approximately 2,000 feet southeast of Gray Road, Alternate 2 crosses SR 1756 (Lake Road) at a proposed interchange. The proposed Alternate 2 interchange at Lake Road is located approximately 2,000 feet southwest of the Lake Road grade crossing of the North Carolina Railroad. After crossing SR 1756 (Lake Road), Alternate 2 parallels the southern side of a cleared power transmission line easement for approximately 7,000 feet before crossing the East Prong of Slocum Creek. East of the creek crossing, Alternate 2 rejoins Alternates 1 and 3 to continue southeastward to existing US 70.

Alternate 3 turns southwest from Alternate 2 approximately 2,600 feet southeast of the CNF access road crossing. Alternate 3 continues along the eastern side of a cleared power transmission line easement to a grade separation at SR 1747 (Sunset Drive). Approximately 740 feet southeast of SR 1747, the corridor crosses over the Southwest Prong of Slocum Creek. Approximately 3,000 feet past the crossing of the Southwest Prong of Slocum Creek, Alternate 3 turns back to the southeast before rejoining Alternate 1 at the interchange with SR 1756 (Lake Road).

Along each of the alternatives, bridges are proposed to cross over the Southwest Prong of Slocum Creek and the East Prong of Slocum Creek. A reinforced concrete box culvert is proposed at the crossing of the headwaters of Tucker Creek.

A red-cockaded woodpecker (RCW) assessment[10] was conducted to determine the potential impact of each alternative on their nesting and foraging habitat. Alternates 1 and 2 were located approximately 2,500 feet west and east respectively from a known (and then active) cluster of federally-protected, red-cockaded woodpeckers (RCW) in the Croatan National Forest. Alternate 3 was located in closer proximity, approximately 1,000 feet east of the RCW cluster. This assessment determined that Alternates 1 and 2 would not impact the foraging habitat associated with this RCW cluster. It also concluded, Alternate 3 would result in a loss of foraging habitat, but the remaining habitat would be sufficient to sustain the group in accordance with the U.S. Department of the Interior, Fish and Wildlife Service (USFWS) guidelines[11] in effect at the time. After a review of this assessment in 1996, the USFWS concurred that Alternate 3 is not likely to adversely affect the red-cockaded woodpecker (USFWS letter dated November 13, 1996). Due to newer USFWS guidelines[12], the previous RCW assessment was revised by Dr. J. H. Carter III & Associates, Inc. The results of the current assessment[13] are similar to those of the previous RCW assessment. This assessment concluded there will be suitable RCW foraging habitat taken by any of the alternatives. However, using both suitable and potentially suitable foraging habitat, all of the impacted RCW clusters would have enough foraging habitat to meet the USFWS Standard for Managed Stability (SMS). No cavity trees will be taken by Alternate 3 (nor any of the other proposed project alternatives) and none of the cleared right of way comes within 200 feet of any RCW cavity tree.

A comparison of the three bypass alternatives was conducted to identify a preferred alternative for the project. All three bypass alternatives have three major stream crossings and may impact a potentially contaminated former landfill site near the northwestern project terminus. Several other characteristics that are unique to one or more of the bypass alternatives were also compared as shown in Table 2.3.

Table 2.3. Comparison of Bypass Alternatives (1998)[6]

	ALTERNATES		
	Alternate 1 (Outside)	Alternate 2 (Inside)	Alternate 3 (Combined)
LENGTH - (Miles)	10.5	9.7	10.1
COSTS			
Construction	$76,200,000	$74,300,000	$73,400,000
Right-of-Way & Utility Relocation	$4,390,500	$10,883,500	$4,738,000
TOTAL (R/W + Construction)	$80,590,500	$85,133,500	$78,138,000
RELOCATIONS			
Residences	15	72	19
Churches [*# Affected Employees*]	0	1[*2*]	0
Businesses [*# Affected Employees*]	1[*1*]	2[*2*]	1[*1*]
TOTAL	16	75	20
PHYSICAL ENVIRONMENT			
Croatan National Forest (Acres)	237	304	320
Potentially Contaminated Sites	1	1	1
Major Stream Crossings	3	3	3
NATURAL RESOURCES (Acres)			
Prime Farmlands by Soils in R/W	93	115	86
Wetlands in R/W			
Privately Owned	37	25	30
Croatan National Forest	124	143	126
TOTAL	161	168	156

Of the bypass alternatives, Alternate 1 is expected to require the least number of relocations and area of the Croatan National Forest (CNF) within the right-of-way. However, this alternative is

furthest from the City of Havelock and fragments the largest area of the CNF between the bypass and the City. Alternate 1 is estimated to cost less than 2, but more than 3. In 1998, the right-of-way for Alternate 1 was estimated to impact less area of prime farmlands and wetlands than Alternate 2, but more areas of these features than Alternate 3. More recent evaluations conclude Alternate 1 will impact less wetlands and prime farmlands than Alternate 3, while fragmenting more of the CNF and impacting more linear feet of jurisdictional streams than Alternate 3.

Alternate 2 is closest to the City of Havelock and fragments the smallest area of the CNF. However, this alternative requires the most residential relocations. Alternate 2 also has the highest total estimated cost of the bypass alternatives. Alternate 2 requires more area of the CNF within the right-of-way than Alternate 1, but less than Alternate 3.

Alternate 3 has the lowest estimated total cost and the least stream impacts, but is estimated to require the most wetlands of bypass alternatives. This alternative also requires the largest area of the CNF within the right-of-way. Located between Alternates 1 and 2, Alternate 3 is further from the City of Havelock than Alternate 2, fragmenting more CNF lands than Alternate 2, but less than Alternate 1. Alternate 3 is also expected to require slightly more residential relocations than Alternate 1, but substantially less than Alternate 2.

2.6. TRAFFIC OPERATIONS ANALYSIS

To determine the number of travel lanes required to adequately accommodate the forecasted 2035 design year traffic along US 70, a capacity analysis was conducted on the preliminary build alternatives for the proposed project utilizing the procedures outlined in the Highway Capacity Manual 2000 (HCM)[14] for estimating the future level-of-service (LOS). For the preliminary Improve Existing US 70 Alternatives, a six-lane, partial control of access expressway, and a six-lane, full control of access freeway were both analyzed and results presented in the Environmental Assessment (1998)[6]. Because those alternates were eliminated due to the significant impact to the human environment and properties protected by Section 4(f), further traffic analyses were not undertaken as part of this DEIS.

2.6.1. 2035 Build Traffic Projections

For the Bypass Alternatives, the forecasted 2035 design year Average Annual Daily Traffic (AADT) volumes along the proposed bypass and the remaining volume along existing US 70 are shown in Figure 2-4. The 2035 AADT along the proposed bypass ranges from 18,800 vehicles-per-day (vpd) south of SR 1756 (Lake Road), to 22,900 vpd north of SR 1756. With a proposed bypass, the 2035 AADT volumes along existing US 70 range from a low of 28,700 vpd between Nunn Street (City Street) and SR 1824 (McCotter Boulevard) on the south end of the project, to a high of 41,900 vpd between SR 1735 (Cunningham Boulevard) and Hollywood Boulevard (City Street), again near the south end of the project.

2.6.2. 2035 Build Capacity Analysis

2.6.2.1. Existing US 70

To determine the adequacy of the existing US 70 route after the construction of a bypass, a signalized intersection LOS analysis was prepared using 2035 design year AADT remaining on the route. The traffic forecasts were developed and provided by the NCDOT Transportation Planning Branch (October 14, 2008). These analyses indicate the existing route, while improved from the no-build option, will still experience poor traffic operations with local traffic use by the design year.

In Section 1.9.4 of Chapter 1, it was noted that existing US 70 would not adequately accommodate the projected 2035 traffic. To determine the adequacy of existing US 70 after the construction of the proposed bypass, the studied signalized intersections were reanalyzed using the 2035 design year AADT remaining on US 70. The overall intersection LOS for these signalized intersections along existing US 70 through Havelock is shown in Table 2.4.

Table 2.4. Existing US 70 Intersection LOS (HCM)[14], 2035 Traffic with Bypass

INTERSECTION	LOS AM/PM
Slocum Road (SR 1781)	E/F
Catawba Road (SR 1765) and Greenfield Heights Blvd. (SR 1746)	F/F
NC 101 and Miller Blvd. (SR 1763)	F/F
McCotter Blvd. (SR 1824)	F/D * C/C **

*Alternates 1 and 3 ** Alternate 2

2.6.2.2. Proposed Bypass

Roadway

Using the 2035 design year traffic, a freeway segment service flow analysis was conducted to determine the anticipated level-of-service for a four-lane divided controlled access bypass. These analyses were prepared for the two main segments of the facility between the interchanges on both ends of the project and at SR 1756 (Lake Road).

Table 2.5 shows the segment description, the 2035 design hourly traffic, and the level-of-service for each segment.

Table 2.5. Proposed Havelock Bypass Freeway LOS (HCM)[14], 2035 Build Traffic

SEGMENT	**Southbound Peak Hour Volume (AM/PM)**	**Northbound Peak Hour Volume (AM/PM)**	**LOS AM/PM**
US 70N to SR 1756	1241/821	821/1241	A/A
SR 1756 to US 70S	961/717	717/961	A/A

The freeway analyses for the Bypass Alternatives indicate a four-lane divided facility will operate at a level-of-service (LOS) A with a free flow speed of 70 miles per hour.

Intersections/Interchanges

The northern and southern terminal ties with US 70 are free flowing and all ramp terminals tied directly to the proposed Bypass are estimated to operate at LOS A. A diamond interchange is proposed at Lake Road (SR 1756). The LOS at the ramp terminal signals and the merge/diverge points along the freeway are shown in Table 2.6.

Table 2.6. Proposed Havelock Bypass/Lake Road LOS (HCM)[14], 2035 Build Traffic, (Alternate 2 Worst Case)

ELEMENT	LOS (AM/PM)
Lake Road Signal East	B/B
Lake Road Signal West	C/B
Northbound	
Diverge	A/B
Merge	B/A
Southbound	
Diverge	B/B
Merge	B/A

2.7. TRAFFIC SAFETY

With a bypass to reduce the average daily volume of traffic along existing US 70, the number of accidents per year is anticipated to decrease. The anticipated accident rate is less along the proposed full control of access bypass since it will fully separate opposing traffic and eliminate stopping and turning conflicts at intersections. For the design year, Table 2.7 shows the projected number of accidents in the year 2035.

Table 2.7. Projected Annual Accidents in the Study Area (2035 Traffic)

ROUTE	ACCIDENTS
Existing US 70 without a Havelock Bypass	330
Havelock Bypass	88
Existing US 70 with a Havelock Bypass	240

The projected number of accidents along the studied portion of existing US 70 is 330 accidents per year by the design year. With the bypass reducing the average daily traffic volume on US 70 (indexed just north of NC 101), the projected number of accidents along US 70 in 2035 is 240 per year. Using average North Carolina rates for combined rural and urban routes, the projected number of accidents along a four lane divided route with full control of access is 88 accidents per year in 2035. If the bypass is constructed, approximately two less accidents per year are projected compared to US 70 without the Bypass.

According to the accident study of US 70 through the project area, the average property damage only cost for all accidents during the analysis period December 1, 2005 and November 30, 2008 was approximately $4,071 per accident. Using this average cost per accident, the construction of a bypass is estimated to save $8,142 per year in property damages. This figure only accounts for the reduction in property damages and does not include injury expenses.

The proposed project will remove through traffic along existing US 70 through Havelock, thereby reducing traffic and the accident potential along the roadway. Reducing traffic congestion has the potential to reduce response time for emergency vehicles. A reduction in fire and rescue vehicle response time not only benefits the citizens of Havelock and the Cherry Point MCAS, but also the Croatan National Forest.

Since the accident rate for four-lane, divided routes with full control of access is substantially less than the existing accident rate along US 70 through Havelock, the number of accidents involving through traffic could be a benefit of constructing the proposed project.

2.8. COSTS

The updated costs associated with the detailed study alternatives together with selected comparative environmental considerations are shown in Table 2.8.

Table 2.8. Updated Comparison of Bypass Alternatives (2011)

	Alternate 1 (Outside)	**Alternate 2** (Inside)	**Alternate 3** (Combined)
Length (miles)	10.85	9.91	10.31
Costs (year dollars)			
Construction (08)	$156,400,000	$138,800,000	$149,600,000
Utility Relocation (07)	1,649,280	2,773,680	2,773,680
Right of Way (09)	9,800,000	28,975,000	10,625,000
TOTAL	$167,849,280	$170,548,680	$162,998,680
Relocations (2009)			
Residences (minorities)	13 (0)	133 (18)	16 (0)
Churches (members)	0	0	0
Businesses (employees)	1 (2)	3 (9)	1 (2)
Non-profit	1 (3)	1 (3)	1 (3)
TOTAL	13	137	18
Physical Environment			
Croatan National Forest (Acres)	189	225	240
Potentially-Contaminated Sites	1	1	1
Major Stream Crossings	3	3	3
Natural Resources (Acres)			
Prime Farmland by Soils in R/W	66	112	71
Jurisdictional Areas in R/W			
Wetlands (acres)	109	78	115
Streams (lin. ft.)	2,581	3,094	2,505
Neuse River Riparian Buffers (sq. ft.)	69,534	142,025	106,647
RCW (June 2008 Evaluation, JCA)			
Active clusters	0	0	0
Inactive clusters	1 N, 4 R*,	1 N, 3 R*	1 N, 4 R*
Future Recruitment clusters	1	1	1
Habitat management areas	3	3	3

* N=Natural, R= Recruitment

2.9. PREFERRED ALTERNATIVE

US 70 in the Havelock area is an important part of the statewide, regional and local transportation systems. A new location bypass will provide a safe and efficient means to serve the transportation needs of the region while reducing traffic congestion through Havelock. After evaluating the potential impacts associated with the detailed study alternatives, Alternate 3 as shown in Figure 2-5, was identified as the Preferred Alternative for the proposed project. The construction of the Preferred Alternate 3 around the southwest side of the City of Havelock will satisfy the purpose of and need for the project while resulting in the least overall impacts to the environment.

Alternate 3 was developed to balance the impacts to the human and natural environments. Although Alternate 3 involves slightly more wetlands than Alternates 1 or 2, this alternate fragments less of the Croatan National Forest than Alternate 1 and requires less relocations of businesses and residents (over 100) than Alternate 2. For these reasons, Alternate 3 was presented as the preferred alternative to the project steering committee in December, 1996 (See Appendix B).

The project's steering committee was the predecessor of what is currently referred to as the merger process team. The steering committee consisted of the Federal Highway Administration, the U.S. Army Corps of Engineers, the North Carolina Department of Transportation, the North Carolina Department of Environment and Natural Resources, the U. S. Environmental Protection Agency; the U. S. Fish and Wildlife Service, the National Marine Fisheries Service, the N. C. Wildlife Resources Commission, the N. C. Department of Cultural Resources, the U. S. Coast Guard, the U. S. Forest Service, the National Park Service, Craven County, and the City of Havelock. All of these regulatory and review agencies were involved in the project review and coordination meetings. This committee reviewed and concurred with the decisions to eliminate the existing US 70 corridor from consideration, and to present Alternate 3 as the preferred alternative in the environmental documentation for the project.

The November 1996 approval of the requirements of Section 7 of the Endangered Species Act regarding the red-cockaded woodpecker (RCW) assessment (See Appendix A1), and the pending

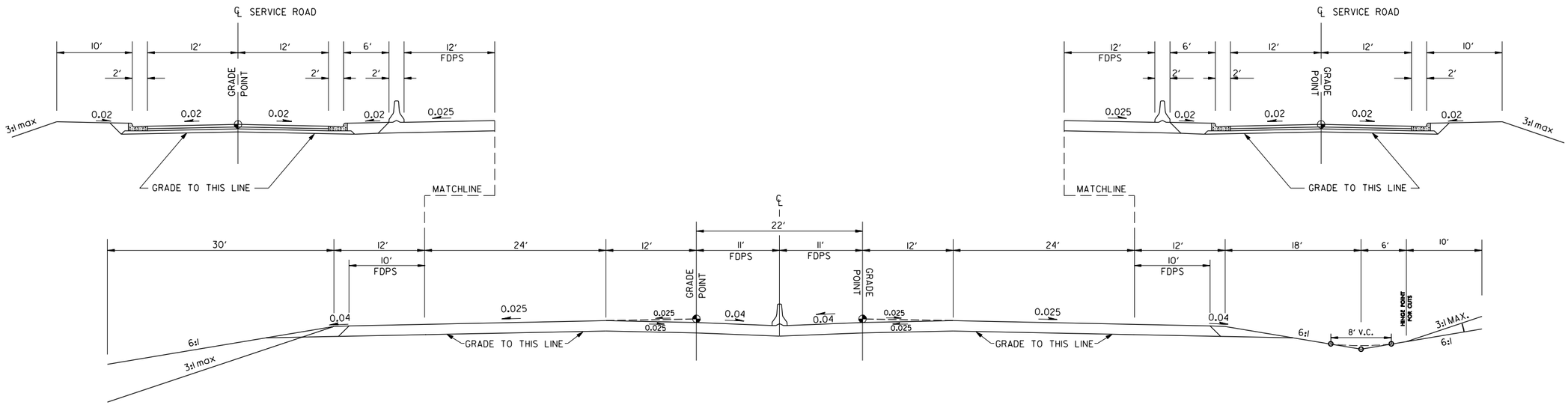
purchase of the Croatan Wetland Mitigation Bank to mitigate impacts of the project to the Croatan National Forest, alleviated the principal remaining concerns of the project steering committee. In December 1996, the steering committee concurred the Alternate 3 was the preferred alternative for the project. In mid-1997, after the purchase of the Croatan Wetland Mitigation Bank, it was decided to rename the Draft Environmental Impact Statement that was nearing completion, and process this environmental documentation as an Environmental Assessment (EA). An EA documenting the project studies, and identifying Alternate 3 as the preferred alternative, was approved in January 1998. Following approval of the EA, a Corridor Public Hearing was held on May 26, 1998. Following a Post Hearing Meeting on July 20, 1998, the Corridor Selection Committee selected Alternate 3 as the Preferred Alternative and the Least Environmentally Damaging Practicable Alternative (LEDPA) on August 27, 1998.

Preliminary designs were prepared for Alternate 3. In December 1999, the project received design alignment approval for Alternate 3 subject to bridging requirements at the stream crossings. In January 2001, the merger team approved avoidance and minimization measures for the project alignment. Final designs were developed and a design public hearing was planned to present the design. However, due to modifications to the Section 7 project environmental assessment requirements regarding the red-cockaded woodpecker (RCW), and the request for additional assessment of the U.S. Forest Service Proposed, Endangered, Threatened, and Sensitive (PETS) species, additional project studies were required. In December 2003, the decision was made to process the project as a Draft and Final Environmental Impact Statement to include these additional studies. It was determined the Environmental Impact Statement would also include updated traffic projections and analysis, more community impact studies, and indirect and cumulative impacts studies.

The decisions to eliminate the existing US 70 corridor from consideration, and to present Alternate 3 as the Preferred Alternative in the environmental documentation for the project have been revisited during the preparation of this Draft Environmental Impact Statement. Although additional studies have provided updated information regarding the project impacts, the initial decision to present Alternate 3 as the Preferred Alternative remains the same. The final selection of an alternative will

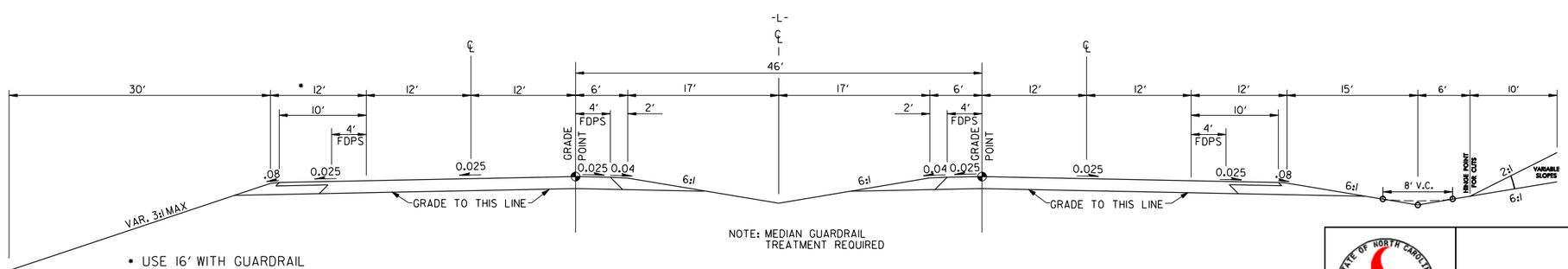
be made following a second Corridor Public Hearing and the distribution of this document. Comments received at the Hearing and on the environmental document will be considered in this selection.

[1] NCDOT Draft 10-Year Program and Resource Plan (2015-2020), March 2010
[2] North Carolina Department of Transportation, Transportation Planning Branch. Strategic Highway Corridors. Available:http://www.ncdot.org/doh/preconstruct/tpb/SHC/ Accessed: 09 January 2009
[3] United States Department of Transportation, Federal Highway Administration. FHWA Technical Advisory T6640.8A: Guidance for Preparing and Processing Environmental and Section 4(f) Documents. October 30, 1987.
[4] Kimley-Horn and Associates, Inc. 2007 Draft Havelock Comprehensive Transportation/Land Use Plan, April 9, 2007
[5] American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets (2004 edition)
[6] Federal Highway Administration (FHWA). 1998. USDOT and North Carolina Department of Transportation. US 70, Havelock Bypass, Craven County, NC T.I.P. No. R-1015, Environmental Assessment, January 27, 1998, Division of Highways, Project Development and Environmental Analysis Branch, Raleigh, N.C. (EA)
[7] Urban Resources Group (URG), City of Havelock 2030 Comprehensive Plan, June 15, 2009. City of Havelock, Planning Department
[8] North Carolina Department of Transportation, Transportation Planning Branch. 1993. City of Havelock Thoroughfare Plan, November, 1993
[9] National Park Service, National Register of Historic Places, Washington, D.C. >http:nps.gov/nr
[10] Dr. J.H. Carter III and Associates, Inc., 1996a. Red-cockaded woodpecker assessment for US 70 Bypass (R-1015), Craven County, North Carolina for NC Department of Transportation, Division of Highways, Project Development and Environmental Analysis Branch, Natural Environment Unit, Raleigh, N.C.
[11] [USFWS] U.S. Fish and Wildlife Service. 1992. Guidelines for management of red-cockaded woodpeckers on private lands. U.S. Fish and Wildlife Service.
[12] [USFWS] U.S. Fish and Wildlife Service. 2005. Implementation procedures for use of foraging habitat guidelines and analysis of project impacts under the red-cockaded woodpecker (*Picoides borealis*) recovery plan: Second revision. R. Costa, USFWS, unpublished memorandum.
[13] Dr. J.H. Carter III and Associates, Inc. 2007. Final Biological Alternatives Analysis, for Red-Cockaded Woodpecker and Bald Eagle Impacts, US Highway 70 Bypass (R-1015), Craven County, North Carolina, December 11, 2007. for NC Department of Transportation, Division of Highways, Project Development and Environmental Analysis Branch, Natural Environment Unit, Raleigh, N.C.
[14] Transportation Research Board, National Research Council, 2000. Highway Capacity Manual 2000. Washington, D.C.



TYPICAL SECTION NO. 1

Improve Existing US 70 Alternatives



TYPICAL SECTION NO.2

New Location Bypass Alternatives

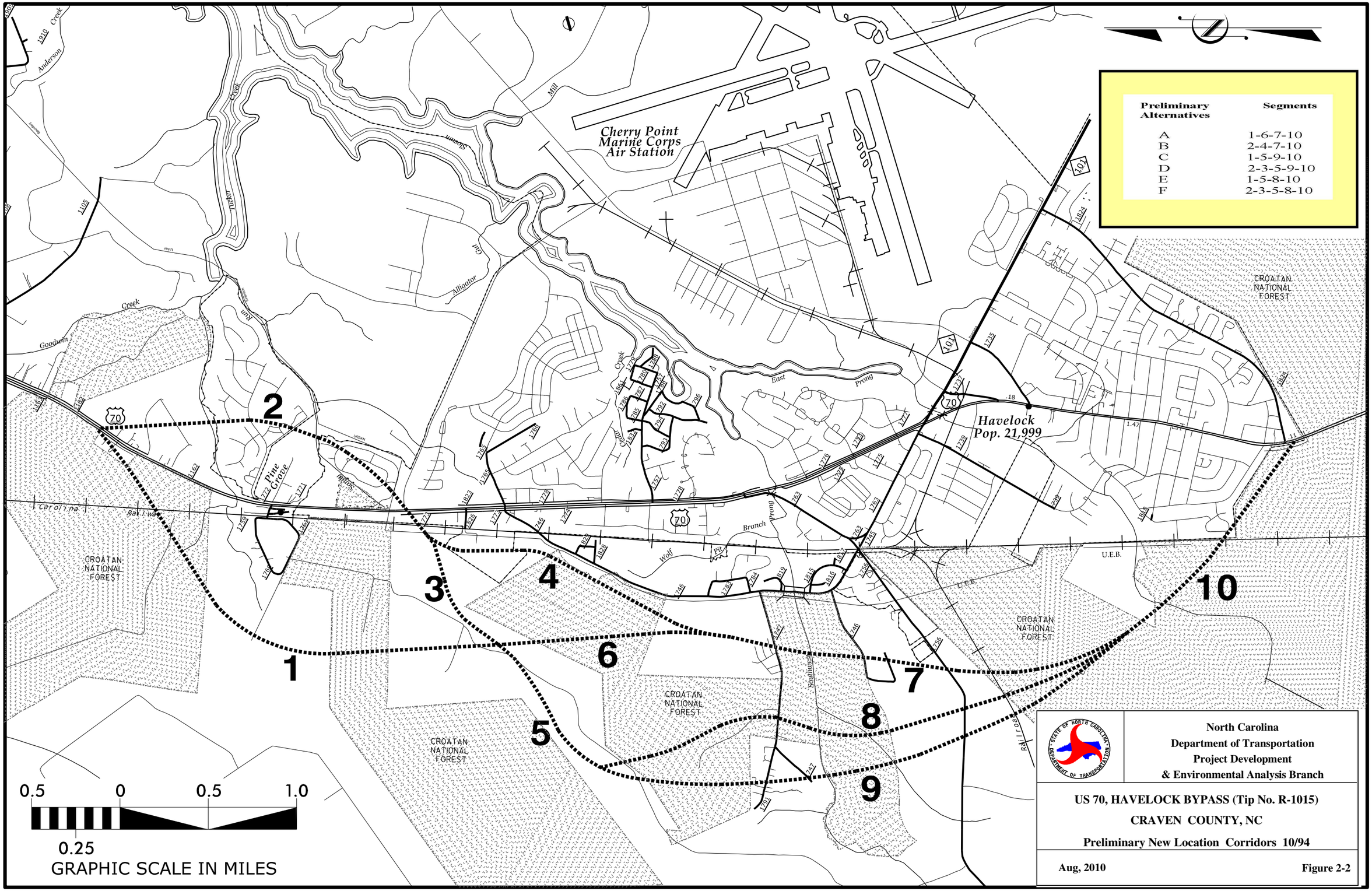
North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)

CRAVEN COUNTY, NC

Typical Sections

April, 2009 **Figure 2-1**


Preliminary Alternatives
Segments
A 1-6-7-10
B 2-4-7-10
C 1-5-9-10
D 2-3-5-9-10
E 1-5-8-10
F 2-3-5-8-10
Cherry Point Marine Corps Air Station
Havelock Pop. 21,999
CROATAN NATIONAL FOREST
Pine Grove
Goodwin Creek
Anderson Creek
Tucker Creek
Alligator Creek
East Prong
Wolf Pit Branch
Southwest Creek
Carolina Railway
U.E.B.
1
2
3
4
5
6
7
8
9
10
0.5 0 0.5 1.0
0.25
GRAPHIC SCALE IN MILES
North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch
US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Preliminary New Location Corridors 10/94
Aug, 2010
Figure 2-2

HAVELOCK
US 70 HWY
SLOCUM RD
W MAIN ST
E MAIN ST
CHURCH RD
MILLER BLVD
SUNSET DR
GRAY RD
LAKE RD
CROATAN NATIONAL FOREST
CROATAN NATIONAL FOREST
CROATAN NATIONAL FOREST
ALTERNATE 1
ALTERNATE 2
ALTERNATE 3
CORRIDOR 1
CORRIDOR 2
CORRIDOR 3

0.5 0 0.5 1.0
0.25
GRAPHIC SCALE IN MILES

LEGEND

ALTERNATE 1
ALTERNATE 2
ALTERNATE 3

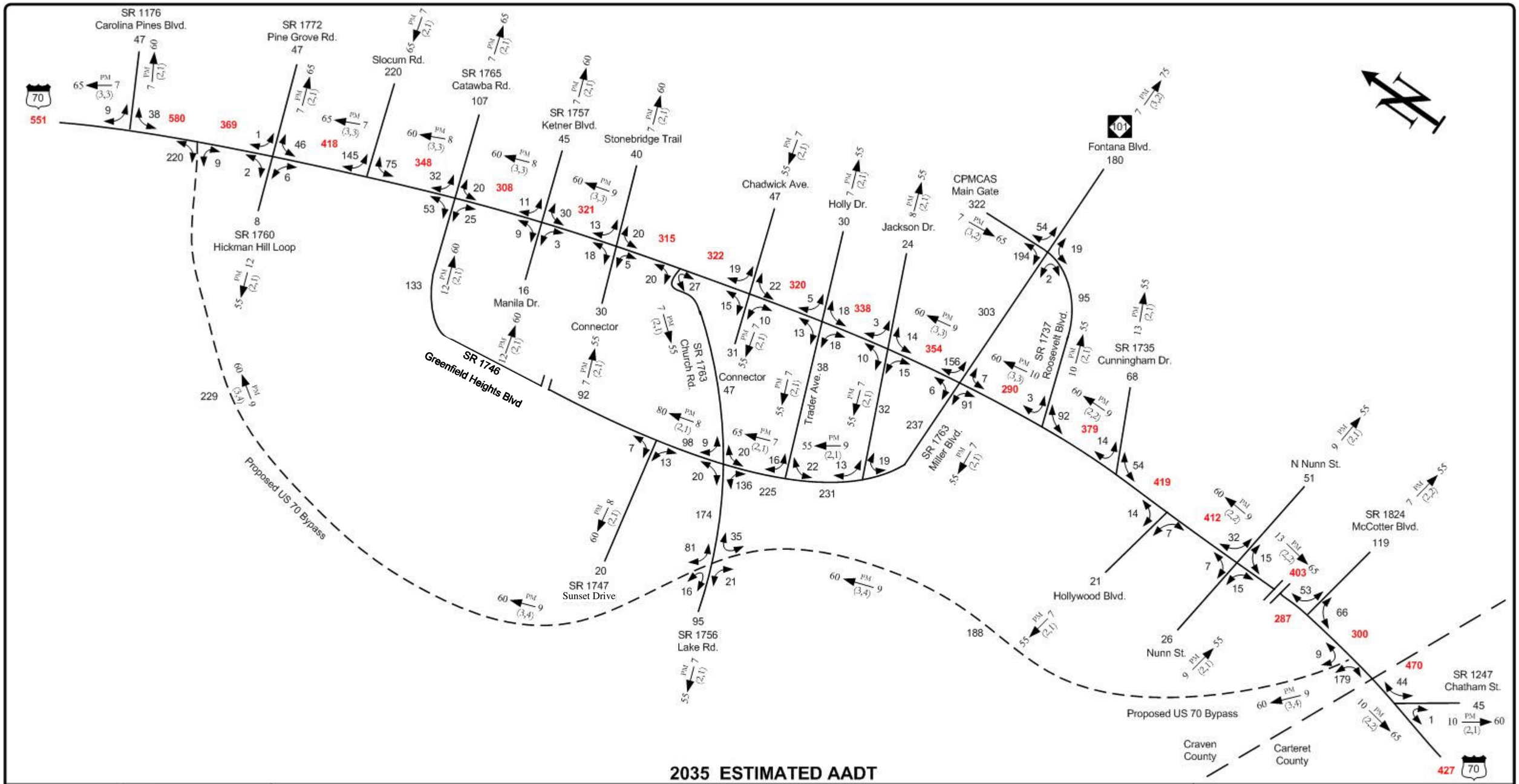
North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC

Detailed Study Corridor Locations
And Study Alternates

Aug, 2010

Figure 2-3



LEGEND

###	VPD----# OF VEHICLES PER DAY IN 100'S
1 -	MUCH LESS THAN 50 VPD
X	MOVEMENT PROHIBITED
→	ONE-WAY MOVEMENT
DHV $\xrightarrow[(d,t)]{PM}$ D	
DHV	DESIGN HOURLY VOLUME (%) = K30
	K30 = 30'TH HIGHEST HOURLY VOLUME
PM	PM PEAK PERIOD
D	DIRECTIONAL SPLIT (%)
→	INDICATES DIRECTION OF D REVERSE FLOW FOR AM PEAK
(d,t)	DUALS, TT-ST'S (%)

Drawing Not To Scale

FIG. 2-4.1

Drawn by Darryl Austin

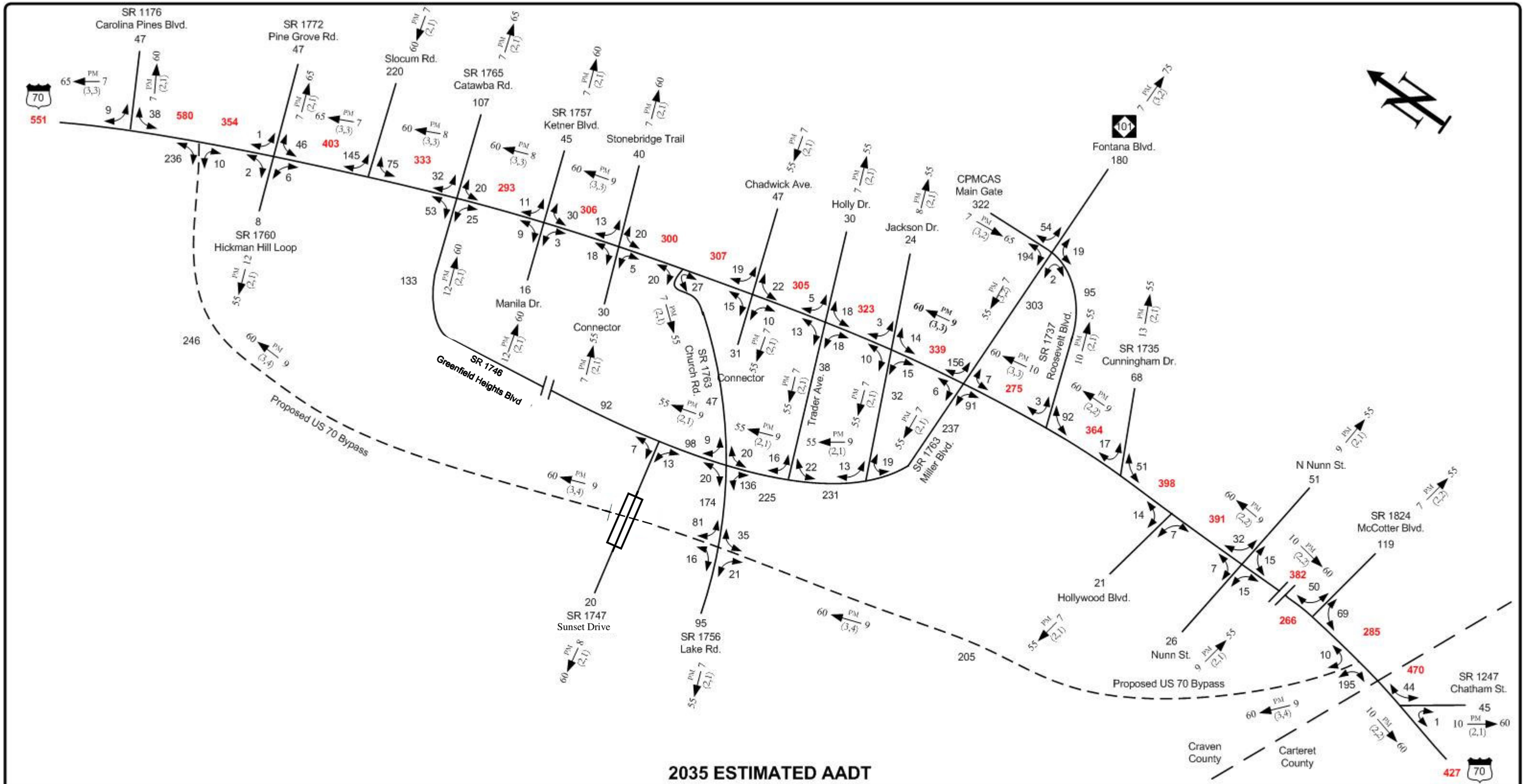
LOCATION:
US 70 from SR 1247 (Chatham St. in Carteret Co.)
To SR 1176 (Carolina Pines Blvd.)

PROJECT:
US 70 Havelock Bypass on New Location
Alternative 1

COUNTY: Craven

DIV.: 02 **DATE:** October 14, 2008

TIP # R-1015 **WBS#** 34360.1.1



LEGEND

###	VPD----# OF VEHICLES PER DAY IN 100'S
1 -	MUCH LESS THAN 50 VPD
X	MOVEMENT PROHIBITED
→	ONE-WAY MOVEMENT
DHV $\frac{PM}{(d,t)}$ → D	
DHV	DESIGN HOURLY VOLUME (%) = K30
	K30 = 30'TH HIGHEST HOURLY VOLUME
PM	PM PEAK PERIOD
D	DIRECTIONAL SPLIT (%)
→	INDICATES DIRECTION OF D
REVERSE FLOW FOR AM PEAK	
(d,t)	DUALS, TT-ST'S (%)

Drawing Not To Scale

FIG. 2-4.2

Drawn by Darryl Austin

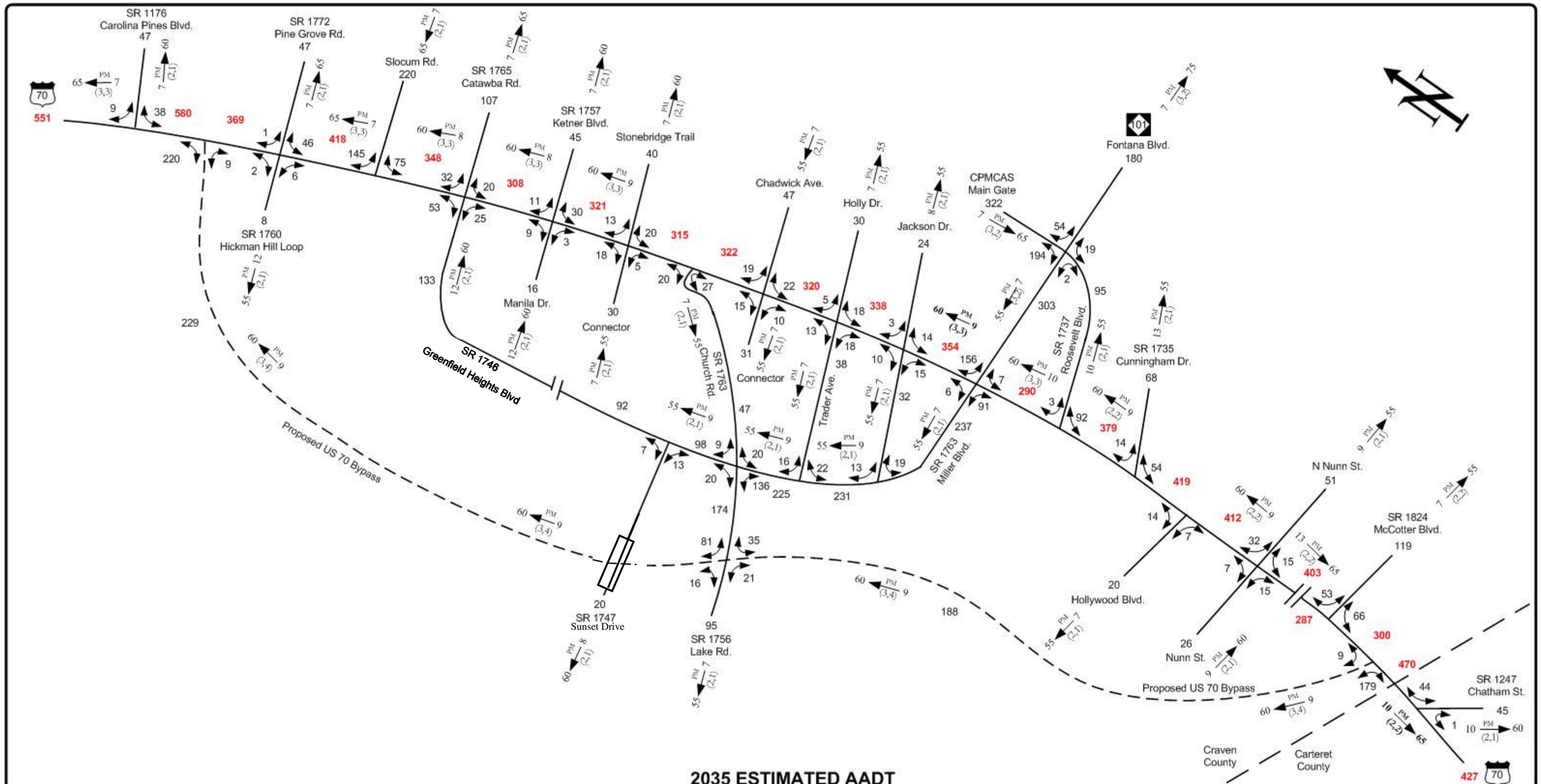
LOCATION:
US 70 from SR 1247 (Chatham St. in Carteret Co.)
To SR 1176 (Carolina Pines Blvd.)

PROJECT:
US 70 Havelock Bypass on New Location
Alternative 2

COUNTY: Craven

DIV.: 02 **DATE:** October 14, 2008

TIP # R-1015 **WBS#** 34360.1.1



LEGEND

VPD----# OF VEHICLES PER DAY IN 100'S
1 - MUCH LESS THAN 50 VPD
X MOVEMENT PROHIBITED
→ ONE-WAY MOVEMENT

DHV $\xrightarrow[(d,t)]{PM}$ D

DHV DESIGN HOURLY VOLUME (%) = K30
K30 = 30'TH HIGHEST HOURLY VOLUME
PM PM PEAK PERIOD
D DIRECTIONAL SPLIT (%)
→ INDICATES DIRECTION OF D
REVERSE FLOW FOR AM PEAK
(d,t) DUALS, TT-ST'S (%)

Drawing Not To Scale

FIG. 2-4.3

Drawn by Darryl Austin

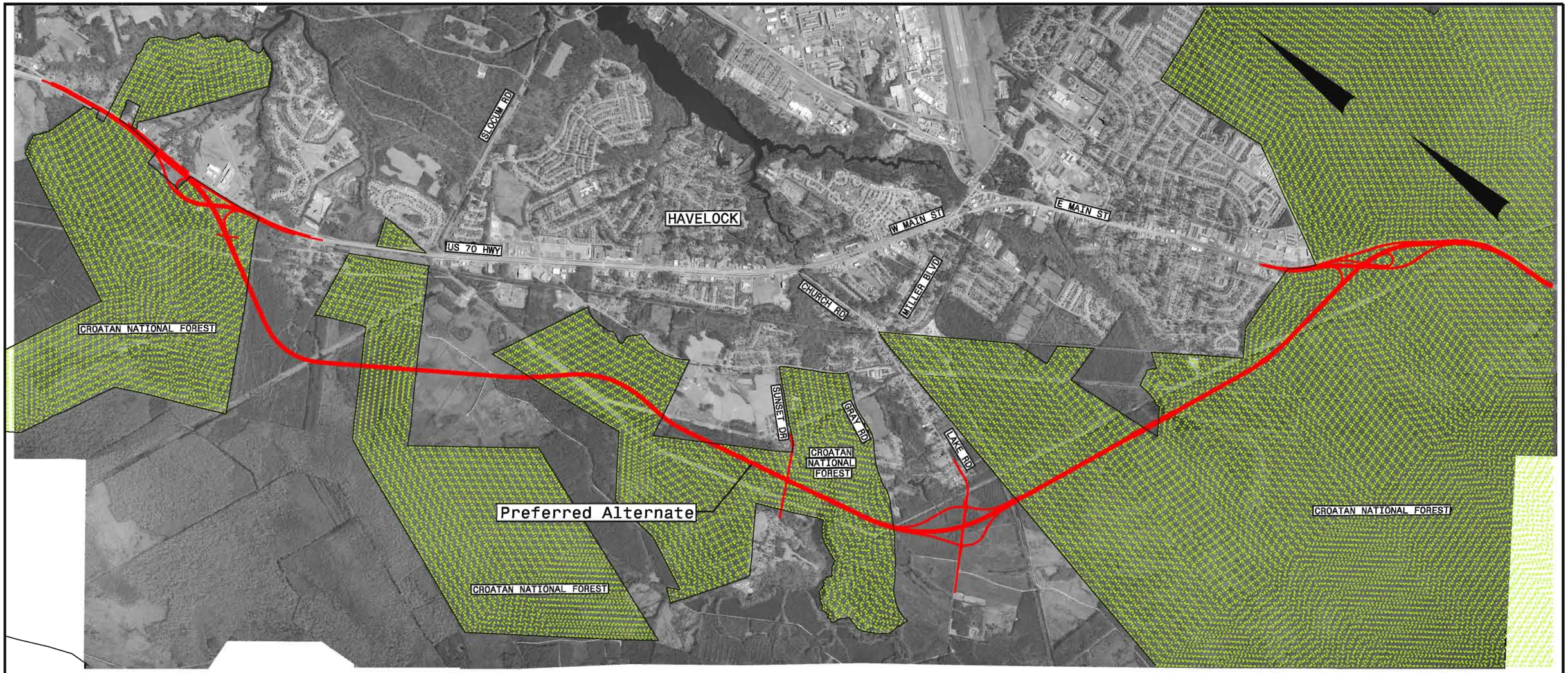
LOCATION:
US 70 from SR 1247 (Chatham St. in Carteret Co.)
To SR 1176 (Carolina Pines Blvd.)

PROJECT:
US 70 Havelock Bypass on New Location
Alternative 3

COUNTY: Craven

DIV. : 02 **DATE:** October 14, 2008

TIP # R-1015 **WBS#** 34360.1.1



0.5 0 0.5 1.0

0.25

GRAPHIC SCALE IN MILES

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)

CRAVEN COUNTY, NC

Alternate 3, Preferred Alternate

Aug, 2010

Figure 2-5

CHAPTER 3
EXISTING ENVIRONMENTS

CHAPTER 3. EXISTING ENVIRONMENTS

A comprehensive inventory and evaluation of the existing human and natural environmental settings of the US 70 study area (Figure 3-1) is contained in this chapter. This inventory and evaluation serves as the basis for assessing the potential environmental impacts of the proposed project. The information presented is both updated information found in Chapter 3 of the 1998 Environmental Assessment[1] for the project and new information relating current existing conditions relative to the project studies. The environmental consequences of the proposed US 70 Havelock Bypass alternatives are discussed in Chapter 4.

3.1. Human Characteristics

Many of the characteristics of the human environment in this section are from the Community Impact Assessment[2] prepared for the project in 2008 by HNTB North Carolina, PC. This report is primarily based on demographic data collected from the United States (U.S.) Census Bureau (www.census.gov) and employment-by-industry data collected from the Employment Security Commission of North Carolina (www.esc.state.nc.us). Additional information concerning the community impacts can be found in this assessment.

In order to evaluate impacts on the surrounding community, a Direct Community Impact Area (DCIA) was developed for the project. The DCIA is generally bounded by the Croatan National Forest to the west, Carolina Pines Boulevard to the north, the East Prong of Slocum Creek and NC 101 to the east, and the Craven/Carteret County line to the south. The DCIA includes the existing US 70 corridor and the three bypass alternatives. To analyze the population characteristics of the DCIA, a Demographic Area of Census Tracts and Blocks Groups was used (see Figure 4-1). While this Demographic Area is larger than the DCIA, these Census Block Groups were chosen in order to be able to compare 1990 and 2000 Census data effectively.

Note: Endnotes are presented at the end of this Chapter

The Demographic Area is comprised of the following 2000 U.S. Census Tracts and Block Groups:

- Census Tract 9611, Block Groups 1, 2, and 3
- Census Tract 9612, Block Group 1
- Census Tract 9613, Block Groups 1, 2, 3, 4, and 5

The Demographic Area is generally bounded to the north by Catfish Lake Road, US 70, and the Neuse River; to the east by Hancock Creek and NC 101; to the south by the Craven/Carteret County line and the Craven/Jones County line; and to the west by the Craven/Jones County line (Figure 4-1). The Demographic Area encompasses the entire project study area, and is located in Craven County and portions of Carteret County.

Census data was also gathered to determine the socioeconomic characteristics of the City of Havelock, Craven County and North Carolina as a whole. The 1990 Census data was compared to 2000 Census data to determine the changes in the socioeconomic characteristics that occurred in this ten-year period.

3.1.1. Population Characteristics

With the exception of three, all of the twenty North Carolina counties regulated by the Coastal Area Management Act (CAMA) experienced a net permanent population growth from 1990 to 2006. In general, the greatest population growth occurred in the oceanfront coastal counties. However, Craven County experienced the fifth fastest growth of the non-oceanfront CAMA-regulated counties.

Although Craven County is growing, from 1990 to 2000 it did not rank among the fastest growing counties in North Carolina. In fact, from 1990 to 2000, Craven County was characterized by low/moderate growth. The population of the City of Havelock increased by 10.7 percent from 1990 to 2000. This rate was lower than the population growth in the County (12 percent) during the same time period. North Carolina's growth rate of 21.4 percent was higher than all other comparison

groups. Table 3.1 shows the population growth of the Demographic Area, City, County, and State.

In 1990 and 2000, the U.S. Census reported Craven County populations of 81,613 and 91,436 respectively. About two-thirds of the population lived in and around New Bern, the County seat, and Havelock, which includes the Cherry Point Marine Corps Air Station. During this period, the population of Havelock grew 10.7 percent from 20,268 persons in 1990 to 22,442 persons in 2000. This is consistent with a 12.0 percent increase in population experienced by Craven County. The population of the Demographic Area increased by 5.1 percent between 1990 and 2000. This rate was lower than the population growth experienced in Havelock and Craven County during the same time period.

Table 3.1. Population Growth

	Population		Growth 90-00	
Area	**1990**	**2000**	**Difference**	**% Change**
Demographic Area	25,210	26,504	1,294	5.1%
Havelock	20,268	22,442	2,174	10.7%
Craven County	81,613	91,436	9,823	12.0%
North Carolina	6,628,637	8,049,313	1,420,676	21.4%

Source: U.S. Census Bureau

The military and industrial growth in Craven County has influenced the population and economic growth of the region. Both the City and County governments support military expansion and consider future military growth in their respective land use plans. The current rural character, available open space, and low tax structure attract the military and industry to the area. However, as the residential and the supporting commercial development expands, the once rural character of the region also changes.

Racial Characteristics

The racial composition of the population in Craven County did not change dramatically from 1960 through 1990. During the decade from 1990 to 2000, more significant shifts in the racial

composition of the area have taken place. In Havelock, the white population has decreased from 75.3 percent to 70.4 percent. The black population has remained almost constant at 18.5 percent. The other population component has increased from 6.7 percent to 11.0 percent. In Craven County, the trend is also lower percentage white population, lower percentage black population, and higher percentage other population when compared to 1990 Census data. Table 3.2 shows the 2000 racial composition of the Demographic Area, the City of Havelock, Craven County, and the State.

Table 3.2. Racial Characteristics Census 2000

	Demographic Area		City of Havelock		Craven County		North Carolina	
Race	**Pop.**	**%**	**Pop.**	**%**	**Race**	**Pop.**	**%**	**Pop.**
White	18,308	69.1%	15,002	66.8%	62,435	68.3%	5,647,155	70.2%
White Hispanic	885	3.6%	814	3.6%	1,517	1.7%	157,501	2.0%
Black or African American	4,514	17.0%	4,043	18.0%	22,729	24.9%	1,723,301	21.4%
Black Hispanic	124	0.5%	116	0.5%	237	0.3%	14,244	0.2%
American Indian/ Alaska Native	175	0.7%	162	0.7%	357	0.4%	95,333	1.2%
American Indian/ Alaska Native Hispanic	14	0.1%	14	0.1%	31	0.0%	4,218	0.1%
Asian	608	2.3%	549	2.4%	881	1.0%	112,416	1.4%
Asian Hispanic	21	0.1%	21	0.1%	27	0.0%	1,273	0.0%
Native Hawaiian/Pacific Islander	35	0.1%	29	0.1%	51	0.1%	3,165	0.0%
Native Hawaiian/Pacific Islander Hispanic	4	0.0%	4	0.0%	5	0.0%	818	0.0%
Other Race	45	0.2%	42	0.2%	119	0.1%	9,015	0.1%
Other Race Hispanic	898	3.4%	843	3.8%	1,508	1.6%	177,614	2.2%
Two or More Races	655	2.5%	593	2.6%	1,187	1.3%	79,965	1.0%
Two or More Races Hispanic	218	0.8%	210	0.9%	352	0.4%	23,295	0.3%
Total	**26,504**	**100.0%**	**22,442**	**100.0%**	**91,436**	**100.0%**	**8,049,313**	**100.0%**
Total Hispanic	2,164	8.2%	2,022	9.0%	3,677	4.0%	378,963	4.7%

Source: 2000 U.S. Census

Table 3.2 indicates that the race distribution of the Demographic Area was generally similar to all other comparison sectors, with a few minor differences. The percentages of African Americans in the Demographic Area and Havelock are slightly lower than in Craven County and the State. The percentages of Hispanics in the Demographic Area and Havelock (8.2 percent and 9.0 percent respectively) are more than twice that of Craven County (4.0 percent). The percentage of Asians in the Demographic Area is twice that of Craven County as well; however, the percentages of Hispanics and Asians when combined make up only 10.5 percent of the total population. The higher percentage of Hispanics and Asians in the Demographic Area and the City of Havelock may be related to the presence of the Cherry Point Marine Corps Air Station.

Population Characteristics by Gender

Table 3.3 shows the male-female ratio in the City of Havelock, Craven County and North Carolina. In the State, the number of females slightly outnumber males. However, in the City of Havelock and Craven County, the reverse is true with approximately 57 percent males to 43 percent females in the City of Havelock and slightly more males than females in Craven County.

Table 3.3. 2000 Population Characteristics by Gender

	City of Havelock		Craven County		North Carolina.	
	Total	**%**	**Total**	**%**	**Total**	**%**
Male	12,847	57.3%	46,152	50.5%	3,942,695	48.9%
Female	9,595	42.7%	45,284	49.5%	4,106,618	51.1%
Total	**22,442**	**100.0%**	**91,436**	**100.0%**	**8,049,313**	**100.0%**

Source: 2000 U.S. Census

Although it is more usual to find the number of females slightly outnumbering males, the reverse in Havelock is likely the result of the presence of the Cherry Point Marine Corps Air Station.

Population by Age Group

Table 3.4 summarizes the population by age group for the City of Havelock, Craven County and the State.

Table 3.4. 2000 Population by Age Group

Age	Population					
	Havelock	**%**	**Craven Co.**	**%**	**N.C.**	**%**
0-4	2,524	11.3%	6,703	7.3%	539,509	6.7%
5-14	3,016	13.4%	12,263	13.4%	1,113,920	13.8%
15-24	7,295	32.5%	15,256	16.7%	1,117,439	13.9%
25-44	6,775	30.2%	25,536	28.0%	2,500,535	31.1%
45-64	2,146	9.6%	19,415	21.2%	1,808,862	22.5%
65+	686	3.0%	12,263	13.4%	969,048	12.0%
TOTAL	**22,442**	**100.0 %**	**91,436**	**100.0%**	**8,049,313**	**100.0 %**

Source: 2000 U.S. Census

The large number of young people in the City of Havelock is also likely the result of the presence of the Cherry Point Marine Corps Air Station with its abundance of young military personnel and families.

Educational Attainment

Educational status for residents within the Demographic Area are generally comparable to the City of Havelock and Craven County (see Table 3.5), although the Demographic Area had a smaller percentage of residents with Bachelors or Graduate degrees when compared to the County.

Table 3.5. Educational Status, 2000

Educational Attainment	Demographic Area % of Population	Havelock % of Population	Craven County % of Population	North Carolina % of Population
< High School	10.2%	10.0%	17.9%	21.9%
High School	31.6%	31.6%	30.0%	28.4%
Some College	32.7%	34.6%	25.0%	20.5%
Associates Degree	8.7%	8.5%	7.8%	6.8%
Bachelors Degree	12.8%	11.9%	13.5%	15.3%
Graduate or Professional Degree	4.0%	3.4%	5.8%	7.2%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: 2000 U.S. Census

Housing Characteristics

According to the U.S. Census Bureau, the number of households in the Demographic Area grew by 6.9 percent between 1990 and 2000, which was less than the household growth in Havelock (13.2 percent), Craven County (17.1 percent), and North Carolina (24.4 percent).

Table 3.6. Household Growth, 1990-2000

	Households		Growth, 90-00	
Area	**1990**	**2000**	**Difference**	**% Change**
Demographic Area	7,498	8,019	521	6.9%
Havelock	5,661	6,411	750	13.2%
Craven County	29,542	34,582	5,040	17.1%
North Carolina	2,517,026	3,132,013	614,987	24.4%

Source: U.S. Census Bureau

Homeownership rates in the Demographic Area increased from 39.6 percent in 1990 to 45.3 percent in 2000 (see Table 3.7). During the same period, homeownership rates in Havelock, Craven County and North Carolina grew as well. The Demographic Area experienced a larger increase in homeownership rates than Craven County and North Carolina; however, a lesser percentage of Demographic Area and Havelock residents own homes when compared to Craven County and North Carolina. This could be attributed to the close proximity of Cherry Point MCAS and the itinerant nature of military personnel.

Table 3.7. Homeownership Rate, 1990-2000

Area	Rate		Change, 90-00	
	1990	2000	Difference	% Change
Demographic Area	39.6%	45.3%	5.7%	14.4%
Havelock	29.8%	37.9%	8.1%	27.2%
Craven County	63.3%	66.7%	3.4%	5.4%
North Carolina	68.0%	69.4%	1.4%	2.1%

Source: U.S. Census Bureau

In 2000, the median home value within the Demographic Area was $84,886, slightly higher than the median value in Havelock ($81,700) and slightly lower than the median value in Craven County ($86,100). The median year structure built in the Demographic Area was comparable to all other areas studied, as they were all built in the 1970s (see Table 3.8).

Table 3.8. Median Home Value & Year Structure Built, 2000

Area	Value	Year Built
Demographic Area	$84,886	1976
Havelock	$81,700	1974
Craven County	$86,100	1979
North Carolina	$95,800	1978

Source: 2000 U.S. Census

3.1.2. Economic Characteristics

3.1.2.1. Employment

The economic picture for Craven County has been strong through the 1980's and 1990's. The economy of the County is no longer primarily supported by agriculture. The largest employer in Craven County and the City of Havelock is the Cherry Point Marine Corps Air Station (MCAS), which provides employment for civilian as well as military personnel. The MCAS is home to the 2nd Marine Aircraft Wing as well as the Fleet Readiness Center East, the largest industrial employer

east of I-95. In July 2005, local officials indicated that approximately 8,000 military personnel were stationed at Cherry Point. According to the Cherry Point Marine Corps Air Station (MCAS) website, www.cherry.point.usmc.mil., 15,602 total employees worked at the Cherry Point MCAS facilities as of January 2008. Of this total, approximately 10,180 are military personnel. It is believed that the majority of the Cherry Point MCAS growth since 2005 can be attributed to the implementation of the 2005 Base Realignment and Closure (BRAC).

Table 3.9 shows the employment growth by industry sector for Craven County between 1990 and 2006. The increases are likely related to the presence of the Cherry Point MCAS.

Table 3.9. Employment by Sector, Craven County 1990-2006

	Employment		Change, '90-'06	
Sector	**1990**	**2006**	**#**	**%**
Agriculture, Forestry, Fishing & Hunting	355	414	59	16.6%
Mining	68	57	-11	-16.2%
Utilities	97	101	4	4.1%
Construction	1,564	1,774	210	13.4%
Manufacturing	3,608	4,837	1,229	34.1%
Wholesale Trade	907	898	-9	-1.0%
Retail Trade	4,481	4,187	-294	-6.6%
Transportation and Warehousing	675	1,201	526	77.9%
Information	690	557	-133	-19.3%
Finance and Insurance	683	699	16	2.3%
Real Estate and Rental and Leasing	224	371	147	65.6%
Professional and Technical Services	1,095	1,723	628	57.4%
Management of Companies and Enterprises	*	105	N/A	N/A
Administrative and Waste Services	691	2,185	1,494	216.2%
Educational Services	*	164	N/A	N/A
Health Care and Social Assistance	3,033	4,273	1,240	40.9%
Arts, Entertainment, and Recreation	809	405	-404	-49.9%
Accommodation and Food Services	1,999	3,797	1,798	89.9%
Other Services, Ex. Public Administration	833	1,065	232	27.9%
Government	6,354	12,734	6,380	100.4%
Unclassified	11,026	150	-10,876	-98.6%
Total**	**39,124**	**41,697**	**2,573**	**6.6%**

Source: North Carolina Employment Security Commission (NCESC)
** - Indicates disclosure suppression*
N/A – Not Applicable
*** - 1990 & 2006 total does not include data for * sectors*

The government sector added the most jobs in Craven County during this time period, with a total of 6,380 more jobs in 2006 than in 1990 (an increase of 100.4 percent). The Health Care and Social Assistance sector added 1,240 additional jobs between 1990 and 2006. This increase could be attributed to the presence of the Craven Regional Medical Center and ancillary medical facilities that serve a growing number of retirees relocating to the area. Administrative and waste services, and transportation and warehousing, also experienced large percentage gains in employment.

Craven County experienced an overall increase in employment (6.6 percent) between 1990 and 2006 primarily due to the increase in the number of government and health care jobs. In comparison, North Carolina experienced an overall increase in employment of 28.2 percent between 1990 and 2006.

The Cherry Point Marine Corps Air Station and the Naval Aviation Depot were the largest government employers in the County (with over 15,000 employees as of January 2008). In 2007, the Fleet Readiness Center at the Cherry Point MCAS was the largest civilian employer in the County with approximately 3,800 workers. This total was followed distantly by Craven County Schools (1,900) and Craven Regional Medical Center (1,759). Hatteras Yachts (1,312) and BSH Home Appliances Corporation (1,200) (both manufacturing) were the largest private employers in the County. Brunswick Corporation and Moen Incorporated (both manufacturing) also employed over 1,000 employees in Craven County.

Unemployment

According to the Employment Security Commission of North Carolina, the unemployment rate in 2008 for Craven County (6.1 percent) was comparable to the State of North Carolina (6.3 percent) as a whole. In 2006, before the recent economic downturn, the unemployment rate in Craven County (4.4 percent) was also comparable to the State of North Carolina (4.7 percent) as a whole. There was a decrease in the unemployment rate from 1990 to 2006 for Craven County. The largest closing, at Jasper Textiles, Inc. in Havelock, involved the loss of approximately 170 jobs. Employment at the Naval Aviation Depot in Havelock also decreased by 24 employees during this time period.

Table 3.10. Unemployment Rate, 1990-2006

Area	Unemployment Rate		Growth, 90-06	
	1990	2006	Difference	% Change
Craven County	4.7%	4.4%	-0.3%	-6.4%
North Carolina	4.2%	4.7%	0.5%	11.9%

Source: North Carolina Employment Security Commission

Census data indicated that in 1990, the Demographic Area had an unemployment rate of 11.2 percent, which was significantly higher than Craven County (6.4 percent) and North Carolina (4.8 percent). In 2000, Census data indicated the unemployment rate for the Demographic Area decreased to 5.7 percent, while the rate in Craven County decreased to 5.3 percent. Unemployment decreases during this time period could possibly be attributed to an increase in employees at Cherry Point MCAS and the associated Naval Aviation Depot.

Unemployment rate data for these two comparison sectors was retrieved from the U.S. Census Bureau, while State and County unemployment rates were retrieved from the North Carolina Employment Security Commission. The Census data was sample data, while the Employment Security Commission's percentages were 100 percent counts and more recent.

3.1.2.2. Income and Poverty

In 1989, the median household income for the Demographic Area was $25,783 (see Table 3.11). By 1999, the median income in the Demographic Area had grown to $36,406. Income levels and growth rates between 1989 and 1999 are comparable for all studied comparison sectors.

Table 3.11. Median Household Income, 1989-1999

Area	Household Income		Growth, 89-99	
	1989	1999	Difference	% Change
Demographic Area	$25,783	$36,406	$10,623	41.2%
Havelock	$24,553	$35,351	$10,798	44.0%
Craven County	$25,619	$35,966	$10,347	40.4%
North Carolina	$26,647	$39,184	$12,537	47.0%

Source: U.S. Census Bureau

In 2000, the median family income in North Carolina was $46,335 and the median household income was $39,184 while the median family income in Craven County was $42,574 and the median household income was $35,966. Per capita income in Craven County for 2000 was $18,423 or $1,884 less than the per capita income for the State (2000 Census). Likewise, in the City of Havelock, the median family income was $37,000, the median household income was $35,351, and the per capita income was $15,586.

The U.S. Census Bureau employs a set of income thresholds that vary by the size and composition of a family to determine poverty status. These thresholds are not based on geographic boundaries and are adjusted for inflation. The thresholds are also based on income before taxes, and do not include any capital gains or non-cash benefits such as public assistance. In addition, those people living in military barracks or institutional group homes are not included in the poverty statistics.

In 1989, the percentage of the Demographic Area population that lived below the poverty level was 10.0 percent, the lowest of any of the other areas studied (see Table 3.12). In 1999, the poverty rate for the Demographic Area decreased to 8.7 percent. The percentages of impoverished persons living in the Demographic Area and Havelock between 1989 and 1999 experienced greater decreases than either the County or the State.

Table 3.12. Percentage Below Poverty Level, 1989-1999

Area	% Below Poverty		Growth, 89-99	
	1989	1999	Difference	% Change
Demographic Area	10.0%	8.7%	-1.3%	-13.0%
Havelock	10.5%	8.6%	-1.9%	-18.1%
Craven County	13.6%	13.1%	-0.5%	-3.7%
North Carolina	13.0%	12.3%	-0.7%	-5.4%

Source: U.S. Census Bureau

Table 3.13 summarizes the socioeconomic data analyzed for the City of Havelock, Craven County and the State.

Table 3.13. Socioeconomic Data Summary

Category	City of Havelock		Craven County		North Carolina	
	1990	2000	1990	2000	1990	2000
Total Population	20,268	22,442	81,613	91,436	6,628,637	8,049,313
Total Housing Units	6,096	6,783	32,293	38,150	2,818,193	3,523,944
Median Household Income	$24,553	$35,351	$25,619	$35,966	$26,647	$39,184
Per Capita Income	$9,204	$15,586	$11,619	$18,423	$12,885	$20,307
Labor Force						
Armed Forces	6,352	6,335	7,383	7,097	118,432	90,847
Civilian	4,435	6,801	31,305	37,733	3,401,495	4,039,732
TOTAL	10,787	13,136	38,688	44,830	3,519,927	4,130,579
Unemployed	617	405	2,143	2,008	163,081	214,991
Percent of Civilian Unemployed	12.2%	6.0%	6.4%	5.3%	4.8%	5.3%
Workers Working Outside of County	--	--	4036	5879	--	--
Percent Working Outside County	--	--	12.9%	13.1%	--	--

Source: U.S. Census Bureau

A review of the Census data shows that as the population grew, the housing industry within Craven County and Havelock also expanded. The total number of housing units in Craven County and Havelock increased 18.1 and 11.3 percent respectively between 1990 and 2000. During this same period, the labor force increased from 38,688 to 44,830 in Craven County and from 10,787 to 13,136 in the City of Havelock. This increase can be attributed to growing civilian employment and business opportunities in the area.

One notable change in the County's employment statistics during this ten-year period, is the decrease in military personnel and the accompanying increase in civilian workers. In 1990, armed forces personnel accounted for 7,383 members of the County's workforce. This number had decreased to 7,097 members by 2000. However, the civilian workforce, which included 31,305 persons in 1990, had increased to 37,733 by the end of the decade. Likewise, the City of Havelock experienced a slight decrease in military workers and an increase in civilian workers. Between 1990 and 2000, the military labor force in Havelock decreased from 6,352 to 6,335 workers, while the civilian labor force increased from 4,435 to 6,801 workers indicating a growth in employment and business opportunities over the past ten years.

3.1.3 Community Facilities and Services

Havelock has no established or traditional downtown area. Much of the government and public services are located in the vicinity of existing US 70 (Main Street) and SR 1735 (Cunningham Boulevard). The Havelock City Hall is located east of existing US 70 off of Cunningham Boulevard. The Havelock Post Office and the Havelock Tourist & Event Center are both located along existing US 70. The Craven County Public Library and Craven County Community College are located along Cunningham Boulevard east of existing US 70 (see Figure 3-1).

3.1.3.1. Parks & Recreation Facilities

The City of Havelock's Parks and Recreation Department manages two facilities available to the residents of the Havelock area. These are City Park and the Recreation Center (at the intersection of

existing US 70 and Cunningham Boulevard) and adjoining Walter B. Jones Park, 50-acre athletic complex, off NC 101 beside the Roger Bell Elementary School. However, there are no existing or planned parks or recreational facilities located within the study area for the proposed bypass.

The Croatan National Forest (CNF) (see Figure 3-2) offers recreational opportunities but has no designated recreational areas in the immediate study area. According to the Croatan National Forest Final Environmental Impact Statement (2002)[3], "much of the recreation opportunities within the CNF occur on significant bodies of water within a few miles of the Atlantic Ocean; and most of these waters have a tidal influence. These tidal waters are among the most important aspects of recreation on the CNF." A recreational analysis of the proposed project on the CNF was conducted by the U. S. Forest Service. This analysis noted visitors to the CNF in this area predominantly engaged in dispersed recreational activities such as hunting, hiking, and bird watching.

The CNF Final EIS describes categories within the Recreation Opportunity Spectrum (ROS) as Primitive, Semi-Primitive Non-Motorized, Semi-Primitive Motorized, Roaded Natural, Rural and Urban. All of these categories are represented on the CNF with the exception of urban and primitive. Approximately 28 percent of the CNF is in the Semi-Primitive Non-Motorized and Semi-Primitive Motorized settings. These areas would be attractive to hunters. The rest of the CNF is in Roaded Natural (62 percent) and Rural (10 percent) settings.

Analysis of the alternative project corridors revealed no designated wildernesses, wild or scenic rivers, or other specially designated recreational areas within the CNF that might be impacted by the proposed project.

The Carolina Pines County Club and the Cherry Point Marine Corps Air Station both operate 18-hole golf courses in the Havelock vicinity.

The nearby Neuse River and the Atlantic Ocean afford many water-related recreational opportunities to area residents. A public boat launch is located along the northern branch of Slocum Creek just west of existing US 70.

3.1.3.2 Schools

Currently, there are eight public schools in the City of Havelock, including five elementary schools (grades K-5), two middle schools (grades 6-8) and one high school (grades 9-12). All of these schools except one, the Gurganus Elementary School, are located on the northeastern side of existing US 70. The Gurganus Elementary School is located approximately 0.2 miles west of the US 70 and SR 1746 (Greenfield Heights Boulevard) intersection (see Figure 3-1). The Tucker Creek Middle School is located north of the City of Havelock. Although this facility is not located in the study area, it has access to existing US 70 at the SR 1760 (Hickman Hill Loop Road) intersection at the northern end of the study area. In addition to the eight public schools, two parochial schools serve the Havelock Community - Annunciation Catholic School (K-8) and Liberty Christian (K-12).

To serve the local schools in 2008, there were 40 school bus routes that used existing US 70 in the project study area twice daily.

3.1.3.3. Churches

The City of Havelock has approximately thirty-five churches serving many denominations. Although most of these churches are located closer to the center of the City, one church, the Lake Road Baptist Church (formerly Crystal Pines Baptist Church) is located along Lake Road in the project area (see Figure 3-1 for location).

3.1.3.4. Civic and Fraternal Organizations

There are no civic or fraternal organizations located in the Havelock Bypass study area.

3.1.3.5. Emergency Response Services (Police, Fire & Emergency Services)

There are currently two emergency response facilities along the US 70 corridor, including the Havelock police, fire, and EMS services at a single facility located along Cunningham Boulevard (near the intersection with US 70), and a Cherry Point MCAS fire station located at the intersection of Jackson Drive and US 70. Both of these facilities are relatively centralized and utilize existing US 70 to provide a north-south travel route for emergency response. The MCAS fire station and the Havelock police, fire, and EMS services are mutually supporting. According to local officials, no other emergency response facilities exist within the project area; however, a recent study has explored the possibility of adding a fire substation somewhere within the area.

3.1.3.6. Commercial Centers

With no established downtown area, the City of Havelock commercial centers are primarily concentrated along existing US 70. Several strip malls, restaurants, hotels, gas stations, and other services typical of a commercial corridor are located along existing US 70. This corridor is also typified by traffic signals, billboards, and congestion often associated with such development.

The City of Havelock currently has ten shopping centers in addition to a large military shopping complex within the Cherry Point MCAS facility (see Figure 3-1). Nine of these shopping centers are located along existing US 70 between Slocum Road and McCotter Boulevard. The tenth is located along NC 101 near the main gate to the Cherry Point MCAS. Other commercial development is scattered throughout the community. Commercial uses are also located along McCotter Boulevard A new Wal-Mart superstore has recently opened along US 70 north of Slocum Road. Local officials estimated that Wal-Mart would bring 500 to 600 jobs to the area.

3.1.4. Community Cohesion

Areas with widespread community cohesion are not prevalent in the City of Havelock. Due to the principally rural character of the study area consisting mostly of forested government lands, the

affected communities will be limited to the areas surrounding the few existing routes that cross the detailed study corridors (Gray Road, Sunset Drive, and Lake Road). The proposed bypass could create a physical barrier between existing houses along these routes.

3.1.4.1. Neighborhoods

The presence of the Cherry Point Marine Corps Air Station (MCAS) has created both on and off-base military neighborhoods throughout the Havelock area. A large concentration of the off-base military housing is adjacent to the east side of existing US 70. The military neighborhoods in Havelock are a mix of single and multi-family housing units in relatively well defined locations.

Other neighborhoods within the area are comprised of one and two-story single family houses not related to the MCAS. These neighborhoods are located near Hollywood Boulevard, Carolina Pines Drive, Webb Boulevard, and on Hickman Hill Loop Road. Some of the infill development in these rural-residential neighborhood areas includes apartments, manufactured housing, or multi-family townhouses. Rural areas of the community (primarily west of existing US 70) are typically a mix of single-family houses and manufactured homes (both alone and in manufactured home parks). These less-developed areas border the Croatan National Forest and are set adjacent to forests and fields typical of rural areas.

The majority of houses within the city and its extraterritorial area are more than 30 years old. However, the military is remodeling some of its older housing adjacent to US 70. Many new houses are being constructed as developers are trying to keep up with the demand for housing. Newer subdivisions are Wolfcreek, Stonebridge, Foxcroft, Hunters Landing, and Tucker Creek. None of these subdivisions are in the immediate vicinity of the project.

The proposed Alternate 2 interchange with SR 1756 (Lake Road) is just east of the center of the 49-lot Marman Terrace residential subdivision. The proposed Alternates 1 and 3 interchanges with SR 1756 (Lake Road) are west of this subdivision.

3.1.5. Title VI of the 1964 Civil Rights Act and Environmental Justice

Title VI of the Civil Rights Act of 1964[4], and related statutes, require there be no discrimination in Federally-assisted programs on the basis of race, color, national origin, age, sex, or disability. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"[5], provides that "each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of its program, policies, and activities on minority populations and low-income populations." It also directs agencies to ensure that representatives of an affected community have every opportunity to provide input regarding the impact of the proposed project.

Environmental justice refers to the equitable treatment of people of all races, cultures, and incomes with respect to development, implementation and enforcement of environmental laws, regulations and policies. In addition, the Interorganizational Committee on Guidelines and Principles for Social Impact Assessment (ICOGP) has identified vulnerable elements of the population to include the elderly, children, the disabled, and members of low-income and minority groups. These special populations based on the ICOGP definitions, and those set forth in Title VI of the Civil Rights Act of 1964[4], and Executive Order 12898[5], have been identified to ensure that the project is not disproportionately impacting or disproportionately denying benefits of the project.

The Council on Environmental Quality (CEQ) has oversight of the Federal government's compliance with Executive Order 12898[5]. CEQ has developed guidance to further assist agencies with their procedures so that environmental justice concerns are effectively identified and addressed. Based on the CEQ guidance, minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population in the general population or other appropriate unit of geographic analysis. The North Carolina Department of Transportation (NCDOT) defines "meaningfully greater" as being ten percentage points higher than the county average. Low-income populations, based on CEQ guidance, should be identified with the annual

statistical poverty thresholds from the United States Census Bureau's Current Population Reports (Series P-60 on Income and Poverty)[6].

According to the 2000 Census for the City of Havelock and Craven County, minority percentages are 33.2, and 31.7, respectively. These percentages are slightly higher than the State average of 29.8 percent. According school information from the National Center for Education Statistics (NCES)[7] website, three schools within the Direct Community Impact Area (DCIA), including Roger R. Bell Elementary School (55.2 percent minority), Havelock Elementary (51.7 percent minority), and Havelock Middle School (50.4 percent minority), have minority populations greater than 50 percent. However, as noted in Section 3.1.1, the percentages of African Americans in the Demographic Area (DA) and Havelock are slightly lower than in Craven County and the State. The percentages of Hispanics in the DA and Havelock (8.2 percent and 9.0 percent respectively) are more than twice that of Craven County (4.0 percent). The percentage of Asians in the DA and Havelock is less than 3 percent but more than twice that of Craven County (1.0 percent). The percentages of Hispanics and Asians when combined make up only 10.5 percent of the total population. The higher percentage of Hispanics and Asians in the DA and Havelock is likely related to the presence of the Cherry Point Marine Corps Air Station.

Upon examination of the Census data at the Block Group level, a few trends concerning race were noted. Geographic Information System (GIS) data provided by NCDOT indicates that the U.S. Census Blocks with the highest levels of minority population are primarily located in the more developed areas of the City of Havelock and surrounding Cherry Point Marine Corps Air Station (MCAS). With the exception of Census Tract 9611, Block Group 1, all Block Groups within the DCIA have higher percentages of Hispanic persons than Craven County (4.0 percent). Census Tract 9613, Block Group 4 (10.4 percent Hispanic) and Census Tract 9612, Block Group 1 (11.1 percent Hispanic) each have Hispanic populations more than double the County average. Both of these Block Groups border the existing US 70 corridor and are in close proximity to Cherry Point MCAS.

According to U.S Census data, there is a large young population (15 to 24 years old) in Havelock. This is likely resulting from the presence of the Cherry Point MCAS. Local officials indicated one

home for the elderly exists within the area (Britthaven of Havelock along McCotter Boulevard) and a Havelock Senior Citizens Center has been proposed for the former post office building along Trader Avenue.

Two Block Groups, east of existing US 70 and close to the center of the City, were determined to have a lower median income than the remainder of the project area. One of these had 20.5 percent of residents living below the poverty level. According to local officials, three low-income areas exist within the DCIA including the Lynnwayne Circle area (east of existing US 70), the Belltown Apartments (along Belltown Road west of US 70), and Manteo Circle (a public housing facility run by the Eastern Carolina Regional Housing Authority located at the intersection of Manteo Circle and High School Drive, east of existing US 70).

This assessment of the U.S. Census data reveals the presence of population groups subject to environmental justice considerations in the Demographic Area. However, this assessment also indicates these populations are located in the developed areas of Havelock near the Cherry Point MCAS, along and east of existing US 70. As discussed in Chapter 2, Section 2.5.3.3, the detailed study corridors for the proposed project are located west of existing US 70 through principally undeveloped areas. No population groups subject to environmental justice considerations were noted within close proximity to these detailed study corridors.

Although the detailed study corridors are through principally undeveloped areas west of Havelock, residential communities are present along SR 1756 (Lake Road), SR 1746 (Gray Road), and SR 1747 (Sunset Drive). Site investigations and discussions with local officials did not reveal any notable presence of populations subject to environmental justice considerations in these communities. Site investigations have identified one predominantly African-American neighborhood in close proximity to the detailed study corridors. This neighborhood surrounding Hickman Hill Loop Road, is located adjacent to existing US 70 near the northwestern terminus of the proposed project. All of the bypass study alternatives share the same corridor in this area. None of the properties within this neighborhood are within the bypass study corridor. The residents of these neighborhoods, as well as the public within the entire DCIA, have had several opportunities to

provide input to NCDOT and FHWA officials regarding the impacts of the proposed project.

Two Citizens Informational Workshops and a Corridor Public Hearing have been conducted to present the proposed project to the public and obtain both written and spoken information and comments from all attending. Comment sheets were provided at all three of these public meetings, for those attending and for attendees to distribute to any concerned citizens who could not attend. Copies of the meeting handouts with project information and comment sheets were also made available through mailings and at local facilities.

3.1.6. Access to Services for Persons with Limited English Proficiency (LEP)

Executive Order 13166 "Improving Access to Services for Persons with Limited English Proficiency" requires all recipients of federal funds to provide meaningful access to persons who are limited in their English proficiency (LEP). The US Department of Justice defines LEP individuals as those "who do not speak English as their primary language and who have a limited ability to read, write, speak, or understand English" (67 FR 41459). Data about LEP populations was gathered in the 2000 Census. Due to the high number of Hispanics in the DCIA, a Limited English Proficiency (LEP) assessment was conducted of the population in the Demographic Area. Table 3.14 illustrates the LEP population of the total adult population 18 years of age or older.

As shown in Table 3.14, there are no language groups within the DA in which more than 5 percent of the population or 1,000 persons speak English less than “Very Well.” Therefore, demographic assessment does not indicate the presence of LEP language groups that exceed the Department of Justice’s Safe Harbor threshold. However, NCDOT will include notice of Right of Language Access for future meetings for this project. Thus, the requirements of Executive Order 13166 appear to be satisfied.

Table 3.14. Limited English Proficiency (LEP) Population

Block Group	Total Adult Pop.	Primary Language Group of Persons Who Speak English Less than Very Well								Total LEP	
		Spanish		Other Indo-Euro		Asian/Pacific		Other			
		#	%	#	%	#	%	#	%	#	%
CT 9611, BG 1	1,877	9	0.5%	0	0%	5	0.3%	0	0%	14	0.7%
CT 9611, BG 2	1,491	38	2.5%	0	0%	19	1.3%	0	0%	57	3.8%
CT 9611, BG 3	1,336	35	2.6%	0	0%	29	2.2%	0	0%	64	4.8%
CT 9612, BG 1	7,918	127	1.6%	16	0.2%	68	0.9%	20	0.3%	231	2.9%
CT 9613, BG 1	627	0	0%	0	0%	23	3.7%	0	0%	23	3.7%
CT 9613, BG 2	1,066	6	0.6%	8	0.8%	14	1.3%	0	0%	28	2.6%
CT 9613, BG 3	1,192	0	0%	0	0%	13	1.1%	0	0%	13	1.1%
CT 9613, BG 4	1,246	0	0%	0	0%	20	1.6%	0	0%	20	1.6%
CT 9613, BG 5	2,555	30	1.2%	0	0%	39	1.5%	0	0%	69	2.7%
DA Aggregate	**19,308**	**245**	**1.3%**	**24**	**0.1%**	**230**	**1.2%**	**20**	**0.1%**	**519**	**2.7%**
Craven County	27,818	905	3.3%	61	0.2%	384	1.4%	43	0.2%	1,393	5%

3.2. Land Use and Transportation Planning

3.2.1. Land Use Plans

The future land use planning for most of the project study area is outlined in the City of Havelock 2030 Comprehensive Plan[8]. This plan serves as the official adopted statement of the Havelock Board of Commissioners and was adopted by the North Carolina Coastal Resources Commission to be in compliance with the Coastal Area Management Act (CAMA) in 2009. The goals, objectives, and policies contained in the document are organized into 10 plan elements. Each element addresses an important aspect of growth and development in Havelock These elements include land use, community design, housing, transportation, community facilities and services, parks and recreation, environment and natural resources, historic and cultural resources, economic development, and capital improvements. The US 70 Bypass is specifically referenced as a future element in this Plan.

The 2009 CAMA Core Land Use Plan Craven County[9] was adopted by the Craven County Board of Commissioners and by the North Carolina Coastal Resources Commission in 2009. Although the City of Havelock was not a participant in the Craven County plan, this plan notes the County's

support for projects which will improve hurricane evacuation routes and improve access to the Marine Corps Air Station Cherry Point. County policy supports the implementation of the 2009-2015 State Transportation Improvement Program[10] and lists the US 70 Havelock Bypass as one of several transportation improvements in the County. The plan documents existing conditions within the county with respect to demographics and the economy. It also projects land development patterns and identifies future infrastructure and land use issues, as well as creates a policy and vision statement for resource protection, economic and community development, and public participation.

Although the City of Havelock provides land use planning for most of the study area, the U.S. Forest Service also provides land use planning for the lands within the Croatan National Forest (CNF). The Croatan National Forest Land and Resource and Management Plan 2002[11], prepared by the U.S. Forest Service, guides the natural resource management activities and establishes management standards within the Croatan National Forest (CNF). It describes the care and protection of the land, resource management practices, and the availability of lands for varied purposes for the next 10 to 15 years. The plan was prepared in accordance with the National Forest Management Act of 1976[12], and the Forest and Rangeland Renewable Resources Planning Act of 1974[13]. According to this plan, the goals of the CNF are to provide a forest environment for public enjoyment, to provide goods and services to satisfy short-term public demand, to provide quality habitat for fish and wildlife, to protect unique natural pocosin environments, to maintain plant and animal diversity, and to protect threatened, endangered, and sensitive plant and animal species among others. The construction of the US 70 Bypass is specifically mentioned in this Plan as an activity that would provide public benefit and would require a special use permit to provide the lands for project construction.

This plan provides a description and history of the Croatan National Forest, and addresses issues related to:

- biological diversity
- recreation opportunities
- special land allocations
- forest health and products
- fire management
- access
- coordination with local communities

The forest-wide and management prescriptions identified in the CNF Land and Resource Management Plan[11] include the management of recreation sites according to the appropriate recreation opportunity spectrum (ROS) setting. The map that is included in the plan shows some hardwood cypress wetland management areas, and red-cockaded woodpecker (RCW) habitat management areas, in which the ROS classes are primarily roaded natural and rural. It is standard within the RCW habitat management areas to manage lands as suitable for timber production.

3.2.1.1. Existing Land Use

The proposed project is located in the coastal plain region of eastern North Carolina. Although generally rural, this area of coastal North Carolina is experiencing substantial growth. Situated near the Neuse River, between the Cherry Point U.S. Marine Corps Air Station (MCAS) and the Croatan National Forest (CNF), highway access into the Havelock area is limited to three routes including US 70, NC 101, and SR 1756 (Lake Road also known as Nine Mile Road). Existing US 70 is the only principal arterial that passes through the City of Havelock.

The City of Havelock functions primarily as a residential and service area for the Cherry Point MCAS. Cherry Point is the home of the nation's largest U.S. Marine Corps Air Station and a large Naval Aviation Depot operated by the Marine Corps. Cherry Point was constructed in the early 1940's and covers more than 12,000 acres at its primary complex to the north and east of existing US 70 through Havelock. A portion of the Cherry Point MCAS was annexed into the City of Havelock in December 1979.

Most of the currently-developed area of the City of Havelock is centered around existing US 70. Almost all of the land adjacent to US 70 supports strip-commercial development. The areas away from US 70 are principally residential. The Croatan National Forest (CNF) borders the City to the south and west of existing US 70. As shown in Figure 3-2, the proposed US 70 Bypass is located around the western side of the City through portions of the CNF.

A portion of the project study area is located in undeveloped lands contained within the boundaries

of the CNF. The CNF is one of four National Forests in North Carolina owned and managed by the U.S. Forest Service. The purchase of the Croatan began in the early 1930's and by 1935 the forest included 77,000 acres. Currently, the CNF consists of a total of approximately 160,000 acres in Craven, Carteret, and Jones Counties (see Figure 3-2). There are approximately 40 miles of streams and 4,300 acres of lakes in the CNF. The CNF is generally bounded by the White Oak River to the west, the Neuse and Trent Rivers to the north and east, and Bogue Sound to the south.

The largest land use not included in the Cherry Point MCAS and the CNF is residential (see Figure 3-3). Most of the residential development outside of the Cherry Point MCAS has occurred along McCotter and Hollywood Boulevards behind the commercial land use along existing US 70. There is not a traditional central business district in Havelock and the commercial land use is primarily spread along existing US 70. The remaining lands along existing US 70 are shown as a mixture of residential, office or institutional, recreational, industrial, or vacant. Located to the south and west of existing US 70, the most predominant land use classification in the project study area is agriculture/forest due to the presence of the CNF. The study area lands west of existing US 70, and not within the CNF, generally contain agriculture, residential, or commercial uses. Much of this land is vacant and undeveloped. There is very little industrial land use in the area. The industrial land uses are scattered along existing US 70.

3.2.1.2. Zoning Characteristics

Most of the lands within the detailed study corridors are undeveloped and currently outside of the City of Havelock's current zoning jurisdiction. Craven County has no countywide zoning ordinance. East of the study area and the Cherry Point U.S. Marine Corps Air Station (MCAS), there is a County zoning ordinance to address military aircraft impacts including noise; however, the principal purpose of this ordinance is not land use control. Regulations within this document focus on the how land is developed within the noise contours and general airport environment of Cherry Point MCAS. The focus is to minimize the amount and intensity of residential development within what is termed the Air Installation Compatibility Use Zone (AICUZ) and the Accident Potential Zones (APZ). Permitted uses are identified, and development requirements are specified.

Zones include:

- **A** = Clear Zones (CZ); greatest potential for accidents and highest noise exposure; no residential development
- **B3** = Accident Potential Zone 1 (APZ 1) & Noise Zone 3 (75 ldn or higher); significant potential for accidents and area of significant noise impact; no residential development
- **3** = Noise Zone 3 (75 ldn or higher); area of significant noise impact; no residential development
- **B1 =** Accident Potential Zone 1 (APZ 1) & Noise Zone 1 (below 65 ldn); significant potential for accidents and area of some noise impact; maximum density is one unit per five acres.
- **B2** = Accident Potential Zone 1 (APZ 1) & Noise Zone 2 (65 to 74 ldn); significant potential for accidents and area of moderate noise impact; maximum density is one dwelling unit per five acres.
- **C1** = Accident Potential Zone 2 (APZ 2) & Noise Zone 2 (65 to 74 ldn); measurable potential for accidents and area of moderate noise impact; maximum density not to exceed two dwelling units per acre.
- **C2 =** Accident Potential Zone 2 (APZ 2) & Noise Zone 1 (below 65 ldn); measurable potential for accidents and area of some noise impact; maximum density not to exceed two dwelling units per acre.
- **2** = Noise Zone 2 (65 to 74 ldn); area of moderate noise impact; maximum density not to exceed two dwelling units per acre.
- **1** = Noise Zone 1 (below 65 ldn); area of some noise impact.

The only existing zoning districts within the project study area are under the jurisdiction of the City of Havelock (see Figure 3-4). The City of Havelock determines and regulates zoning districts for the lands within the Havelock City Limits and Extraterritorial Jurisdiction (ETJ). Approximately 10,395 acres within the city limits of Havelock are zoned for various uses. Over 70 percent of this acreage is for the Cherry Point MCAS. However, the Cherry Point MCAS, total area of more than 12,000 acres, is not under the City of Havelock's zoning authority. The predominant zoning for the areas outside the MCAS are single- family residential or highway commercial. An additional 7,912 acres are zoned in the City's ETJ. The Croatan National Forest occupies most of the approximately 2,453 acres of the ETJ that are zoned as government services. Most of the western side of the project study

area is outside of the Havelock City Limits, but some is within the City's current ETJ.

The City of Havelock zoning districts currently include:

- Military Reservation
- R-10 (Minimum Lot Size 10,000 sq. ft.)
- Highway Commercial
- Government Services
- R-12 (Minimum Lot Size 12,000 sq. ft.)
- R-M (Multi-family residential)
- R-20 (Minimum Lot Size 20,000 sq. ft.)
- R-7 (Minimum Lot Size 7,000 sq. ft.)
- Light Industrial
- R-13 (Minimum Lot Size 13,000 sq. ft.)
- R-MH (Mobile Home Minimum Lot Size 5,000 sq. ft.)
- R-20A (Minimum Lot Size 20,000 sq. ft.)
- Office and Institutional

The City of Havelock's Zoning Ordinance stated purpose is to promote the “health, safety, morals, and the general welfare of the community.” The ordinance outlines the permitted uses within each zoning designation, as well as the site development regulations within these designations. The regulations set forth in the ordinance affect all land and buildings, as well as every use of land and/or buildings.

The entire area along existing US 70 is zoned highway commercial. In the bypass study corridors, the zoning is principally single-family residential in the privately owned areas along SR 1756 (Lake Road), SR 1746 (Gray Road), and SR 1747 (Sunset Drive). However, there are also several existing mobile home parks zoned as multi-family residential in these areas. The only properties in the ETJ zoned industrial are a parcel along the southeastern side of SR 1756 (Lake Road) that is occupied by an auto salvage yard and a vacant parcel along SR 1747 (Sunset Drive). There is no existing highway commercial zoning in the bypass study corridors except at the termini along existing US 70.

3.2.1.3. Future Land Use

Most of the lands within the bypass study corridors are adjacent to the existing Havelock ETJ and were included in a proposed ETJ in the City of Havelock 2030 Comprehensive Plan[8]. The future land use map in this Plan shows the general location of the proposed bypass along the preferred Alternate 3 study corridor. Most of the lands adjacent to this corridor are shown as National Forest or agriculture future land use. With the exception of a residential area along SR 1747 (Sunset Drive), all of the lands west of the bypass are shown as agriculture or National Forest.

3.2.2. Transportation Plans

3.2.2.1. Statewide Plans

In November 1983, the proposed project was included in the North Carolina Department of Transportation, Transportation Improvement Program (TIP)[14] as Project R-1015.

The North Carolina Strategic Highway Corridors (SHC)[15] Plan identifies highway corridors that play a critical role in regional or statewide mobility and seeks to protect and improve these routes in an effort to enhance transportation, economic development, and environmental stewardship. The SHC are chosen based on traffic volumes and relative importance to the state and/or region, whether they provide a connection between major activity centers or between existing and/or planned interstates, and if they serve as reliever routes to an existing interstate facility. This plan calls for US 70 (Corridor 46) to be upgraded to a freeway between Morehead City and Raleigh. The US 70 corridor connects the cities/towns of Raleigh, Smithfield, Goldsboro, Kinston, New Bern, Havelock and Morehead City, a length of approximately 148 miles. The entire corridor is ultimately envisioned as a controlled access, median-divided freeway based on the SHC Plan.

3.2.2.2. Local Highway Plans

In 1979, the project was originally included as a potential bypass around the southwestern side of the

City in the approved thoroughfare plan for the City of Havelock. Currently, both the City of Havelock Thoroughfare Plan[16] adopted in November 1993, and the Draft Havelock Comprehensive Transportation/Land Use Plan (2007)[17] show proposed and existing routes in the study area (see Figure 3-5). The US 70 Havelock Bypass is shown on both plans as a proposed freeway around the southwest side of the City with interchanges on each end and at SR 1756 (Lake Road). The plans describe the bypass as a four-lane divided, controlled-access freeway.

Other major thoroughfares shown on both plans include Main Street (US 70), Fontana Boulevard (NC 101), Lake Road (SR 1756), and Miller Boulevard. Minor thoroughfares include Hollywood Boulevard, Belltown Road, and Greenfield Heights Boulevard (SR 1746).

3.2.2.3. Transit and Railway Plans

No local, fixed-route, fixed-schedule mass transit systems operate in the City of Havelock. The Craven Area Regional Transit Services (CARTS) provides transportation services to the general public. The system provides services in Craven, Jones, and Pamlico counties using a fleet of 32 vehicles, including 12 modified vans, 12 standard vans, four mini buses, and four sedans. Currently, two scheduled routes serve local human service agencies, including Social Services, Craven Evaluation and Training Center, Coastal County Enterprises, Neuse Mental Health Center, and several senior citizen and employment assistance centers. This demand/response service is provided on a limited basis with an emphasis on the elderly and persons with disabilities.

There is no passenger rail transit service in Havelock. Railroad freight service is provided to the City of Havelock by Norfolk Southern Corporation on the North Carolina Railroad line which generally parallels US 70 and runs from the State Port in Morehead City through New Bern to Goldsboro. Norfolk Southern also operates the Camp Lejeune Railroad that connects the Cherry Point MCAS with Camp Lejeune on the southern side of Jacksonville. Occasionally, hazardous materials, such as jet fuel, may be transported through Havelock on these railroad lines.

3.2.2.4. Bicycle/Pedestrian Plans

Discussions with the NCDOT Bicycle and Pedestrian Division indicate that currently there are no designated bicycle routes in the study area. However, the Draft Havelock Comprehensive Transportation/Land Use Plan[17] includes local elements for bicyclists and pedestrians. Figures 3-6 and 3-7 show these facilities.

The Down East Rural Planning Organization (RPO) Bicycle Routes Map (2005)[18] identifies the following potential bike routes in the Havelock area:

US 70 from New Bern to NC 101 - Proposed Regional Bike Route
NC 101 from US 70 to Ferry Road - Proposed Regional Bike Route
NC 101 from Ferry Road to east - Existing State Bike Route
Ferry Road from US 70 north to Neuse River - Existing State Bike Route
Lake Road from US 70 to beyond County Line - Proposed Regional Bike Route
Old Winberry from NC 101 to south - Proposed Regional Bike Route

To bring the proposed bicycle routes to fruition, demand and priorities must be established and funding provided for signing and improvements such as adequate bicycle lanes to separate bicycle traffic from motor vehicle traffic.

3.2.3. Coastal Management Plans

Craven County is one of the twenty North Carolina coastal region counties regulated by the Coastal Area Management Act (CAMA). As such, the land use planning in the study area must comply with the CAMA requirements. The most recent land use plan for the City of Havelock was prepared in accordance with CAMA requirements and certified by the Coastal Resources Commission (CRC) in October 2009. The most recent land use plan for Craven County was also prepared in accordance with CAMA requirements, was adopted by the County in August 2009, and certified by the CRC in October 2009. These plans are described in Sections 3.2.1 and 3.2.1.3. Each of the plans directs

future land use policy. Both of these CRC-certified plans recognize and support the US 70 Havelock Bypass.

3.3. Physical Environment Characteristics

3.3.1. Noise Characteristics

When discussing existing noise levels in the Havelock vicinity, it is important to note the City of Havelock is home to the Cherry Point Marine Corps Air Station (MCAS). Local residents are somewhat accustomed to the overhead roar of military jets from the MCAS. A sign near the main gate to the base reads, "Pardon our noise. It's the sound of freedom."

Noise is basically defined as unwanted or annoying sound. It is emitted from many sources including airplanes, railroads, power generating plants, and highway vehicles. Highway noise, or traffic noise, is usually a composite of noises from engine exhaust, drive train, and tire-roadway interaction. Most individuals in urbanized areas are exposed to fairly high noise levels from many sources as they go about their daily activities.

Sound pressure usually describes the magnitude of noise. Because the sensitivity of the human ear is more nearly logarithmic than linear in its response, it was determined many years ago to express sound levels on a logarithmic scale. "Decibels" are the logarithmic units used to quantify the magnitude of sound. Sound pressures described in decibels are called sound pressure levels and are often defined in terms of frequency-weighted scales (A, B, C, or D). Sound level measuring equipment usually includes weighting circuits that simulate human response to sounds of differing frequencies.

The "A" weighting circuit best simulates this human response for sounds like traffic noise. The weighted-A scale is used almost exclusively in vehicle noise measurements because it places most emphasis on the frequency characteristics (1000 – 6000 Hertz) that correspond to a human's subjective response to noise. The resulting descriptor is called "A-weighted decibels", or simply,

"dBA." Throughout this report, references are made to dBA, which means an A-weighted decibel level. Several examples of noise pressure levels in dBA are listed in Table 3.15.

Review of Table 3.15 indicates that most individuals in urbanized areas are exposed to fairly high levels from many sources as they go about their daily activities. The degree of disturbance or annoyance of unwanted sound depends essentially on three things:

1. The amount and nature of the intruding noise.
2. The relationship between the background noise and the intruding noise.
3. The type of activity occurring when the noise is heard.

In considering the first of these factors, it is important to note that individuals have different sensitivity to noise. Loud noises bother some more than others and some individuals become upset if an unwanted noise persists. The time patterns of noise also enter into an individual's judgment of whether or not a noise is offensive. For example, noises that occur during sleeping hours are usually considered to be more offensive than the same noises in the daytime.

With regard to the second factor, individuals tend to judge the annoyance of an unwanted noise in terms of its relationship to noise from other sources (background noise). The blowing of a car horn at night when background noise levels are approximately 45 dBA would generally be more objectionable than the blowing in the afternoon when background noises might be 55 dBA.

The third factor is related to the interference of noise with activities of individuals. In a 60 dBA environment, normal conversation would be possible while sleep might be difficult. Work activities requiring high levels of concentration may be interrupted by loud noises while activities requiring manual effort may not be interrupted to the same degree.

Table 3.15. Hearing Sounds Bombarding Us Daily

140	Shotgun blast, jet 100' away at takeoff Motor test chamber	PAIN HUMAN EAR PAIN THRESHOLD
130		
120	Firecrackers Severe thunder, pneumatic jackhammer Hockey crowd Amplified rock music	UNCOMFORTABLY LOUD
110		
100	Textile loom Subway train, elevated train, farm tractor Power lawn mower, newspaper press Heavy city traffic, noisy factory	LOUD
90		
80	Diesel truck 40 mph at 50' away Crowded restaurant, garbage disposal Average factory, vacuum cleaner Passenger car 50 mph at 50' away	MODERATELY LOUD
70		
60	Quiet typewriter Singing birds, window air-conditioner Quiet automobile Normal conversation, average office	QUIET
50		
	Household refrigerator Quiet office	VERY QUIET
40		
30	Average home Dripping faucet Whisper at 5' away	
20	Light rainfall, rustle of leaves	
	Whisper	AVERAGE PERSON'S THRESHOLD OF HEARING JUST AUDIBLE
10		
0		THRESHOLD FOR ACUTE HEARING

Sources: World Book, Rand McNally Atlas of the Human Body, Encyclopedia America. "Industrial Noise and Hearing Conversation" by J. B. Olishifski and E. R. Harford (Researched by N. Jane Hunt and published in the Chicago Tribune in an illustrated graphic by Tom Heinz.)

Over time, particularly if the noises occur at predicted intervals and are expected, individuals tend to accept the noises that intrude into their lives, i.e., regularly scheduled trains or subways in a city. Attempts have been made to regulate many of these types of noises including airplane noise, factory noise, railroad noise, and highway noise. In relation to highway traffic noise, methods of analysis and control have developed rapidly over the past few years.

Usually present in a particular area, existing background noise or ambient noise, results from human activity including natural and mechanical sources. To determine the ambient noise levels in the Havelock area, field measurements were taken at representative locations using a Cel-493/2 Precision Integrating Impulse Sound-Level Meter. The purpose of this noise level measurement was to quantify the existing acoustic environment and to provide a base for assessing the impact of future noise levels from the project. Two sites along existing US 70 were measured. Measurements were also taken to determine existing background noise in two neighborhoods adjacent to the Bypass. Figure 3-8 displays the location of the noise measurement sites. The measured ambient noise levels are listed in Table 3.16.

The existing noise levels of the receivers at the north and south ends of the project and near SR 1756 (Lake Road) and SR 1747 (Sunset Drive) were measured and then calculated by the current traffic noise prediction model (TNM version 2.5, February 2004) with year 2002 traffic volumes and existing roadway conditions. When calculated and measured existing noise levels were both available for a receiver, the higher noise level is used for the existing noise condition.

The ambient sound levels in Table 3.16 are in terms of equivalent sound level, or Leq. By definition, Leq is the equivalent steady-state sound level that contains the same amount of acoustic energy as a time varying sound level for the same time period. In other words, the fluctuating sound levels of traffic noise are represented in terms of a steady sound level with the same energy content.

Table 3.16. Ambient Noise Levels

Receptor Area	Location	Description	Ambient Noise Level (Leq)
1	US 70, North of Havelock, towards New Bern	Grass	69.2
2-1	US 70, South of Havelock, towards Morehead City	Grass	72.9
2-2	US 70, South of Havelock, near county line, towards Morehead City	Grass	71.6
3	SR 1756 (Lake Road)	Grass	57.0
4	SR 1756 (Lake Road), opposite trailer park	Grass	54.6
5	SR 1747 (Sunset Drive), approximately in the right of way of Alternate 2	Grass	50.5
6	A park on South Forest Drive near the Bypass Alternatives	Grass	55.5

NOTE: Traffic noise-reading sites. The ambient noise level sites were measured at 50 feet from the edge of pavement of the nearest lane of traffic.

3.3.2. Air Quality

Air pollution originates from various sources. Emissions from industry and internal combustion engines are the most prevalent sources. The impact resulting from highway construction ranges from intensifying existing air pollution problems to improving the ambient air quality. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility.

Federal standards, known as National Ambient Air Quality Standards (NAAQS), are required to set levels that protect human health. There are currently NAAQS for six pollutants and they are carbon monoxide (CO), nitrogen oxide (NO_2), ozone (O_3), lead (Pb), particulate matter (PM), and sulfur dioxide (SO_2). The main pollutants that are significant from transportation sources are carbon monoxide, ozone, and particulate matter.

Carbon Monoxide is an odorless, colorless gas that interferes with the delivery of oxygen to the body's organs and tissues. The health effects of CO vary depending on the length and intensity of exposure and the health of the individual. CO has both a one-hour and eight-hour standard. The health threat is most serious for those who suffer from cardiovascular disease. Effects of CO include dizziness headache, fatigue, visual impairment, reduced work capacity, reduced manual dexterity, and poor learning ability.

The incomplete burning of carbon in fuels such as gasoline produces CO. High concentrations of CO occur along roadsides in heavy traffic, particularly at major intersections, and in enclosed areas, such as garages and poorly-ventilated tunnels. Peak concentrations typically occur during the colder months of the year when CO vehicular emissions are greater and nighttime inversion conditions are frequent.

Automobiles are regarded as sources of hydrocarbons (HC) and nitrogen oxides (NO_2). Hydrocarbons and nitrogen oxides emitted from cars are carried into the atmosphere where they react with sunlight to form ozone and nitrogen dioxide. Automotive emissions of HC and NO_2 are expected to decrease in the future due to the continued installation and maintenance of pollution control devices on new cars. However, regarding area-wide emissions, these technological improvements may be offset by the increasing number of cars on the transportation facilities.

The photochemical reactions that form ozone and nitrogen dioxide require several hours to occur. For this reason, the peak levels of ozone generally take place 10 to 20 kilometers downwind of the source of hydrocarbon emissions. Urban areas as a whole, not individual streets and highways, are regarded as sources of hydrocarbons and are analyzed using an area-wide analysis. The emissions of all sources in an urban area mix together in the atmosphere, and in the presence of sunlight, the mixture reacts to form ozone, nitrogen dioxide, and other photochemical oxidants. The best example of this type of air pollution is the smog that forms in Los Angeles, California.

Lead (Pb) and sulfur dioxide (SO_2) emissions are predominantly the result of non-highway sources (e.g., industrial, commercial, and agricultural). Because emissions of lead matter and sulfur dioxide from automobiles are very low, there is no reason to suspect that traffic on the project will cause air

quality standards for particulate matter and sulfur dioxide to exceed the NAAQS.

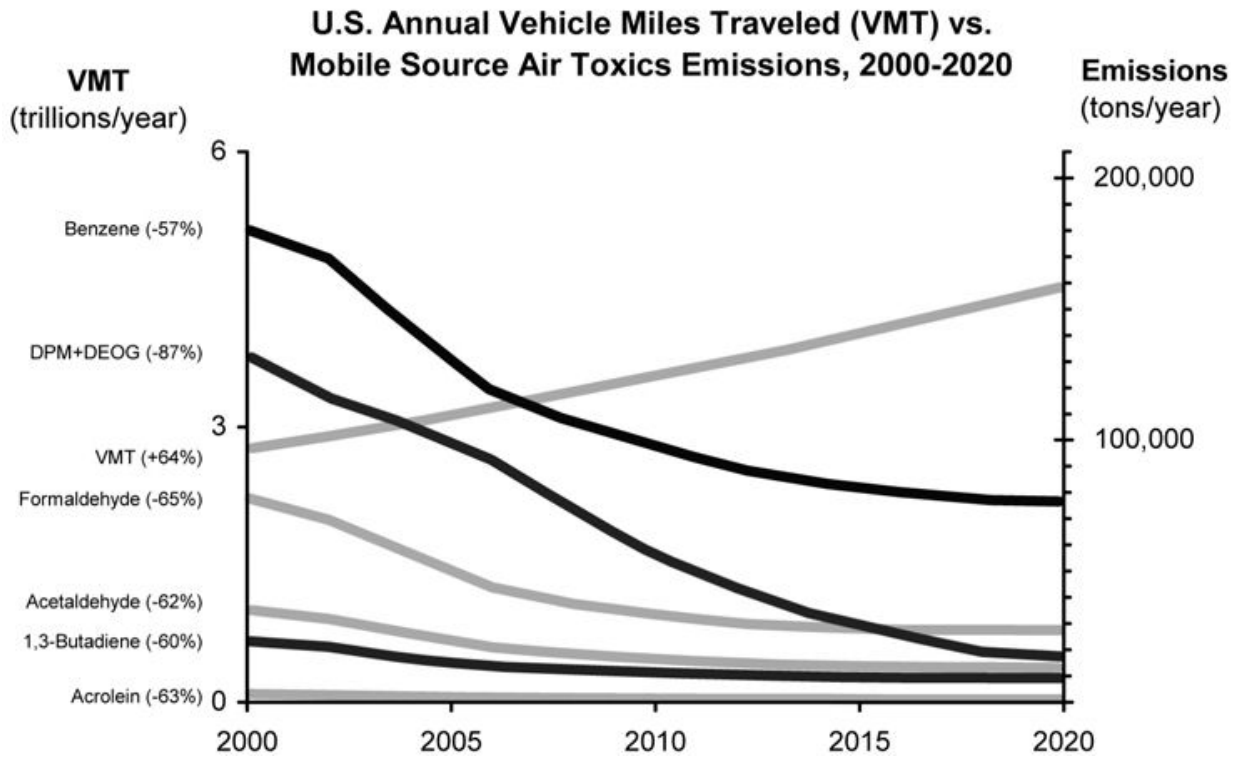
The project is located in Craven County, which has been determined to comply with the National Ambient Air Quality Standards. The proposed project is located in an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

Mobile Source Air Toxics

In addition to the criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS), the Environmental Protection Agency (EPA) also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries). Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead Federal Agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources [66 FR 17229 (March 29, 2001)]. This rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and

acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent, as shown in the graph below.



Notes: For on-road mobile sources. Emissions factors were generated using MOBILE 6.2. MTBE proportion of market for oxygenates is held constant, at 50 percent. Gasoline RVP and oxygenate content are held constant. VMT: Highway Statistics 2000, Table VM-2 for 2000, analysis assumes annual growth rate of 2.5 percent. "DPM + DEOG" is based on MOBILE 6.2-generated factors for elemental carbon, organic carbon and SO4 from diesel-powered vehicles, with the particle size cutoff set at 10.0 microns.

As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under authority of CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.

3.3.3. Farmlands

Prime, unique, statewide, and locally-important farmlands are classified by soil type. Those areas where soil types result in such a farmland designation may or may not be used for agricultural purposes. Urban or built-up land 10 acres or more in size, public land, and water areas cannot be considered prime farmland. In the study area, the Croatan National Forest contains large areas of prime and state-important farmland soil types. However, since it is public land, these areas are not considered prime farmlands.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. Farming these soils results in the least damage to the environment.

As defined in the U.S. Department of Agriculture, Important Farmlands in North Carolina[19], nearly 15 percent of Craven County is designated as prime farmland. This farmland occurs throughout the County on uplands and stream terraces mainly in areas near major drainage ways. The four prime farmland (P1) soils identified in the project area are as follows: Craven silt loam (CrB), Goldsboro loamy fine sand (GoA), Norfolk loamy fine sand (NoB) and Onslow loamy sand (On). Five (P2) soils that are prime farmlands if drained are also identified in the project area as follows: Lynchburg fine sandy loam (Ly), Masontown mucky fine sandy loam (MM), Pantego fine sandy loam (Pa), Rains fine sandy loam (Ra) and Torhunta - Urban land complex (To). Two (S2) soils, Lenoir silt loam (Le) and Bayboro mucky loam (Ba) are farmlands of statewide importance if drained.

As required by the Farmland Protection Act, this project was coordinated with the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS also known as the Soil Conservation Service [SCS]). According to the NRCS, all of the bypass alternatives will involve the use of some lands with the prime farmland designation. The completed Farmland Conversion Impact Rating form (Form AD-1006) is included in Appendix A1.

3.3.4. Utilities

Electric Power Transmission Service

Three different distributors provide electric power to the City of Havelock and surrounding areas. These are the Carteret-Craven Electric Cooperative, Progress Energy and the City of New Bern. The Carteret-Craven Electric Cooperative provides electric service east of SR 1746 (Greenfield Heights Boulevard) and north of SR 1745 and SR 1763 (Miller Boulevard). Northwest of Greenfield Heights Boulevard, along existing US 70, Progress Energy and the City of New Bern both provide service to local customers.

In addition to the local service, several high-voltage electric transmission lines are located in the project area. Progress Energy owns all of these lines. The Progress Energy lines are located on easements west of the North Carolina Railroad. All of these lines converge at a large substation located along SR 1826 near the Gurganus Elementary School. A 115 KV line traverses the Croatan National Forest connecting Havelock to New Bern, Morehead City, and Beaufort. This line is crossed on National Forest System lands by all three bypass alternatives at the northwestern end of the project, and again near the East Prong Slocum Creek crossing at the southeastern end of the project. Another 230 KV line which is generally located further west of the 115 KV line, connects Havelock with New Bern, Jacksonville and Morehead City. This 230KV line is crossed on National Forest System lands by Alternates 2 and 3 approximately 4500 feet south of the substation, and again by all three bypass alternatives at the southeastern end of the project east of the North Carolina Railroad (NCRR). If relocations or upgrading of these facilities is required as a result of this project, coordination with the U.S. Forest Service and Progress Energy will be required.

Water and Sewer Service

The City of Havelock, Craven County, and the Cherry Point Marine Corps Air Station (MCAS) maintain separate water and sewer systems. Within the Havelock City Limits, these services are provided by the City and Cherry Point systems. It was noted in discussions with local planners and

developers that the presence of the railroad tracks is an impediment to the extension of water and sewer lines into developable lands across the tracks. Outside of the City limits, residents and businesses are not served by these systems (Figures 3-12 and 3-13). Craven County does not provide these services to any of the study area. Other than in the Carolina Pines development, located off of existing US 70 northeast of the project study area, private wells and septic tanks provide water and sewer for the local County residents.

Water Service

The City's water supply is taken from wells that draw from the Castle Hayne aquifer. The City has two treatment facilities, both of which are north of existing US 70. The City provides water to approximately 5,500 residential customers and 250 business customers. This system has approximately 50 miles of water lines and is presently pumping an average of 1.2 million gallons per day (MGD). This system has a pumping capacity of 2.4 MGD.

The potable water supply at the Cherry Point MCAS is also pumped from wells and treated at a central base facility. This water treatment system has an average use of 4 MGD and a capacity of 6 MGD.

Sewer Service

The City of Havelock provides a complete sewer collection system for residents and businesses within the City limits. The sewage is treated at the City's wastewater treatment plant located on Jackson Drive, north of existing US 70. The effluent is discharged into the East Prong Slocum Creek. The sewage treatment facility treats 1.33 to 1.5 MGD and has a 1.9 MGD permitted capacity.

The Cherry Point MCAS also operates an independent sewage disposal system that has an average use of 2.3 MGD and a permitted capacity of 3.5 MGD. The wastewater effluent is discharged into the Neuse River.

Carolina Pines Utility, located north of the project study area has a permitted discharge of 0.5 MGD directly into the Neuse River.

Solid Waste Disposal Service

A private hauler under County contract provides solid waste collection in the City of Havelock. The City picks up yard trimmings, used furniture, and used appliances. The yard trimmings are taken to a composting site in New Bern and the used appliances and furniture are taken to the County's waste transfer station. The Craven County waste transfer station also accepts household waste from County residents. All waste accepted at this station is transferred to other waste disposal facilities outside of the project area. This transfer station is located approximately 0.5 miles northwest of the existing US 70 and SR 1760 (Hickman Hill Loop Road) intersection.

Natural Gas Service

Piedmont Natural Gas currently provides natural gas service via a line running from New Bern to Morehead City that runs along US 70 and along McCotter Boulevard. Local LP gas distributors provide gas for private storage tanks in the area.

3.3.5. Visual Quality

A Visual Analysis was conducted by the U.S. Forest Service in 1996 to assist in the evaluation of the proposed project (Highway 70 Bypass, Croatan National Forest, Analysis of the Scenic Resource, Prepared by Kathy Ludlow, Landscape Architect, November 1996). For the inventory and analysis of the aesthetic values of National Forest lands, the Forest Service uses a system called the Scenery Management System (SMS). This system evolved from and replaces the Visual Management System that was used in writing the Croatan and Uwharrie Land and Resource Management Plan, 1986. The revision of the Croatan Plan was done utilizing SMS.

The Scenery Management System process involves identifying scenery components as they relate to people, mapping these components, and developing a value unit for aesthetics from the data gathered. This value unit provides information for planning and leads to rational decisions relative to scenery as a part of ecosystems. These scenery components include the following elements. Scenic Attractiveness classes which are developed to determine the relative scenic value of the lands within a particular landscape character. They are the primary indicator of the intrinsic beauty of the landscape and the positive responses it evokes in people. The three classes are Class A, Distinctive; Class B, Typical; and Class C, Indistinctive. On the Croatan, Class A landscapes include rivers, lakes and sounds, marshes and tidal influence areas, swamp forests, low pocosin, long leaf pine savannas with wire grass understory, and hardwood slopes. Class B landscapes include High pocosin, Pond Pine forest, mixed pine forest, and mixed pine and hardwood forest. Class C landscapes include areas where the vegetation and/or landform has been significantly altered by human activity.

Existing Scenic Integrity is a measure of the degree to which a landscape is visually perceived to be intact or whole. It indicates the current status of a landscape; and indicates the existing degrees of alteration from the attributes – form, line, color, and texture- of the landscape character. The six scenic integrity levels and descriptions for the Croatan are: Very High (unaltered) and includes wilderness, low pocosin, and other undisturbed areas; High (appears unaltered) and includes vegetative stands over 60 years old and some evidence of prescribed burning and/or fire plow lines or skid roads; Moderate (slightly altered) and includes vegetative stands 41–60 years old, some drainage ditches and some evidence of prescribed burning, rows in timber plantations not apparent; Low (moderately altered) and includes wildlife openings with geometric shapes, vegetative stands 21–40 years old where rows are evident, and recreation, summer home and administrative sites where the structures are evident; Very Low (heavily altered) and includes vegetative stands 1-20 years old with rows very evident, roads which are mostly straight with drainage ditches, transmission lines which are straight but have vegetative understory, and fire plow lines; and Unacceptably Low and includes borrow pits, railroads, landfill and urban development.

Landscape Visibility is composed of two parts: human values as they relate to the relative

importance to the public of various scenes and the relative sensitivity of scenes based on distance from the observer.

Human Values – Constituent Analysis serves as a guide to perceptions of attractiveness, helps identify special places, and helps to define the meaning people give to a landscape. It discusses visitor values, desires, and expectations for what they will encounter in terms of landscape character and scenic integrity in the Forest. These are defined by sites, travelways, and special places and use a rating of high, medium and low. The Croatan is becoming a major tourist draw along the central North Carolina coast because of its year-round recreation opportunities. Visitors come for nature study and to view the unique habitats and inhabitants. Although people living near the Forest are less interested in the visual issues associated with timber management, visitors to the Forest often have preconceived images of huge white oaks draped in Spanish moss growing along white sandy beaches. The US 70 highway corridor under this system is a secondary travelway with high use and the people using the highway probably have moderate interest in the scenery they are driving past.

Seen Areas and Distance Zones – These are mapped from the areas determined by constituent analysis as having a level of concern. Mapping indicates the relative sensitivity of scenes based on their distance from an observer. The zones are Foreground (up to ½ mile from the viewer), Middleground (up to 4 miles from the Foreground), and Background (4miles from the viewer to the horizon). The Croatan because of the flat topography has only Foreground and Middleground distance zones.

The area being analyzed for the US 70 Havelock Bypass includes the existing US 70 corridor from the beginning of the proposed Bypass on the north to where it ties back in to US 70 on the south and the national forest land primarily west of existing US 70. The analysis area breaks down to include approximately 25 to 40 percent Scenic Attractiveness Class A (distinctive), 10 to 20 percent Class B (typical), and 40 to 50 percent Class C (indistinctive). Scenic Integrity of these areas includes primarily Moderate (slightly altered) with some High (appears altered), road corridors which are Low and power line corridors which are Very Low. Distance Zone is Foreground because

of the topography and the Concern Level is Moderate, consistent with the existing use and designation of US 70.

3.3.6. Hazardous Materials

A survey to identify known and potential hazardous material sites as well as hazardous waste generators was conducted in the vicinity of Havelock. A search of records at the N.C. Department of Environment and Natural Resources (DENR), Division of Solid Waste Management, indicated that there are no listed hazardous waste sites along the project study corridors. The records identified a closed solid waste landfill site located in the Croatan National Forest behind the current County waste transfer site on the southwest side of existing US 70 near the northern project terminus (see Figure 3-1). The County operated this landfill in the 1960's with the objective of filling a marl pit on the property. U.S. Forest Service and Craven County records indicate the exact boundaries of the landfill are not available.

The U.S. Forest Service has indicated a potential contamination issue at the Craven County Waste Transfer Station on National Forest System lands. They have directed the County to clean spills, repair containers for hazardous waste, and install secondary containment systems for all containers intended for liquid or hazardous waste.

A review of records from DENR, Division of Water Quality, Groundwater Section in concert with field investigations resulted in the identification of numerous underground storage tanks (UST) located along existing US 70 in Havelock. However, no UST sites were identified in the project study area.

One potential site for contaminated soils or groundwater, an automobile salvage yard, is located along the southeastern side of SR 1756 (Lake Road) within the project study area (see Figure 3-1). The soils or groundwater at this site could be contaminated by gasoline, oil, battery acid, or other such contaminants found in motor vehicles. Foss Auto Salvage located at 901 Lake Road in Havelock operates the business.

3.3.7. Mineral Resources

A June 1997 study of the files in the N.C. Department of Environment and Natural Resources, Division of Land Resources, Land Quality Section revealed there were thirty-five proposed or existing mines including twenty-six (26) that were active and two (2) seeking permits in Craven County since they began permitting mines in 1971. Of the thirty-five (35) mines, twenty-eight (28) were listed as sand and gravel mines. There are eight (8) sand and gravel mines including one (1) inactive, one (1) proposed and six (6) active mines listed in the immediate vicinity of Havelock. Of these, only one (1) inactive mine is located in the study area. This inactive mine site is mentioned above in the Hazardous Materials section. It is located on National Forest System lands behind the Craven County Waste Transfer Station where Craven County formerly operated a landfill in the 1960's to fill the mine pit (see Figure 3-1). No other potential mineral resource sites within the study area are known.

3.3.8. Floodplains/Floodways

The Neuse River and adjacent wetlands, under normal weather conditions, experience primarily wind-generated tides. The dominant source of flooding in the area is storm surge from the Atlantic Ocean. The storm surge propagates into the Pamlico Sound and inland up the Neuse River and Slocum Creek. In the Havelock area, the overall storm surge elevations are greatest during hurricanes and relatively insignificant during northeasters. Riverine flooding from heavy rainfall also occurs along Tucker Creek, Southwest Prong of Slocum Creek, and East Prong of Slocum Creek.

A floodway and floodplain evaluation was conducted in accordance with Executive Order 11988 - Floodplain Management and 23 CFR 650, Subpart A. Craven County and the City of Havelock are both participants in the regular program of the National Flood Insurance Program (NFIP). The NFIP defines a floodplain as any land area susceptible to being inundated by water. A regulatory floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water elevation more than a

designated height.

In NFIP regular program communities, the Federal Emergency Management Agency (FEMA) has conducted detailed flood studies to determine designated floodways to safely remove floodwater during flooding events. These studies result in flood boundary and flood insurance mapping. These maps indicate the regulatory floodways and base (100-year) floodplains for the major watercourses. In the study area, these watercourses include Tucker Creek, Southwest Prong of Slocum Creek, and East Prong of Slocum Creek.

The project study area is located within the detailed flood study limits and regulatory floodway for Tucker Creek. The crossings of the Southwest Prong of Slocum Creek and the East Prong of Slocum Creek are also located within a limited detailed flood study (see Figure 3-9) which has been extended upstream of the former limits. The northernmost terminus of the project study area crosses the headwaters of Goodwin Creek, a tributary of Tucker Creek.

The base (100-year) floodplains and detailed flood study limits in the project study area are described below.

Tucker Creek (including several headwater tributaries upstream of existing US 70) crosses the project study area. In the study area, the 100-year floodplain of Tucker Creek varies from 50 to 500 feet in width. According to the detailed flood study for Tucker Creek, immediately downstream of the study area, the designated floodway is 100 feet wide with a 100-year flood elevation of 19.8 feet. Existing US 70 will merge with the northern end of the Bypass in this area and as a result, the existing culvert crossing at Tucker Creek will be extended upstream.

The project study area crosses the Southwest Prong Slocum Creek upstream from the upper limit of the former detailed flood study. However, a recent limited detail study has extended the limit to include the project study area. Due to the relatively flat terrain in the vicinity, the floodplain width across the study area varies from 600 to 2000 feet. The former detailed flood study for Southwest Prong Slocum Creek ended upstream of the Greenfield Heights Boulevard crossing. According to

the detailed flood study, the floodway width downstream of this crossing is 233 feet. The 100-year flood elevation within the floodway at this location is 7.8 feet.

The floodplain of East Prong Slocum Creek is approximately 700 to 2300 feet wide in the study area. The former detailed flood study for East Prong Slocum Creek ended upstream of the existing development near the North Carolina Railroad (NCRR). However, a recent limited detail study has extended the limit to include the project study area. According to the detailed flood study, the 100-year flood elevation with a 391-foot wide floodway at the NCRR is 13.9 feet. The floodway width downstream of existing US 70 is 135 feet. The 100-year flood elevation at existing US 70 is 9.3 feet. This floodplain is undeveloped and consists of predominantly pine-dominated forest alongside a cleared electric power transmission line corridor.

The floodplains for Tucker and Slocum Creeks and their tributaries, attenuate stormwater runoff, reducing the impacts of major riverine flooding events. The three alternatives cross a tributary to Tucker Creek, the Southwest Prong of Slocum Creek, and the East Prong of Slocum Creek. The NCDOT Hydraulics Unit will coordinate with the N.C. Floodplain Mapping Program (FMP), to determine the status of the project with regard to applicability of NCDOT's Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

3.3.9. Protected Lands

3.3.9.1. Wild and Scenic Rivers

There are no water bodies within the study area deserving special attention as denoted under the Federal Wild and Scenic Rivers Act of 1968 (Pub. L. No. 90-542, 82 Stat. 906; codified and amended at 16 U.S.C. 1217-1287 (1982)) or under the N.C. Natural and Scenic Rivers Act of 1971 (G.S. 133A-30).

3.3.9.2. State/National Forests

The Croatan National Forest's ±160,000 acres lie partly within the project study area. The Croatan National Forest is generally bounded by US 17, US 58, NC 24, Newport River, and Neuse River. As discussed throughout this document, the forest contains numerous natural features including pocosin habitat, estuaries, and a large number of carnivorous plants. Estuaries are the areas at the lower ends of rivers where fresh water meets salt water and is influenced by tides. It is near the northern range limit of the American alligator and provides habitat for the red-cockaded woodpecker (RCW). Much of the forest can be characterized as a coastal plain forest that includes densely vegetated pocosins that support a wide range of wildlife, ridges that support longleaf pines, hardwood wetlands with sluggish, meandering streams with cypress trees that provide habitat for songbirds and other unique biological and topographical features.

Highlights of the Croatan National Forest are the Cedar Point Tideland Trail near Cape Carteret, the Island Creek Forest Walk, and the Neusiok Trail beginning at a Neuse River estuary and ending at Oyster Point. Wilderness areas include the Pocosin Wilderness, Pond Pine Wilderness, Catfish Lake South Wilderness, and Sheep Ridge Wilderness. None of the Havelock Bypass alternatives impact these designated areas.

There are no other State or National Forests in the project area.

3.3.9.3. Gamelands and Preservation Areas

Although created to acquire lands needed for timber production as well as protecting flow of navigable streams, the Croatan National Forest is a gameland open to fishermen and hunters with the proper licenses and permits.

The N.C. Natural Heritage Program (NCNHP) was contacted to identify preservation areas in the vicinity of the project. Several sites were identified including the Masontown Pocosin Natural Area, the Havelock Station Flatwoods and Powerline Corridor Natural Area, the Southwest Prong

Flatwoods Priority Area, the Cherry Point Tucker Creek Natural Area, and the Paupers Island/Goodwin Creek Natural Area. The locations of these areas are shown in Figure 4-3. These areas have been identified because they include large, steady-state, contiguous communities, unique ecotonal fringes, and important wetland corridors which may serve as critical habitat for wildlife.

Masontown Pocosin Natural Area is located approximately 1,000 feet southwest of the southern terminus of all three detailed study alternatives, none of which encroach into the area. Masontown Pocosin Natural Area denotes a large pocosin preserve within the Croatan National Forest Megasite. This contiguous pocosin ecosystem most likely harbors a variety of proposed, endangered, threatened, and sensitive species, and rare or unique plant associations. The difficulty in gaining access to the interior of Masontown Pocosin and the lack of recent disturbance to the site warrants protection of this area as a bioreserve.

The Havelock Station Flatwoods and Powerline Corridor Natural Area consists of pine flatwoods dominated by longleaf pine, with two powerline corridors featured prominently through the area. The powerline corridors have created savanna-like conditions conducive to many rare plants. This natural area occupies a large area of National Forest System lands east of Lake Road and south of the railroad, and is crossed by all three bypass alternatives.

The Southwest Prong Flatwoods Priority Area (shown in Figure 4-3) located north of SR 1747 (Sunset Drive), encompasses a mesic pine flatwoods community and numerous transitions into wet pine flatwood variants. This area includes a red-cockaded woodpecker (RCW) cluster, extensive RCW habitat, and Proposed, Endangered, Threatened, and Sensitive (PETS) species populations within the power line easement that bisects this flatwood community. This natural area occupies a large portion of the National Forest System lands north of Sunset Drive between the Alternates 1 and 3, and extends northward along a powerline corridor towards US 70. This natural area is crossed by both Alternate 2 and Alternate 3 (the Preferred Alternative) with Alternate 3 impacting slightly more of this natural area.

The Cherry Point Tucker Creek Natural Area and the Paupers Island/Goodwin Creek Natural Area

are located approximately 1000 feet east of the northern terminus of all three bypass alternatives.

3.4. Cultural Resources and Section 106 of the National Historic Preservation Act of 1966

Cultural resources investigations were undertaken to identify potentially-important historic architectural and archaeological resources within the study area to address the requirements of Section 106 of the National Historic Preservation Act of 1966. Reports were prepared to document the information obtained during these investigations. The historic architectural survey report entitled An Architectural Resources Survey and Evaluations for the US 70, Proposed Havelock Bypass (September 1993), the archaeological background report entitled Archaeological Background Report, US 70 Havelock Bypass, Craven County, North Carolina[20] (January 1997), and the archaeological survey report entitled An Intensive Archaeological Survey of the Preferred Corridor for the US 70 Havelock Bypass, Craven County, North Carolina (April 2000) are available for review at the North Carolina Department of Transportation in Raleigh, North Carolina. In the project vicinity, one historic architectural property was identified, seven previously recorded archaeological sites were located, and fifteen previously unrecorded archaeological sites were discovered.

3.4.1. Historic Architectural Resources

The historic architectural resources survey was conducted in accordance with Section 106 of the National Historic Preservation Act of 1966 and guidelines set forth by the NCDOT and the North Carolina State Historic Preservation Office (SHPO). The survey was conducted in two phases. In September 1992, a reconnaissance survey was conducted, and in August 1993, a determination of the Area of Potential Effect (APE) was made and identified properties in the APE were evaluated.

One property within the APE for the proposed project was identified as potentially-eligible for the National Register of Historic Places[21].

Property: The Needham B. White House

Location: Southwest side of existing US 70, at junction with SR 1737 (Roosevelt Boulevard)

Date: ca. 1840

Style: Vernacular Federal

Description: A story-and-a-half, three-bay-wide frame dwelling with a side-gable roof, stepped single-shoulder, gable-end chimneys of five-to-one common bond brick, and symmetrically-arranged doors and windows.

Evaluation: Placed on the Study List for the National Register[21] in 1989, the house is essentially unchanged since that date. The Needham B. White House is eligible for inclusion on the National Register under Criterion C in the Area of Architecture. The house, though altered, contains a significant late-federal interior and a "surprisingly stylish" interior finish, center hall plan, and upstairs fireplace, unusual for houses of this form in Craven County.

3.4.2. Archaeological Resources

A staged archaeological background study and field reconnaissance of the study alternatives, entitled Archaeological Background Report US 70 Havelock Bypass Craven County, North Carolina[20] (Greg C. Smith, 1997) was conducted for the US 70 Havelock Bypass. The purpose of the background work was to provide a framework and general understanding of the types of archaeological resources in the project vicinity. Maps, historical documents, and information about local history in the Croatan National Forest Ranger station, State Archives, Duke University's Special Collections, the Southern Historical Collection, the University of North Carolina's North Carolina Collection, North Carolina State University, New Bern Public Library, and the New Bern Historical Society were consulted.

The background study revealed no sites listed in or eligible for listing in the National Register of Historic Places[21]. The study noted twenty previously-recorded archaeological sites within the project study area. Seven of these previously-recorded archaeological sites (31CV62, 31CV163**, 31CV164**, 31CV166**, 31CV168, 31CV169**, and 31CV170**) are located within the proposed corridors. Of these, only two sites (31CV164** and 31CV170** both located on National Forest

System lands) were recommended for further testing to determine if they are eligible for listing. Most of the previously-recorded sites in the project vicinity are small, often nondiagnostic prehistoric and late 19th/early 20th century sites. The majority (55 percent) of the sites are earthen tar kilns located in poorly-drained areas, while 15 percent of the sites represent small Woodland Period sites situated in well-drained areas near a permanent water source. This study was provided to both the North Carolina Deputy State Historic Preservation Officer and the U.S. Forest Service, National Forests in North Carolina's Heritage Resources Staff Director (See the North Carolina Deputy State Historic Preservation Officer letter dated May 15, 1997 and the U.S. Forest Service, National Forests in North Carolina's Heritage Resources Staff Director letter dated June 11, 1997 in Appendix A2 and A1).

Based upon previous archaeological work in Craven County and results of the background study, an intensive terrestrial archaeological survey of the high probability soil within the Alternate 3 (the Preferred Alternative) Area of Potential Effect (APE = 327 acres) was conducted in 1999 (Smith et al. 2000). The NCDOT and FHWA coordinated with the SHPO and USFS to develop a mutually satisfactory Scope of Work for this terrestrial survey. As a result, 15 previously unrecorded archaeological sites were discovered. Subsurface testing demonstrated that 14 of the sites do not exhibit characteristics that would make them eligible for listing in the National Register of Historic Places[21] (NRHP). However, one site, 31CV302, located on National Forest System lands was found to contain intact subsurface deposits that have the potential to contribute new information regarding regional prehistory; therefore, Site 31CV302 is recommended as eligible for the NRHP per Criterion D. Two previously recorded archaeological sites (31CV164** and 31CV170**) were found and evaluated during the course of the intensive survey. Site 31CV164** was investigated and recommended as not eligible for the NRHP. Site 31CV170** was not fully assessed because its location was considered outside the project limits; however, it was recommended as eligible for the NRHP per Criterion A according to its archaeological site form on file at the Office of State Archaeology. In a letter dated December 22, 2004, the SHPO concurred with these findings (see Appendix A2).

Two cemeteries (Rowe Family Cemetery [Site 31CV300**] and Wynne Family Cemetery

[31CV301**] neither located on National Forest System lands) have been recorded within the project vicinity. Based on current design plans, neither cemetery is located within the Area of Potential Effect. If design plans change prior to construction and avoidance is no longer possible, then relocation in accordance with existing State statutes is appropriate.

3.5. Natural Environment Characteristics

The discussions of natural environment characteristics found in this chapter are taken from the Natural Resources Technical Report, US 70 Havelock Bypass DEIS, Craven and Carteret Counties, North Carolina, State Project No. 8.T170701, T.I.P. No R-1015, prepared for the North Carolina Department of Transportation, Division of Highways, Planning and Environmental Analysis Branch, Natural Environment Unit, Raleigh, North Carolina, May 2007[22] that was prepared by Environmental Services, Inc.

Materials and research data in support of this investigation have been derived from a number of sources. The United States Geological Survey (USGS) 7.5-minute [Havelock, NC (1994)[23], Masontown, NC (1994)[24]] topographic quadrangle maps depicting the project study corridors were consulted to determine physiographic relief and to assess landscape characteristics. The National Wetlands Inventory (NWI) maps (USFWS 1988)[25] of these same quadrangles were reviewed prior to the initiation of field studies. Additional information on soils, topography, and physiography was obtained from the county soil survey available through the Natural Resource Conservation Service (NRCS) for Craven (USDA 1989[26]) and Carteret (USDA 1987[27]) Counties.

Aerial photographs provided by NCDOT for the project study corridors provided an overview of baseline features in the project study area. These photographs served as the basis for mapping the vegetative communities and jurisdictional areas. Vegetative community distributions were approximated from available mapping sources and verified in the field. Dominant components of these communities were examined and the species composition of each was recorded. Vegetative community designations are generally based on the classification system developed by Schafale and Weakley (1990)[28]. When appropriate, community designations have been modified to better reflect

field observations. Vascular plant names generally follow nomenclature found in Kartesz (1999)[29]; plant names used on data forms generally follow Radford *et al.* (1968)[30] based on the widespread usage of this source for wetlands regulatory purposes.

Surface waters within the project study corridors were visited and evaluated to ascertain physical characteristics. All stream channel segments within the project study area were classified using the Natural Stream Channel Classification System (Rosgen 1996[31]) and the Cowardin classification system (Cowardin *et al.* 1979[32]). Water quality information for streams and tributaries within the project study area were derived from available sources provided through the N.C. Department of Environment and Natural Resources (DENR) (DWQ 2006a[33]).Quantitative sampling was not undertaken to evaluate the DENR data.

Jurisdictional wetlands were identified using the three-parameter approach (hydrophytic vegetation, hydric soils, and hydrology) outlined in the Corps of Engineers Wetlands Delineation Manual (DOA 1987[34]). Jurisdictional areas within the Alternate 3 preliminary design limits were originally delineated in 1997-1999 and updated in January 2005. Jurisdictional areas within the Alternates 1 and 2 preliminary design limits were field-delineated from April 2004 to October 2004. The detailed study corridor for Alternate 3 was field verified by the U.S. Army Corps of Engineers (USACE) in 1999 and the reevaluation approved the USACE in January 2005. The detailed study corridors for Alternates 1 and 2 were field verified by the USACE on 28 October 2004. The USACE field verified Stream S-9 in the Alternate 3 corridor on 11 May 2005 and issued a Notification of Jurisdictional Determination to NCDOT on 10 May 2006 (expiration date 10 May 2011) covering all three detailed study corridors. Additional areas at interchanges outside the original project study corridors, but within the project alignments were delineated on 28 August 2006.

Wildlife distribution and habitat use were determined through field observation, evaluation of habitat type distributions, and a review of supporting literature (Martof *et al*. 1980[35], Potter *et al*. 1980[36], Webster *et al*. 1985[37], Menhinick 1991[38], and Rohde *et al.* 1994[39]). Techniques used to document terrestrial fauna included visual observation, identification of bird and frog calls and songs, and identification of tracks and scat.

The lists provided by the U.S. Fish and Wildlife Service (USFWS) of federally-protected species with ranges extending into Craven and Carteret Counties was reviewed prior to initiation of field studies and updates checked regularly throughout the project investigation (latest referenced lists dated September 22, 2010 - Craven County, and March 21, 2011 - Carteret County). Records maintained by the N.C. Natural Heritage Program (NCNHP) were consulted for documented occurrences of federal-listed and state-listed species before commencing the field effort and periodically updated (most recent update 11 August 2006). *BasinPro, Version 3.1*[40], was reviewed to determine if any project study area streams were considered Significant Aquatic Endangered Species Habitat (NCGIA 2002). The North Carolina Wildlife Resources Commission (NCWRC) was contacted regarding anadromous fish habitat within the project study corridors. A general literature review provided information on the distribution and ecological requirements of various taxa. The U.S. Forest Service was consulted to identify species listed as Proposed, Endangered, Threatened, and Sensitive (PETS) species on the Croatan National Forest (latest list update: October 2010) that will be evaluated for portions of the project study area that cross National Forest System (NFS) lands.

3.5.1. Soils/Topography/Geology

The study area is in the Coastal Plain Region of North Carolina. The topography of the study area is characterized by nearly-level stream terraces dissected by drainageways, with the land gently sloping toward the Neuse River to the east. Slopes are nearly flat with only a few areas having slopes greater than 12 percent. Elevations range between approximately 30 feet above mean sea level (msl) in uplands to approximately five feet above msl in marshes and streambeds. Dominant topographic features occurring in the study area include uplands, floodplains along streams, and stream terraces.

Geology and Soils

The study area is located in the Coastal Plain physiographic province of North Carolina and is underlain by the Dublin Formation. This geologic formation is characterized by shelly,

medium-to-coarse-grained sands, sandy marls, and limestones which are generally bluish-gray in color.

There are seven hydric soil mapping units within the project study corridors: Bayboro mucky loam; Croatan muck; Leaf silt loam; Masontown mucky fine sandy loam and Muckalee sandy loam; Pantego fine sandy loam; Rains fine sandy loam, and Torhunta fine sandy loam (USDA 1991[41]). The project study corridors also contain two non-hydric soil mapping units that may contain hydric inclusions: Lenoir silt loam and Lynchburg fine sandy loam (USDA 1991[41]). Six other non-hydric soil mapping units occur within the project study area. All soil mapping units within the project study area are listed in Table 3.17.

Table 3.17. Soils in the Study Area

Soil Name	Map Symbol	Drainage Class	Hydric Status
Bayboro	Ba	Very Poorly Drained	Hydric
Craven	CrB	Moderately Well Drained	Non-hydric
Croatan	CT	Very Poorly Drained	Hydric
Goldsboro	GoA	Moderately Well Drained	Non-hydric
Leaf	La	Poorly Drained	Hydric
Lenoir	Le	Somewhat Poorly Drained	Hydric*
Lynchburg	Ly	Somewhat Poorly Drained	Hydric*
Masontown	MM	Very Poorly Drained	Hydric
Muckalee	MM	Poorly Drained	Hydric
Norfolk	NoB	Well Drained	Non-hydric
Onslow	On	Moderately Well Drained	Non-hydric
Pantego	Pa	Very Poorly Drained	Hydric
Rains	Ra	Poorly Drained	Hydric
Suffolk	SuD	Well Drained	Non-hydric
Torhunta	To	Very Poorly Drained	Hydric
Udorthents	Ud	NA	Non-hydric

* Soil mapping unit primarily non-hydric but which have hydric inclusions

3.5.2. Biotic Communities and Wildlife

3.5.2.1. Terrestrial Communities and Wildlife

Terrestrial Communities

Distribution and composition of vegetative communities throughout the project study area reflect landscape-level variations in topography, soils, hydrology, and past or present land use practices. Development and other disturbances have resulted in the present vegetative patterns. Nine major vegetative community types were identified in the project study area. Examples of these communities identified on private lands typically include a greater component of invasive and successional species that are excluded from National Forest System (NFS) lands through fire and other management regimes. Five vegetative community types are further divided by characteristics of hydrology or vegetation. One vegetative community type, rural/urban modifications, is used to include all obvious human-maintained landscape modifications including roads, residential areas, businesses, etc. Communities sustaining recent or regular disturbance are included under the successional/ruderal habitat community type. Vegetative community mapping is depicted in Figures 3-10 A through 3-10 E. The vegetative community names have been adopted and modified from the N.C. Natural Heritage Program classification system units (Schafale and Weakley 1990[28]) and the descriptions written to reflect local variations within the project study corridors. Each vegetative community is described in detail below.

<u>Pine Flatwoods (Mesic PFm, Hydric PFh)</u>

This community type is synonymous with the mesic and wet pine flatwoods communities described in Schafale and Weakley. Pine flatwoods is the most abundant community type within the project study corridors. Mesic, or moist and hydric, or wet, variations have been mapped. Pine flatwoods develop naturally when landscapes in this region are exposed to regular fire. In many of the private lands, fire has been suppressed, whereas in Croatan National Forest the burning cycle is more systematically and evenly applied. Under completely natural conditions fires would be more random

and the effects would be more discontinuous. Doubtless, more severe fires would result under natural conditions, and the resulting seres would be considerably different than those that currently exist in the project study area. Naturally, the landscape would support more of a heterogeneous mosaic of forest seres. Not only frequency, but also severity of fires governs the density of vegetation through pine flatwoods. The difference between mesic and hydric pine flatwoods variations is the greater tendency for the hydric form to hold moisture for longer periods of time during and following precipitation. Hydric flatwoods are not permanently wet, but may be wet in those winter seasons experiencing normal or above normal rainfall.

Pine flatwoods are dominated by two, or sometimes three, strata or vegetation layers. The uppermost layer or canopy is composed primarily of pine. Longleaf pine (*Pinus palustris*) is prevalent in dryer areas or mesic sites while loblolly pine (*Pinus taeda*) and/or pond pine (*Pinus serotina*) are most abundant in wetter or hydric areas (scientific and common names of vascular plants covered in this section generally follow Kartesz 1999[29]). Under a regime of intermittent fire, a single layer of two to five foot high shrubby vegetation composed of tree and shrub species is common in the mesic and hydric variations of this type. Occasional young trees may extend above the shrub stratum. Within the communities examined, pine stems are usually within the 14 to 20 inch classes, but stands of younger trees can be found, particularly paralleling utility corridors. The pine canopies are not usually dense, due to thinning, and provide only a characteristic 20 to 25 percent cover over the forest floor. Shrub covers are much higher and approach 100 percent in some thick areas, but most usually do not exceed 60 to 70 percent cover. Herbaceous species generally provide scattered, sparse cover except in a few areas where high light levels reach the forest floor.

The single most abundant shrub species in mesic areas is blue huckleberry (*Gaylussacia frondosa*). Sweetgum (*Liquidambar styraciflua*) is the most abundant tree species present below the pine canopy, but this species may be represented by only shrub or sapling-sized individuals. Other woody species frequently present in mesic areas include horsesugar (*Symplocos tinctoria*), southern bayberry (*Morella cerifera*), swamp bay (*Persea palustris*), and small black blueberry (*Vaccinium tenellum*). Yellow jessamine (*Gelsemium sempervirens*) is a frequent woody vine that grows by twining through young trees and scrambling across the ground.

Openings in shrubs make sunlight more available and provide habitat for a variety of herbaceous species. In addition, this is prime habitat for a species of particular interest, spring-flowering goldenrod (*Solidago verna*), which is quite abundant throughout this habitat type, and even occurs in the more hydric variations of this habitat. Northern bracken fern (*Pteridium aquilinum* var. *pseudocaudatum*) and wire-grass (*Aristida stricta*) are abundant and provide thick cover in some areas. Additional, but rarely dominant species represented are round-leaf thoroughwort (*Eupatorium rotundifolium*), spiked hoary-pea (*Tephrosia spicata*), and narrow-leaf silk-grass (*Pityopsis graminifolia* var. *tenuifolia*).

Hydric variations of pine flatwoods are characterized by an intermittent to nearly continuous shrub stratum frequently dominated by giant cane (*Arundinaria*. *tecta*). While sweetgum is frequent in these habitats, red maple (*Acer rubrum*) is somewhat more abundant. Wetter versions of this habitat are similar to streamhead pocosins and may have some of the same species in common. Southern blueberry (*Vaccinium formosum*), evergreen bayberry (*Morella caroliniensis*), black blueberry (*Vaccinium fuscatum*), swamp bay, southern bayberry, horsesugar, and shinyleaf (*Lyonia lucida*) are often present. Herbaceous species include cinnamon fern (*Osmundastrum cinnamomeum*) and Virginia chain-fern (*Woodwardia virginica*) that are favored by scattered openings in the thick shrub cover.

Narrow seepage shelves along slopes above swamp forests at the edges of mesic pine flatwoods habitats are characterized by the clonal stands of coastal doghobble (*Leucothoe axillaris*). Stands of this species may remain visible for years following modification of the conditions that allowed them to establish. Loblolly pine is a regular canopy associate. Other species that can be found are cinnamon fern, American holly (*Ilex opaca*), and yellow poplar.

Bryophyte species are sparse through the mesic portions of this habitat. Wetter stages with fallen logs and hardwood tree bases may support mixed species dominated by the leafy liverwort *Odontoschisma prostratum* (scientific names of liverworts follow Hicks 1992[42]) and the moss *Leucobryum albidum* (Scientific names of mosses follow Crum and Anderson 1981[43]). Depressions

holding water for extended periods of time may support small mounds of sphagnum (usually *Sphagnum palustre* or *S. affine* but also possibly *S. perichetiale*). These are never extensive or abundant and are widely scattered unless associated with plowed firebreaks where moisture is perched over subsoil clays. Bryophyte cover in mesic habitats is sparse to non-existent especially under heavy leaf litter. Cover by bryophytes in some hydric stands can approach an estimated one percent.

Natural modifications in pine flatwoods habitats accompany topographic variation. Topographic variation is found along slopes of natural drainage lines, for example, Southwest Prong Slocum Creek. Changes accompanying topographic breaks are marked by an increase in occurrence of broadleaf deciduous tree species in the forest canopy or subcanopy. As the slope breaks from mesic flatwoods, longleaf pine may be partially replaced in the canopy by loblolly pine, white oak (*Quercus alba*), southern red oak (*Quercus falcata*), hickory (*Carya* spp.), and water oak (*Quercus nigra*). Sourwood (*Oxydendrum arboreum*) and flowering dogwood (*Cornus florida*) are regular constituents of a subcanopy along well-drained sandy slopes. Red maple and sweetgum often become more abundant on moist slopes, as well. Lower, along the slope, soils may become moister from seepage or sandier as fine particulates are leached from the soil and moved further down the slope. Yellow poplar (*Liriodendron tulipifera*) and swamp chestnut oak (*Quercus michauxii*) are often important in the canopy while American holly becomes a characteristic subcanopy species. Near the base of the slope, swamp forest species increase in importance as soil moisture increases and as textures become more loamy or mucky.

Pine/Hardwood Forest (PH)

As indicated above, pine/hardwood forests may develop along stream slopes. This forest type is also one of the intermediate results of fire exclusion from otherwise natural forest systems. In mature pine forests protected from fire, particularly mature loblolly pine forests, hardwood forest species tend to invade as soils become coarser and as light levels are reduced at the forest floor. Reduced light levels offer a competitive advantage to broadleaf deciduous or hardwood species. At intermediate seral stages, hardwoods may grow into a subcanopy stratum. Eventually, as pines mature, senesce, and die, hardwoods replace them in the canopy. This process of natural successions

is often truncated in natural systems where fire is experienced. Pine forests may be the temporary result. Additional disturbances can further confuse successional stages and promote further diversity in forest variation. Mesic and hydric variations in pine/hardwood forests were not recognized during mapping due in part to the subtle successional and hydrologic factors present in these communities that are difficult to discern from aerial photography.

Additionally, pine/hardwood forest variations were not recognized because aerial photographic resources were inadequate without intensive ground truth. As a result many variations of this type along slopes have been included with pine flatwoods. In some areas, somewhat more extensive pine canopy covers are broken by hardwood occurrences. Examination of these areas in the field indicates that while pines appear to be functioning as a canopy, high hardwoods, though not quite as tall as the pines, were functioning in the lower canopy as well. In such situations, photographic signatures returned only pine in the canopy. From a strictly aerial photographic view, pine-hardwood canopy mixing was not readily visible unless pines were more widely spaced.

Pine/hardwood forests are present in a wide range of landscape conditions. Successional trends across these habitats are not always clear, as indicated by the wetland example in the last paragraph. In one area there was a visible trend toward pine standing stock with greater diameters where hardwoods were present in the canopy. Combined cover by the canopy species (hardwood and pine) exceeded 50 percent in some areas. The successional sere was older. As in pine flatwoods, shrub strata were relatively dense with covers up to 60 percent. Covers were low for herbaceous plants. Bryophytic species were largely corticolous because of the presence of hardwood bark substrates. However, bryophytes were also favored on rotten wood and soil with the naturally increased moisture under multiple canopy layers. Fire, still a management factor in such habitats, was responsible for thinner litter layers and additional stand diversity.

In the above area, post-mature loblolly pine was the dominant tall canopy species, while a well-developed lower canopy of hardwood consists primarily of water oak, sweet-gum, red maple, and large swamp bay. Horsesugar makes up the bulk of the subcanopy stratum along with younger individuals of canopy species. Swamp titi (*Cyrilla racemiflora*) and large gallberry (*Ilex coriacea*)

constitute a high shrub layer along with younger individuals of canopy and subcanopy species.

Bluff areas along Southwest Prong Slocum Creek within the detailed study corridors are marked by the occurrence of a greater percentage of hardwood species in the canopy and replacement of longleaf pine by loblolly pine. The slopes above the creek near the intersection of Greenfield Heights Boulevard and Gray Road have a similar canopy composition that grades to more loblolly pine to the south. One outstanding parcel along the south side of the creek at the eastern boundary of the Alternate 3 corridor has been partially separated from the mainland by stream dissection. The top of the resulting knoll rises 10 to 15 feet above the elevation of the surrounding swamp to about the height of the adjacent upland flatwoods landscape. With minimal connection to the main portion of the upland landscape, seepage characteristics have been lost.

A mix of hardwood species joins loblolly pine in the canopies of the above pine/hardwood parcels. Yellow poplar, hickory, white oak, southern red oak, an occasional northern red oak (*Quercus rubra*), water oak, and sweetgum are included among the canopy dominants. Longleaf pine is absent from these parcels, but present in the nearby adjacent landscapes. A subcanopy is composed of younger individuals of the canopy species as well as flowering dogwood and sourwood. In other more mesic areas such as the bluff along the north side of Southwest Prong Slocum Creek, American beech (*Fagus grandifolia*) grows on the low slopes and ridges just above the wet floodplain along with a typical subcanopy species American hornbeam (*Carpinus caroliniana*). Shrub species included small-flower pawpaw (*Asimina parviflora*), silky-camellia (*Stewartia malacodendron*), swamp bay, and several species of woody vines including muscadine (*Vitis rotundifolia*) and Virginia creeper (*Parthenocissus quinquefolia*). Partridge-berry (*Mitchella repens*) and variable rosette grass (*Dichanthelium commutatum*) were the most abundant herbaceous species, though these were only scattered.

Additional areas of pine/hardwood forest were found. Two areas were found along a ridge paralleling the east and west sides of East Prong Slocum Creek. Several areas were found along the upland slopes of Tucker Creek west and south of the Craven County Transfer Facility (recycling facility adjacent to the old landfill site along US 70).

Streamhead Pocosin (SPt - Tree Dominated, SPs - Shrub Dominated)

Significant streamhead pocosin habitats occur largely in the southern portion of the project study corridors. These are located near the western and eastern sides of East Prong Slocum Creek and in the proposed southern interchange with the existing US 70. Scattered pocosin habitat also occurred along the west side of Creek Road just south of Havelock and west of East Prong Slocum Creek. These habitats consist of high, dense-shrub strata under a scattered canopy of pond pine, occasionally loblolly pine, and loblolly bay (*Gordonia lasianthus*). Areas with a relatively continuous canopy are identified as tree-dominated (SPt). Shrubs dominate pocosin containing only widely-scattered trees in the canopy (SPs). Most of the pocosin habitat seen in the project study area exists at the heads of streams or in upper stream divides where runoff is slow. That is, they occur in areas above discernable stream dissection.

Pond pine is the dominant canopy species of most pocosin habitat. Occasional loblolly and longleaf pine may be present depending to some extent on variance in soil characteristics. A thick stratum of shrubs is typical of most areas. The shrub layers contain varying mixtures of several species of shrubs including shinyleaf, swamp titi, Carolina-laurel (*Kalmia carolina*), swamp doghobble (*Leucothoe racemosa*), southern blueberry, honeycup (*Zenobia pulverulenta*), inkberry (*Ilex glabra*), horsesugar, and large gallberry. Red maple, loblolly bay, and swamp bay occur as trees or younger individuals. Swamp tupelo (*Nyssa biflora*) and pond cypress (*Taxodium ascendens)* may be found in somewhat lower areas that experience nearly permanent standing water. Laurel-leaf greenbrier (*Smilax laurifolia*) is an abundant woody vine that adds significantly to the thickness of these habitats.

Shrub cover in most pocosin habitats approaches or exceeds 80 percent, while the canopy may have only 20 to 30 percent cover. Controlled burning may be responsible for reducing shrub cover in scattered areas, but that management practice has not been used to create any significant wet savannas. Pines dominating the canopy may exceed 18 inches in diameter, but most are within the 12- to 16-inch classes. In a few areas, canopy trees are considerably smaller. Some areas are more open where the shrub stratum is intermittently broken such as the habitats west of Creek Road.

These open areas support a wider variety of herbaceous species than do the more shaded systems. Two species commonly found throughout these habitats are cinnamon fern and Virginia chain fern. Many other species are regular constituents of more open phases of pocosins. Bryophytes are most visible in open habitats and include several species of *Sphagnum* as well as *Aulacomnium palustre*. In more shaded areas, a variety of both mosses and leafy liverwort species can be found on decaying wood and tree bases.

Swamp Forest (SFl -along large streams, SFs - along small streams, SFp - in ponds)

This community type is synonymous with the coastal plain small stream swamp community described in Schafale and Weakley. Swamp forest is typically subject to saturated soils and/or standing water for most of the year. These forests have been grouped under three distinct regimes with respect to hydrologic conditions. Swamp forests occur along large streams (SFl) such as East Prong Slocum Creek and Southwest Prong Slocum Creek. Larger streams often have been impounded by beaver (*Castor canadensis*) activity. Swamp forests occur along small streams (SFs) that are generally free-flowing and possibly intermittent tributaries of a larger stream. They occur, as well, in depressions or ponds (SFp) scattered through head water areas of small or large streams. During dry weather these depressions may be isolated from tributary streams and in some cases may be permanently isolated.

Canopy cover in swamp forest was highly variable. Generally, canopy coverage across more open large stream swamp forests was intermittent, primarily because of landscape drowning due to beaver activity. Small streams and inner edges of large stream swamp forests were usually quite well shaded with up to 60 or 70 percent cover by largely deciduous trees with a small percent contributed by pine. Cover by shrubs and herbs was usually low in small stream floodplains and ponded areas, but high along large streams particularly in areas flooded by beaver activity. Standing large trees nearest the main channels of large stream swamp forest were generally represented by dead stems. Away from the deeper portions of the swamp, larger trees could be found that were in the 20 to 24-inch diameter classes. Along small stream channels, tree stems usually matched in size those of adjacent upland areas. Stems in ponded swamp forest were quite variable and ranged from 8 to 16 inches in diameter.

Tree species commonly represented in large stream swamp forest are green ash (*Fraxinus pennsylvanica*), southern bald cypress (*Taxodium distichum*), sweetgum, red maple, swamp tupelo, and willow oak (*Quercus phellos*). The subcanopy contained younger individuals of the canopy species. Linear beaver dams add a dynamic elevation continuum from below ambient water levels to well above. Fallen dead trees provide additional habitat diversity for a time and ultimately assist in the accumulation of sediment and detritus in areas impounded by beaver activity. Living plant stems provide additional flow reduction and diversion as the floodplain builds and spreads laterally.

Shrub and herb strata along large streams within the corridor have a species diversity that is accentuated and controlled largely by the course of beaver activity. A wide variety of species occur over the three-dimensional mosaic of beaver-influenced swamp forest in large streams, including swamp-loosestrife (*Decodon verticillatus*), eastern poison-ivy (*Toxicodendron radicans*), woodvamp (*Decumaria barbara*), horsebrier (*Smilax rotundifolia*), giant plume grass (*Saccharum giganteum*), swamp bay, lizard's-tail (*Saururus cernuus*), Virginia blueflag (*Iris virginica*), Virginia sweetspire (*Itea virginica*), swamp doghobble, and swamp rose (*Rosa palustris*).

Included in large stream swamp forest habitat are those areas that are adjacent and slightly above regular water flow, but still within the floodplain. These areas may be flooded during periods of heavy precipitation but otherwise remain saturated to within several inches of the surface of the soil. An example of such an area occurs along the western edges of Southwest Prong Slocum Creek within the Alternate 3 study corrodor. This forest contains loblolly pine along with red maple, southern bald-cypress, and other canopy species of the more open swamp forest. Along with many of the shrub and herb species characteristic of more open areas, cinnamon fern, Virginia chain fern, royal fern (*Osmunda regalis* var. *spectabilis*), netted chain-fern (*Woodwardia areolata*), which often mark the zone of transition between wetland and upland habitats, small-spike false nettle (*Boehmeria cylindrica*), and southern wood fern (*Dryopteris ludoviciana*) may occur.

Small stream swamp forests are narrow linear features that support at least an intermittent flow and are well- shaded by a combination of pine and deciduous tree species. In some areas they differ little

from hydric pine flatwoods except for a larger proportion of hardwood species in the canopies. The most well-developed examples were found in upper branches of Tucker Creek, including Daniels Branch, and along an unnamed tributary of Southwest Prong Slocum Creek between the creek and Gray Road. Other habitats of this type are scattered in mesic flatwoods forest north of Lake Road and south of Sunset Drive. Some are scarcely more than 20 feet in width, while others are over 100 feet wide. Customary canopy constituents are loblolly pine, red maple, swamp tupelo, and sweetgum. Pond pine is occasionally present. Shrub species present are influenced by the nature of the surrounding habitat and usually consist of varying combinations of southern bayberry, giant cane, swamp bay, southern blueberry, shiny leaf, large gallberry, inkberry, and horsesugar. Netted-chain fern and cinnamon fern are among the most abundant herbs.

Ponded swamp forest habitat occurs in depressions that can be perennially isolated or those that contribute to outflow during precipitation events. Those areas that are perennially isolated have a limited habitat diversity, and support a single, mixed-species stand typically consisting of swamp tupelo, pond cypress, and red maple. Swamp bay and sweet-bay (*Magnolia virginiana*) may also be present. Shrub and herb constituents are usually limited to the peripheries of these ponds.

Another type of ponded swamp forest is subject to through-flow and is found in hydric pine flatwoods or streamhead pocosin habitats. These are shallow depressions that fill during precipitation events. Upon filling, there may be a partial flow reversal either above or below the soil surface so that there is a slow redistribution of moisture away from the location of the hydrologic head. A forest canopy and/or a thick shrub stratum usually shade these basin-like depressions. In some habitats, they are more open to direct light as a result of a partial thinning of the forest canopy. The largest such habitats seen are in the proposed southern interchange portion west of the existing US 70.

Vegetation adjacent to the second example of ponded swamp forest is intermediate between hydric pine flatwoods and streamhead pocosin. The habitat is broken by an irregularly-interconnected system of pools up to two feet deep and short channels bordered by narrow ridges supporting trees and shrubs. Largely loblolly pine with or without pond pine forms the highest canopy with

deciduous species including red maple, swamp tupelo, sweetgum, and scattered pond cypress below. Swamp bay and sweet-bay are characteristic subcanopy trees. Southern bayberry and shiny leaf grow on ridges and in clumps often over hanging water. Younger individuals of subcanopy species are generously present. Other species present depend on the character of the surrounding vegetation and whether it is more similar to hydric flatwoods or streamhead pocosin. Cinnamon fern and Virginia chain fern are typically present.

Cover by bryophyte species was variable between different types of swamp forest. In ponded swamp forest, corticolous bryophytes occupied the surfaces of tree bases and fallen logs. These include, among others, *Odontoschisma prostratum*, *Pallavicinia lyellii*, *Leucobryum albidum*, *Leucolejeunea clypeata*, and *Sematophyllum adnatum*. In small stream swamp forest and more shaded edges of swamp forests along large streams, corticolous species were also very abundant with a greater number leafy liverworts and large mosses in soil at the upper edges of floodplains such as *Mnium cuspidatum* and *Climacium americanum*. In addition to the above corticolous species in swamp forest ponds, others were seen on exposed roots and tree bases in swamp forest along major streams. These included *Metzgeria furcata*, *Entodon macropodus*, *Schwetschkeopsis fabronia*, and *Steercleus serrulatus*. In more perennial streams, aquatic species were also present. West of Gray Road, the stream contained *Fontinalis sullivantii*. The genus *Fissidens* was also represented. Swamp forests are rich habitats for bryophytes. Bryophytes were not regularly noted in the main channels of large stream swamp forests, but were abundant well away from areas exposed to frequent flooding in the flood plains, particularly along all portions of Southwest Prong of Slocum Creek.

Small Pond (P)

This community type includes vernal pools and other ephemeral depressions that have formed under natural conditions as well as isolated depressions that have formed through soil compaction by past off-road vehicle usage that have since naturalized with permanent vegetation. Small ponds are habitat features that are isolated by mesic flatwoods or other communities from any natural drainage system. Two areas containing concentrations of such ponds identified during the course of the fieldwork are described here. One area was in the mesic pine flatwoods within the Alternate 3 study corridor. A second was in the Alternate 1 corridor in pine plantation off of Forest Road (FR) 3016

(an extension of Gray Road). The flatwoods ponds were essentially without canopy species except for the presence of a stem of swamp tupelo in one and a stem of loblolly pine in the other in the deepest parts of the depressions. Both were only ephemerally wet and only one supported wetland vegetation. Soils in one pond were marginally-hydric but fully-hydric in the other. Inkberry, giant cane, wand panic grass (*Panicum virgatum*), and cypress rosette grass (*Dichanthelium dichotomum*) were additional species present.

A second area of ponds off of FR 3016 is located within a pine plantation along the north side of the road. The group consists of about five ponds, one of which extends outside the boundary to the west of the Alternate 1 study corridor. The depressions contained little water at the time of the field work in April of 2004, but water had been present earlier during the year as evidenced by the presence of dried sheets of *Sphagnum cuspidatum*. Young red maple, sweet gum, loblolly pine and black gum were present with a low understory of swamp titi. The presence of southern bayberry, inkberry, American holly, and broom-sedge indicated that the ponds were not usually flooded for prolonged periods.

Powerline Corridor (Mesic PCm, Hydric PCh)

Substantial sections of the Alternate 3 study corridor follow a maintained powerline corridor north of Sunset Drive, along FR 638 and across the end of Pine Grove Road (FR 156). A small fragment of power line corridor occurs in the project area east of Creek Road (FR 604) nearest the railroad. Portions of powerline corridor habitats designated as mesic (PCm) do not normally support standing water for significant periods of time. Powerline corridor habitats designated as hydric (PCh) are subject to prolonged periods of standing water normally during winter, spring, and sometimes early summer. Vegetation along these corridors is mowed at intervals of two to five years.

Plant species of mesic areas include inkberry, giant cane, loblolly pine, small black blueberry, narrow-leaf silk-grass, wire-grass, broom-sedge (*Andropogon virginicus*), spring-flowering goldenrod, and hair-awn muhly (*Muhlenbergia capillaris* var. *trichopodes*). Plants in hydric powerline corridors are, among many others, slender goldentop (*Euthamia caroliniana*), giant cane, inkberry, broom rosette grass (*Dichanthelium scoparium*), woolly rosette grass (*Dichanthelium*

scabriusculum), rushes (*Juncus* spp.), sedges (*Carex* spp.), beak rushes (*Rhynchospora* spp.), blue-flower butterwort (*Pinguicula caerulea*), yellow pitcherplant (*Sarracenia flava*), purple pitcherplant (*Sarracenia purpurea*), and little floating bladderwort (*Utricularia radiata*). The most common bryophytes are several species of *Sphagnum* as well as *Aulacomnium palustre*. Where powerline corridors are crossed by ponds or small streams, they may be submerged for a substantial portion of the year.

Pine Plantation (Mesic PPm, Hydric PPh)

Substantial pine plantations occur within the proposed bypass corridors. These pine plantation habitats are located (1) along Creek Road at the southern edge of the project corridor, (2) west of Sunset Drive along FR 638, (3) along the northern side of Hickman Hill Road (FR 601), (4) near the end of Pine Grove Road (FR 156) at the old landfill site west of Craven County Transfer Facility along the existing US 70, (5) along FR 3016, the extension of Gray Road, and (6) along a Weyerhaeuser access road that parallels the Alternate 1 study corridor. Soils within these habitats have been heavily disturbed either by bedding for pine plantation or by the importation of soil material, as in the case of the old landfill.

The bedding process in plantation areas turns furrow slices of soil material, usually the A-Horizon and part of the E-Horizon, to something of an upside-down position over an adjacent linear strip of undisturbed soil. This process changes the character of the soil and surface drainage, but creates a ridge that better supports pine seedlings, particularly in areas that tend to be wet. Otherwise, soils are similar to those found in the area in general. Soils at the landfill plantation are visibly mixed fill material with no natural horizons present.

The most upland plantation parcel was planted over the old landfill where pine was planted in loamy soil material brought in from some other site to cap the landfill. The dominant plant is young loblolly pine planted in rows. A scattered subcanopy of sweet-gum has begun to grow between the rows and southern bayberry is scattered. Meadow rye grass (*Lolium pratense*), Chinese bush-clover (*Lespedeza cuneata*), and slender wood-oats (*Chasmanthium laxum*) have either volunteered or were spread at the time of capping.

A very small segment of hydric pine plantation at the side of Creek Road consists of very-closely-planted young loblolly pine planted on bedded rows. Saw-tooth blackberry (*Rubus argutus*) is residual from early growth following site preparation.

Loblolly and longleaf pine occur at the large pine plantation along FR 638 west of Sunset Drive. The plantation is largely mesic, though unmapped sections of it in the western half are somewhat wetter, and possibly hydric, than the eastern half. Saplings and small tree-sized sweetgum is the major tree species present. Horsesugar, huckleberry, southern bayberry, and swamp bay are the customary shrubs. Herbaceous species commonly represented are northern bracken fern, spring-flowering goldenrod, broom-sedge, and Virginia chain fern occur throughout.

Loblolly pine has been planted at the western edge of the project corridor along the end of Pine Grove Road (FR 156). The major significant understory species in this mesic plantation is southern bayberry. An additional loblolly pine plantation in the Alternate 3 study corridor was planted along Hickman Hill Road (FR 601). This stand is hydric. Sweetgum and southern bayberry are the most-significant understory species.

Successional/Ruderal Habitat (SR)

Natural communities in which natural soil/vegetation relationships have been modified for human use and then abandoned are considered successional. Abandoned agricultural fields, borrow pits, sand mines, and unmanaged clear-cut areas are examples. Ruderal habitats may exist where soil material is maintained in a constant state of disturbance.

An area along Sunset Drive within the Alternate 2 study corridor is an example of habitat containing both successional and ruderal habitats. A combination of mesic pine flatwoods and hardwood slope forest along the north side of the swamp forest paralleling the Southwest Prong Slocum Creek was removed to create a borrow area for one or more nearby projects requiring fill material. Overburden was removed and piled to the sides to allow access to the required material. Natural soil material well into the C-horizon was transported from the site leaving exposed parent material for

regeneration of vegetation.

The ruderal character of the site has been accentuated by recent use by all-terrain-vehicles (ATV). Packed clay soils and incised ATV tracks improve the water-perching capacity of some portions of the site, while breaches in the discarded overburden allow for drainage of others into the adjacent stream. More-frequently-used portions of the site are without significant vegetation. Soil profiles investigated in this area show continuous C-horizon or mixed horizon materials persisting. Areas used by ATV's have a surface that is mixed with surface C-horizon material, organic litter and fragments of previous horizons. Regeneration of vegetation in the low-nutrient soils has led to stunted growth of most trees and shrubs.

Poorly-developed vegetation consisting of spindly loblolly pine forest with a low, scattered hardwood understory dominates much of the site. A scattered understory of sweetgum, water oak, and red maple predominates along slightly lower drainage ways incised into the soil. Poor site quality has limited the coverage and rate of growth of most of the current vegetation. Other elements of the successional vegetation are characteristic of those found in pine plantation. Successional/ruderal habitat inter-fingers with a narrow band of hardwood slope forest just above the swamp forest along Southwest Prong Slocum Creek.

Rural/Urban Modifications (M)

Rural/Urban Modifications (M) habitats include all those landscape features in the project corridors that are currently functioning features within the human infrastructure. Examples are transportation corridors, ditches, transportation corridor shoulders, residential areas, and a recycling and transfer facility. These features are a part of the overall habitat complex of the project corridors, albeit a part with minimal non-human functional importance. These areas provide habitat for a wide assortment of weedy, non-native plant species as well as native flora and also provide corridors for their movement and redistribution. No attempt will be made to itemize plant species that can occur or are likely to be found in these habitats. All species thus far mentioned, as well as many others, are candidates. Non-native invasive plant species in these areas include: Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), serica lespedeza (*Lespedeza cuneata*), and

bicolor lespedeza (*Lespedeza bicolor*).

Wildlife (Terrestrial Fauna)

Most of the project study area is forested in nature, but there are disturbed areas that include clearcuts, residential and commercial areas, agricultural fields, and roads. Clearing and conversion of tracts of land for agricultural, residential, and commercial uses has eliminated cover and protection for many species of wildlife while increasing habitat for other species able to utilize these anthropogenic habitats. The project study area provides habitat for forest-interior species, but in disturbed areas, woodland strips bordering jurisdictional areas often serve as travel corridors for these species between different habitat types. Developed areas provide food for disturbance-adapted wildlife, and create edge habitat favored by certain species.

Most of the mammals documented within the project study area are the conspicuous larger and medium-sized species that have wide habitat tolerances and commonly occur in anthropogenic landscapes. Mammal species observed include gray squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), and gray fox (*Urocyon cinereoargenteus*), as well as evidence of Virginia opossum (*Didelphis virginiana*), beaver, raccoon (*Procyon lotor*), and black bear (*Ursus americanus*) activity.

No quantitative surveys were conducted to document the small mammal populations within the project study area. The forested communities within the project study area are expected to provide habitat for small animals including insectivores such as southeastern shrew (*Sorex longirostris*) and southern short-tailed shrew (*Blarina carolinensis*), and rodents such as cotton mouse (*Peromyscus gossypinus*) and golden mouse (*Ochrotomys nuttalli*). Early successional habitats and weedy disturbed areas are expected to provide habitat for insectivores such as least shrew (*Cryptotis parva*) and eastern mole (*Scalopus aquaticus*), and rodents such as the hispid cotton rat (*Sigmodon hispidus*).

Bird species documented in the project study area are typical of forested communities and

maintained and disturbed areas of North Carolina. Bird sightings within the project study corridors include a combination of permanent residents, summer breeders or visitors, winter visitors, and migratory transients. Some species are habitat specific, being limited by narrow ecological requirements, while others have more general habitat requirements.

Common resident bird species observed year-round throughout the project study corridors include species commonly occurring in both natural and anthropogenic habitats in eastern North Carolina. Commonly encountered bird species of this type included mourning dove (*Zenaida macroura*), downy woodpecker (*Picoides pubescens*), blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), Carolina chickadee (*Poecile carolinensis*), tufted titmouse (*Baeolophus bicolor*), Carolina wren (*Thryothorus ludovicianus*), American robin (*Turdus migratorius*), northern mockingbird (*Mimus polyglottos*), brown thrasher (*Toxostoma rufum*), eastern towhee (*Pipilo erythrophthalmus*), northern cardinal (*Cardinalis cardinalis*), common grackle (*Quiscalus quiscula*), and brown-headed cowbird (*Molothrus ater*). Exotic species found primarily in residential areas included rock dove (*Columba livia*) and European starling (*Sturnus vulgaris*).

The extensive forested areas provide suitable habitat for many Neotropical migrants as well as residents that are area-sensitive species requiring mature forests for breeding. Many of these species are typically associated with specific forest types. Birds documented in the swamp forests and adjacent slopes included red-shouldered hawk (*Buteo lineatus*), barred owl (*Strix varia),* white-breasted nuthatch (*Sitta carolinensis*), Acadian flycatcher (*Empidonax virescens*), northern parula (*Parula americana*), yellow-throated warbler (*Dendroica dominica*), black-and-white warbler (*Mniotilta varia*), prothonotary warbler (*Protonotaria citrea*), worm-eating warbler (*Helmitheros vermivorus*), Swainson's warbler (*Limnothlypis swainsonii*), and hooded warbler (*Wilsonia citrina*). Birds documented in the pine flatwoods that are restricted to, or more prevalent within this habitat included red-cockaded woodpecker (*Picoides borealis*), brown-headed nuthatch (*Sitta pusilla*), and pine warbler (*Dendroica pinus*).

Other species documented that occur in a wider range of forested habitats included wild turkey (*Meleagris gallopavo*), chuck-will's-widow (*Caprimulgus carolinensis*), whip-poor-will

(*Caprimulgus vociferous*), red-headed woodpecker (*Melanerpes erythrocephalus*), red-bellied woodpecker (*Melanerpes carolinus*), hairy woodpecker (*Picoides villosus*), pileated woodpecker (*Dryocopus pileatus*), eastern wood-pewee (*Contopus virens*), red-eyed vireo (*Vireo olivaceus*), blue-headed vireo (*Vireo solitarius*), ruby-crowned kinglet (*Regulus calendula*), blue-gray gnatcatcher (*Polioptila caerulea*), wood thrush (*Hylocichla mustelina*), gray catbird (*Dumetella carolinensis*), yellow-rumped warbler (*Dendroica coronata*), prairie warbler (*Dendroica discolor*), ovenbird (*Seiurus aurocapillus*), and summer tanager (*Piranga rubra*).

Other birds documented that are typically found along forest edges or in shrubby habitats included northern bobwhite (*Colinus virginianus)*, eastern kingbird (*Tyrannus tyrannus*), white eyed vireo (*Vireo griseus*), common yellowthroat (*Geothlypis trichas*), yellow-breasted chat (*Icteria virens*), and swamp sparrow (*Melospiza georgiana*).

Bird species documented in association with aquatic habitats within the project study corridors, particularly the open, beaver-impounded areas, included wood duck (*Aix sponsa)*, hooded merganser (*Lophodytes cucullatus*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), little blue heron (*Egretta caerulea*), spotted sandpiper (*Actitis macularia*), osprey (*Pandion haliaetus*), belted kingfisher (*Ceryle alcyon*), and tree swallow (*Tachycineta bicolor*).

Terrestrial reptile species observed in the project study area included black racer (*Coluber constrictor*), southern copperhead (*Agkistrodon contortrix*), eastern worm snake (*Carphophis amoenus*), pine woods snake (*Rhadinaea flavilata*), scarlet kingsnake (*Lampropeltis triangulum elapsoides*), cornsnake (*Elaphe guttata*), rough green snake (*Opheodrys aestivus*), southern ringneck snake (*Diadophis punctatus*), ground skink (*Scincella lateralis*), southeastern five-lined skink (*Eumeces inexpectatus*), broadhead skink (*Eumeces laticeps*), green anole (*Anolis carolinensis*), and eastern box turtle (*Terrapene carolina*).

Terrestrial amphibians observed within the project study area were several species of toads, treefrogs, and chorus frogs, including Fowler's toad (*Bufo woodhousei fowleri*), oak toad (*Bufo quercicus*), southern toad (*Bufo terrestris*), squirrel treefrog (*Hyla squirella*), green treefrog

(*Hyla cinerea*), pine woods treefrog (*Hyla femoralis*), gray treefrog (*Hyla versicolor*), and little grass frog (*Pseudacris ocularis*). These species require ephemeral pools for breeding, which were present in several locations throughout the project study corridors. Terrestrial salamanders documented included slimy salamander (*Plethodon glutinosus* complex) and Chamberlain's dwarf salamander (*Eurycea chamberlaini*).

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3.5.2.2. Aquatic Communities and Wildlife

Aquatic Habitats

Aquatic habitats within the project study area range from ephemeral waters present in intermittent, channelized first-order streams to perennial stream channels and flooded palustrine habitat.

Aquatic Fauna

The diversity of streams in the project study area provides habitat for a variety of aquatic species. Large streams with good water quality and a diversity of aquatic habitats, such as East Prong Slocum Creek, are expected to support a more-diverse assemblage of fish and other aquatic organisms than smaller tributaries. The variety of flow characteristics and microhabitat within these streams has the potential to support an array of species.

According to *BasinPro Version 3.1*[40], none of the project study area streams are considered Significant Aquatic Endangered Species Habitat (NCGIA 2002). Significant Aquatic Endangered Species Habitat identifies the extent of Endangered or Threatened species populations and the tributaries and headwaters of their habitats (NCGIA 2002). A portion of Southwest Prong Slocum Creek extending into the eastern portion of the Alternate 2 study corridor is identified in *BasinPro*[40] as anadromous fish spawning area; this area is not depicted as extending into the Alternate 2 alignment. Culverts under existing US 70, the railroad, and other roads are expected to limit the potential for anadromous fish to utilize stream segments within the project study corridors. The North Carolina Wildlife Resources Commission (NCWRC) has requested an in-water work moratorium for February 15 to June 15 for East Prong and Southwest Prong Slocum Creek throughout the study area. Goodwin Creek and Tucker Creek upstream of the US 70 structure will not require a moratorium; however, if the current structures are replaced or extended downstream, a

February 15 to June 15 moratorium will apply.

NCDOT biologists sampled Southwest Prong Slocum Creek and East Prong Slocum Creek in April 2005 as part of the Proposed, Endangered, Threatened, and Sensitive (PETS) species evaluation and documented the following species: bowfin (*Amia calva*), American eel (*Anguilla rostrata*), eastern mosquitofish (*Gambusia holbrooki*), creek chub sucker (*Erimyzon sucetta*), redfin pickerel (*Esox americanus*), pirate perch (*Aphredoderus sayanus*), bluespotted sunfish (*Enneacanthus gloriosus*), pumpkinseed (*Lepomis gibbosus*), flier (*Centrarchus macropterus*), warmouth (*Lepomis gulosus*), bluegill (*Lepomis macrochirus*), and mud sunfish (*Acantharchus pomotis*).

The stream channels and flooded wetlands within the project study area provide riparian and benthic habitat for amphibians and aquatic reptiles. Aquatic or semi-aquatic reptiles documented included cottonmouth (*Agkistrodon piscivorus*) and spotted turtle (*Clemmys guttata*). Other reptiles such as the Florida cooter (*Pseudemys floridana*), yellowbelly slider (*Trachemys scripta*), and northern water snake (*Nerodia sipedon*) are expected to occur in the project study corridors. Amphibians observed in or near stream channels and flooded wetlands include: green frog (*Rana clamitans*), southern leopard frog (*Rana utricularia*), carpenter frog (*Rana virgatipes*), and bullfrog (*Rana catesbeiana*).

3.5.3. Water Resources

3.5.3.1. Groundwater

The Castle-Hayne Aquia aquifer yields large volumes of water in North Carolina where it consists of limestone. The Castle-Hayne Aquia aquifer is the groundwater source in the study area. The aquifer is accessed via municipal wells.

3.5.3.1.1. Wells

Information provided by the City of Havelock, indicates municipal water services extend westward

to include Greenfield Heights Boulevard and down Lake Road ending at Gray Drive. Either private or community wells serve the remaining development in the study area.

3.5.3.2. Surface Waters

3.5.3.2.1. Streams

The Neuse River is the main water body in the region. Rivers, streams, and tributaries within the study area are part of the lower Neuse River Basin, and drainage generally runs from west to east towards the Neuse River. The named watercourses in the study area include Goodwin Creek, Daniels Branch, Tucker Creek, Black Swamp, Southwest Prong of Slocum Creek and East Prong of Slocum Creek (see Figure 3-9). The project study area also contains unnamed tributaries to these streams. Although the main stems of Goodwin Creek occur north of the study area, an additional tributary of this named stream occurs within the detailed project study corridors. As the terrain is very flat, all of these creeks have a low-velocity flow. Connecting ditches and/or smaller unnamed tributaries have been channelized or dredged to promote more efficient drainage.

At the headwater of its northwestern-most branch, Goodwin Creek, a tributary of Tucker Creek, is situated at the northernmost terminus of the project area. Daniels Branch, also a tributary to Tucker Creek, is immediately south, also at the northernmost terminus of the project area.

Tucker Creek is located south of Goodwin Creek near the northern end of the proposed project. The total drainage area of Tucker Creek is approximately 9.1 square miles. The upper reach of Tucker Creek near existing US 70, is sometimes referred to as Coleman Branch or Daniels Branch, which is a tributary of Tucker Creek. This stream crosses beneath existing US 70 in a triple barrel 9-foot by 7-foot reinforced concrete box culvert approximately 1500 feet west of SR 1760 (Hickman Hill Loop Road). The drainage area at existing US 70 is approximately 4.5 square miles.

The Southwest Prong Slocum Creek, a tributary of Slocum Creek, is situated southwest of Tucker Creek. The total drainage area of Southwest Prong Slocum Creek is approximately 11.6 square

miles. Existing US 70 crosses the Southwest Prong Slocum Creek on two bridges. Craven County Bridge Number 91 carries eastbound US 70 over this creek on a six-span, 226-foot long crossing that was built in 1956. Craven County Bridge Number 92 carries westbound US 70 on a four-span, 140-foot long crossing that was built in 1944. Immediately upstream, Craven County Bridge Number 176 carries SR 1763 (Church Road) over this creek on a 3-span, 116-foot long, reinforced concrete thru-girder bridge built in 1925. Approximately 0.6 miles upstream, Craven County Bridge Number 7 carries SR 1746 (Greenfield Heights Boulevard) over the Southwest Prong Slocum Creek on a 2-span, 65-foot, cored-slab bridge that was constructed in 1995. All of these crossings have spill-through designs and none have a history of flooding problems. The detailed study corridors cross the Southwest Prong Slocum Creek upstream from the existing crossings.

Black Swamp, a tributary of Southwest Prong Slocum Creek, is situated northwest of Southwest Prong Slocum Creek. No state routes cross this swamp.

The East Prong Slocum Creek, also a tributary of Slocum Creek, is situated southeast of Black Swamp and Southwest Prong Slocum Creek. The total drainage area of East Prong Slocum Creek is approximately 13.2 square miles. Existing US 70 crosses East Prong Slocum Creek approximately 700 feet east of the NC 101 intersection on Craven County Bridge Number 93, a 3-span, 105-foot long structure built in 1960. This crossing also has a spill-through design and no history of flooding problems. The drainage area of East Prong Slocum Creek at existing US 70 is 10.5 square miles.

The detailed study corridor crosses East Prong Slocum Creek approximately 1.5 miles upstream of existing US 70. The proposed crossing will also be upstream of the North Carolina Railroad and near the southernmost terminus of the project.

Water Quality Characteristics

The water quality of the major watercourses in the Neuse River Basin is classified and protected by the N.C. Department of Environment and Natural Resources (DENR), Division of Water Quality (DWQ). These classifications are assigned based upon the existing or contemplated best usage.

The project is located within sub-basin 030410 of the Neuse River Drainage Basin (DWQ 2006a[33]) and is part of USGS hydrologic unit 03020204 (USGS 1974[44]). Drainages within the northern part of the project study corridors are part of the Tucker Creek watershed and drainages in the southern and central part of the project study corridors are part of the Slocum Creek watershed.

The stream index numbers for watercourses in the Tucker Creek and Slocum Creek watersheds are referenced in the Classifications and Water Quality Standards Assigned to Waters of the Neuse River Basin (DEM 2000[45]). The following is a list of these stream index numbers.

Goodwin Creek	27-112-6-2
Daniels Branch	27-112-6-1
Tucker Creek	27-112-6
Black Swamp	27-112-1-3
Slocum Creek	27-112
Southwest Prong of Slocum Creek	27-112-1
East Prong of Slocum Creek	27-112-2

Best Usage Classifications (BUC) and stream index numbers (SIN) follow classifications and water quality standards - published for each river basin (DEM 2000[45]), as updated through September, 26 2006. Generally, unnamed streams carry the same BUC as its receiving water unless they are specifically denoted as having a separate BUC. However, unnamed freshwater tributaries to tidal saltwaters are considered to have a BUC of "C." Streams assigned a BUC within each sub-basin are often given a support rating as a method of interpreting water quality data and assessing water quality.

Goodwin Creek (27-112-6-2) has been assigned a BUC of SC; Sw, NSW from its source to Tucker Creek. Tucker Creek (27-112-6) has been assigned a BUC of SC; Sw, NSW from its source to Slocum Creek. Black Swamp (27-112-1-3) has been assigned a BUC of C; Sw, NSW from its source to Southwest Prong Slocum Creek. Southwest Prong Slocum Creek (27-112-1) has been assigned a BUC of C; Sw, NSW from its source to Slocum Creek. East Prong Slocum Creek (27-112-2) has been assigned a BUC of C; Sw, NSW from its source to Slocum Creek.

The N.C. Division of Water Quality (DWQ) has compiled a comprehensive list of impaired waterbodies according to the Clean Water Act Section 303(d) and 40 CFR 130.7 [Section 303(d) list[46]]. A waterbody that does not meet its water quality standards for its designated uses is considered to be impaired. The stream segments within the project study corridors have not been listed as impaired waters according to the 303(d) list; however, the Neuse River from a line across the Neuse River from Johnson Point to McCotter Point to a line across the Neuse River from Wilkinson Point to Cherry Point is listed as impaired according to the 303(d) list (DWQ 2006c[46]). This impaired segment of the Neuse River is located approximately 3.6 miles downstream of the project study corridors and includes the confluence of Slocum Creek with the Neuse River.

There are no Outstanding Resource Waters (ORW), High Quality Waters (HQW), WS-I waters, or WS-II waters within 3.0 miles upstream or downstream of the project study corridors (DEM 2000[45], DWQ 2006b[47]) or within the project study area. No stream that flows through the project study corridors is designated as a National Wild and Scenic River or a State Natural and Scenic River.

There are no benthic macroinvertebrate monitoring stations within the project study corridors; however, one benthic macroinvertebrate monitoring station is located on Southwest Prong Slocum Creek at Greenfield Heights Boulevard, approximately 200 feet east of the Alternate 2 study corridor. This monitoring station was given a Moderate bioclassification between 2000 and 2005 (DWQ 2006a[33]). No benthic macroinvertebrate sampling has been documented for other project study corridor streams. There are no fish sampling stations within the project study corridors as part of the DWQ Basinwide Fish Community Assessment (DWQ 2006a[33], DWQ 2006d[48]).

Permitted Discharges

There are two active permitted dischargers within 3.0 miles downstream of the project study corridors. The United States Marine Corps Air Station at Cherry Point (NC0003816) is permitted to discharge 3.5 million gallons per day (MGD) into Slocum Creek, approximately 2.4 miles downstream from the project study corridors. The Havelock Wastewater Treatment Plant

(NC0021253) is permitted to discharge 1.9 MGD into East Prong Slocum Creek, approximately 2.1 miles downstream from the project study corridors (DEM 1988[49], DWQ 2006e[50]).

Nonpoint Source Discharges

Nonpoint 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 (DWQ 2006a[33]). Evidence of NPS discharges observed within the project study corridors includes sedimentation from land disturbance activities, such as logging, and stormwater runoff due to impervious surfaces in commercial and residential areas as well as roadways.

3.5.3.2.2. Ponds

Ponds within the study area consist of small, isolated vernal pools and other ephemeral depressions that have formed under natural conditions as well as isolated depressions that have formed through soil compaction by past off-road vehicle usage that have since naturalized with permanent vegetation. These features are characterized as wetlands rather than surface water features and are described in detail under the Small Pond terrestrial community type (Section 3.5.2.1).

3.5.4. Jurisdictional Issues

Section 404 of the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), requires regulation of discharges into "Waters of the United States." Water bodies such as rivers and streams are subject to jurisdictional consideration under the Section 404 program. However, by regulation, wetlands are also considered "Waters of the United States."

Although the principal administrative agency of the CWA is the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers (USACE) has major responsibility for implementation, permitting, and enforcement provisions of the Act. The USACE regulatory program is defined in

Title 33 Code of Federal Regulations, Part 320-330.

3.5.4.1. Streams and Wetlands

Streams

Surface waters within the project study corridors were visited and evaluated to ascertain physical characteristics. All stream channel segments within the project study area were classified using the Cowardin classification system (Cowardin *et al.* 1979[32]) and the Natural Stream Channel Classification System (Rosgen 1996[31]).

All streams within the project study area are considered to be riverine systems. Riverine systems may be perennial or intermittent and are identified as those areas contained within a channel that are not dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and contain less than 0.5 parts per thousand (ppt) ocean-derived salts.

Prior to initiation of field efforts, available mapping of stream channel segments within the project study area was reviewed to estimate sinuosity. In the field, all stream channels were traversed to identify any significant changes in channel type. Estimations of channel width, bankfull depth, and flood-prone width were made at selected locations to verify channel type. These locations were selected because they were either representative of the stream as a whole or of a specific reach. Sinuosity was estimated in the field and compared to estimated sinuosity from the mapping. Slope was also estimated in the field.

To enable alternative analyses, the USACE designates streams as either important or unimportant. Streams that have perennial flow, associated wetlands, significant aquatic fauna, or associated threatened and endangered species are generally considered to be important, and impacts to these streams require mitigation. Intermittent streams may be considered important if the associated wetlands, significant aquatic fauna, or threatened and endangered species criteria are met. Streams designated as unimportant do not typically require mitigation. The USACE has determined that all of the stream channels within the project study area are important.

The following brief descriptions of the physical characteristics are provided for all twenty-five streams present within the project study area. A complete list of streams can be found in Table 3.18a with their substrate, average width and depth, Cowardin classification, Natural Stream Channel Classification, and jurisdictional flow classification of perennial or intermittent with their importance. As noted in Section 3.5, jurisdictional classifications have been field reviewed by USACE officials. Principal streams [defined as named rivers and creeks depicted on the USGS 7.5 minute (1:24,000) topographic quadrangles] within the project study area include East Prong Slocum Creek, Southwest Prong Slocum Creek, Black Swamp and Tucker Creek. Figures 3-11 A through 3-11 E depict the general locations of these streams.

All streams were delineated in the field. Each individual stream was designated alpha-numerically (S1 through S30); Southwest Prong Slocum Creek was labeled individually at each corridor crossing (S10, S12, and S17), widely-separated segments of Tucker Creek were labeled individually (S22 and S30), as were widely-separated segments of Black Swamp (S13 and S15). In Table 3.18a there is no S8 and some individual stream segments have a letter sub-designation. Stream segment sub-designations were typically used for stream channel reaches separated by culverts under existing roadways or railways, in areas where the stream channels lose their stream function for significant distances along the same drainage way, or the same stream channel is present in different portions of the project study area. General descriptions of streams within the project study area are presented below. Wetlands referenced in the descriptions below are designated alpha-numerically with a "W" prefix. Figures 3-11 A through 3-11 E also depict general locations of wetlands within the project area. Further information concerning these streams is available in the Natural Resources Technical Report, US 70 Havelock Bypass DEIS, Craven and Carteret Counties, North Carolina, State Project No. 8.T170701, T.I.P. No R-1015, prepared for the North Carolina Department of Transportation, Division of Highways, Project Development and Environmental Analysis Branch, Natural Environment Unit, Raleigh, North Carolina, May 2007[22].

- **S1** (East Prong Slocum Creek) is located within the southern portion of the detailed study corridors for Alternates 1, 2, and 3. The stream flows north from the southwestern boundary

of the Alternate 3 study corridor to the northeastern boundary of the Alternate 2 study corridor. On the day of the field visit (9/14/04), the water had moderate turbidity with a substrate of sand and organic matter. This stream channel is approximately five feet wide and seven feet deep.

- **S2** enters the western boundary of the Alternate 2 study corridor and flows east to its confluence with East Prong Slocum Creek. On the day of the field visit (9/14/04), the water had moderate turbidity with a substrate of sand and organic matter. This stream channel is approximately three feet wide and two feet deep.

- **S3** originates in the area between the detailed study corridor for Alternate 2 and the shared portion of the detailed study corridor for Alternates 1 and 3. S3 originates as a continuation of an excavated ditch that demonstrates stream function. S3 enters the western boundary of the Alternate 2 study corridor on the southeast side of a railroad bed and flows northeast to a culvert just outside the eastern boundary of the Alternate 2 study corridor (S3a). This stream channel is approximately three feet wide and four feet deep. The stream reenters the project study corridor at the culvert on the northwest side of the railroad bed and flows northwest to a culvert on the southeast side of Lake Road (S3b). This stream channel is approximately three feet wide and five feet deep. The stream emerges from the culvert and flows northwest to a culvert near the northeast side of an existing powerline corridor (S3c). This stream channel is approximately three feet wide and four feet deep. The stream emerges from this culvert and flows to its confluence with S16 in the powerline corridor (S3d). This stream channel is approximately three feet wide and two feet deep. On the day of the field visit (9/08/04), the water had low turbidity with a substrate consisting of sand.

- **S4** originates northwest of Lake Road in the Alternate 2 study corridor behind a residential area, flows southwest into W27, and turns northwest. The stream channel loses its jurisdictional features before reaching the confluence with S16. On the day of the field visit (3/24/04), the water had moderate turbidity with a substrate consisting of sand and organic matter. This stream channel is approximately three feet wide and three feet deep.

- **S5** is a small stream segment that originates northwest of Lake Road in the Alternate 2 study corridor behind a residential area and flows northeast to its confluence with S4 in W27. On the day of the field visit (3/24/04), the water had moderate turbidity with a substrate consisting of sand and organic matter. This stream channel is approximately two feet wide and three feet deep.

- **S6** enters southwestern boundary of the shared detailed study corridor for Alternates 1 and 3, southeast of Lake Road in W9. The stream flows northwest, turns north, and ends at a culvert on the southeast side of Lake Road. On the day of the field visit (2/17/05), the water had low turbidity with a substrate consisting of sand. This stream channel is approximately 12 feet wide and 5 feet deep. S6 loses stream function downstream of the culvert.

- **S7** originates in a pine plantation northwest of Lake Road near the southern intersection of the study corridors for Alternates 1 and 3. S7 represents resumption of stream function within the same wetland feature in which stream function is lost for S6. The stream flows northeast and ends near a powerline corridor southwest of the project study area boundary in W10. On the day of the field visit (1/04/05), the water had low turbidity and a substrate consisting of sand. This stream channel is approximately 10 feet wide and 5 feet deep.

- **S9** enters the Alternate 1 study corridor south of Gray Road and flows northeast to a culvert on the southeast side of Gray Road. Stream function is lost north of the culvert. On the day of the field visit (1/04/05), the water had moderate turbidity with a substrate consisting of sand. This stream channel is approximately three feet wide and two feet deep.

- **S11** is located south of Southwest Prong Slocum Creek. The channel originates near the northeastern boundary of the Alternate 1 study corridor, flows north, and turns west, where it loses its stream function before reaching Southwest Prong Slocum Creek. On the day of the field visit (4/06/04), the water had high turbidity with a substrate consisting of sand, silt, and organic matter. This stream channel is approximately three feet wide and one-foot deep.

- **S12** (Southwest Prong Slocum Creek) enters the western boundary of the Alternate 1 study corridor northwest of Gray Road, flows north and turns east to exit the northeastern boundary of the study corridor. Southwest Prong Slocum Creek continues northeast to enter the Alternate 3 study corridor as **S10** between Sunset Drive and Gray Road and exits the eastern boundary of the study corridor. Southwest Slocum Creek continues northeast to enter the Alternate 2 study corridor as **S17** between Sunset Drive and Gray Road and flows northeast to exit the eastern boundary of the detailed study corridor for Alternate 2 west of Greenfield Heights Boulevard. On the day of the field visit (4/08/04), water in the stream channel had moderate turbidity with a substrate consisting of sand, silt, and organic matter. This stream channel is approximately eight feet wide and four feet deep.

- **S13** (Black Swamp) is a small stream segment that originates in W18 at the northeastern boundary of the Alternate 1 study corridor, east of the Weyerhaeuser logging road. The stream flows south and loses its jurisdictional features before merging with S12 (Southwest Prong Slocum Creek). On the day of the field visit (4/07/04), the water had moderate turbidity and a substrate consisting of sand and organic matter. This stream channel is approximately five feet wide and six feet deep.

- **S14** originates at a culvert on the east side of the Weyerhaeuser logging road in the Alternate 1 study corridor and flows northeast to the corridor boundary and Black Swamp. This stream channel is approximately three feet wide and 1.5 feet deep. Between S14A and S14B the stream loses channel structure and consists of overland flow approximately 15 feet wide and 1-foot deep. On the day of the field visit (4/07/04), the water had high turbidity with a substrate consisting of sand, silt, and organic matter.

- **S15** (Black Swamp) is located near the east side of the Alternate 1 study corridor and west of the southern end of Sunset Drive. The stream channel flows southeast and exits the corridor boundary. On the day of the field visit (4/07/04), the water had moderate turbidity with substrate consisting of sand, silt, and organic matter. This stream channel is approximately

10 feet wide and 4 feet deep.

- **S16** originates in the middle of W27 in a powerline corridor northwest of Lake Road in the Alternate 2 corridor and flows north to exit the eastern boundary of the corridor, near the intersection of Gray Road and Greenfield Heights Boulevard. On the day of the field visit (3/23/04), water in the channel had moderate turbidity with a substrate consisting of sand and organic matter. This stream channel is approximately three feet wide and two feet deep.

- **S18** originates northwest of Southwest Prong Slocum Creek, near Sunset Drive in the Alternate 2 study corridor, and flows southeast out of the project study area (S18b). It reenters the project study area and continues to its confluence with S17 (Southwest Prong Slocum Creek) (S18a). On the day of the field visit (3/22/04), the water had low turbidity with a substrate consisting of gravel and sand. This stream channel is approximately one-foot wide and three feet deep.

- **S19** enters the northern boundary of the eastern extension of the Alternate 2 study corridor at its intersection with Sunset Drive. The stream flows southeast through W41 to a culvert under Sunset Drive (S19b) and emerges from the culvert on the south side of Sunset Drive (S19a). The channel continues through W36 to the boundary of the eastern extension of Alternate 2 south of Sunset Drive and northwest of Southwest Prong Slocum Creek (S10). On the day of the field visit (2/17/05), the water had low turbidity and a substrate consisting of sand and organic matter. The stream channels for both segments are approximately eight feet wide. Segment S19a is approximately five feet deep, while segment S19b has a stream channel approximately three feet deep.

- **S20** originates in W38 north of Sunset Drive within the western extension of the Alternate 2 study corridor at its intersection with Sunset Drive and flows south through a culvert at Sunset Drive (S20b). The stream emerges from the culvert and continues through W37 to exit the southeastern boundary of the project study area (S20a). On the day of the field visit (2/17/05), the water had low turbidity and a substrate consisting of sand and gravel. This

stream channel is approximately three feet wide and five feet deep.

- **S21** is a small stream segment that originates at a culvert on the east side of the Weyerhaeuser logging road in the Alternate 1 study corridor and quickly loses its stream characteristics before flowing into the wetlands associated with Black Swamp. On the day of the field visit (4/12/04), the water had high turbidity with a substrate consisting of sand, silt, and organic matter. This stream channel is approximately two feet wide and 1.5 feet deep.
- **S22** (Tucker Creek) enters the combined study corridor for the northern terminus interchange and flows southeast through W75, W76, and W77 to exit the corridor. S22 reemerges in the combined study corridor as S30 (see below). On the day of the field visit (2/17/05), the water had low turbidity and a substrate consisting of sand. This stream channel is approximately five feet wide and three feet deep.

- **S23** a tributary to Tucker Creek, originates in W77 between an existing railroad bed and the existing US 70 in the combined study corridor for the northern terminus interchange and flows southeast to its confluence with S22. On the day of the field visit (2/17/05), the water had low turbidity and a substrate consisting of sand and silt. This stream channel is approximately 12 feet wide and 1.5 feet deep.

- **S24** identified as Daniels Branch originates on the east side of the existing US 70, and flows east to exit the boundary of the combined study corridor at the northern terminus. On the day of the field visit (2/17/05), the water had low turbidity and a substrate consisting of sand. This stream channel is approximately four feet wide and eight feet deep.

- **S25** a tributary to Daniels Branch, originates in the northern branch of W84, and flows southeast to its confluence with S24 near the eastern boundary of the combined study corridor for the northern terminus interchange. On the day of the field visit (2/17/05), the water had moderate turbidity and a substrate consisting of sand and organic matter. This stream channel is approximately three feet wide and four feet deep.

- **S26** also a tributary to Daniels Branch, originates near the east side of the existing US 70 in the combined study corridor for the northern terminus interchange, and flows southeast to its confluence with S24 in W84. On the day of the field visit (2/17/05), the water had moderate turbidity and a substrate consisting of sand and organic matter. This stream channel is approximately three feet wide and eight feet deep.

- **S27** is a small tributary to S26 on the east side of the existing US 70. The stream originates just north of S26 and flows south to the confluence of the two channels. On the day of the field visit (2/17/05), the water had moderate turbidity and a substrate consisting of sand and organic matter. This stream channel is approximately four feet wide and six feet deep.

- **S28** is a small tributary to S24 that originates in the southern branch of W84, east of the existing US 70. The channel starts just south of S24 and flows north to the confluence of the two streams. On the day of the field visit (2/17/05), the water had moderate turbidity and a substrate consisting of sand and organic matter. This stream channel is approximately two feet wide and three feet deep.

- **S29** a tributary to Goodwin Creek, originates on the east side of the existing US 70 in the combined study corridor for the northern terminus interchange. The stream flows east to exit the boundary of the study corridor. On the day of the field visit (8/28/06), the water had low turbidity and a substrate consisting of sand. This stream channel is approximately four feet wide and six feet deep.

- **S30** (Tucker Creek) enters the southern extension of the northern terminus study corridor west of existing US 70 and flows to the east into a culvert under US 70 (30a) before briefly emerging (30b) and entering a second culvert under a service road to emerge again (30c) before exiting the study corridor.

Table 3.18a. Streams within the Project Study Area (May 2007)

Stream No.	Stream Name	Cowardin[a]	Rosgen[b]	P/I[c]	I/U[d]	Substrate[e]	Avg. Depth (ft)[f]	Avg. Width (ft)[f]
S1	East Prong Slocum Creek	R3	D	P	I	S	7.0	5.0
S2	UT to East Prong Slocum Creek	R3	D	P	I	S/O	2.0	3.0
S3a	UT to SW Prong Slocum Creek	R4	E/F	I	I	S	4.0	3.0
S3b	UT to SW Prong Slocum Creek	R3	E/F	P	I	S	5.0	3.0
S3c	UT to SW Prong Slocum Creek	R3	G/F	P	I	S	4.0	3.0
S3d	UT to SW Prong Slocum Creek	R3	G/F	P	I	S	2.0	3.0
S4	UT to SW Prong Slocum Creek	R3	C/E	P	I	S/O	3.0	3.0
S5	UT to SW Prong Slocum Creek	R3	C/E/G	P	I	S/O	3.0	2.0
S6	UT to SW Prong Slocum Creek	R3	F	P	I	S	5.0	12.0
S7	UT to SW Prong Slocum Creek	R3	F	P	I	S	5.0	10.0
S9	UT to SW Prong Slocum Creek	R4	G	I	I	S	2.0	3.0
S10	Southwest Prong Slocum Creek	R3	D	P	I	S/0	3.0	8.0
S11	UT to SW Prong Slocum Creek	R4	B/C/D	I	I	S	1.0	3.0
S12	Southwest Prong Slocum Creek	R3	D	P	I	S/O	4.0	8.0

Table 3.18a Continues.

Table 3.18a. Streams within the Project Study Area (May 2007) Continued

Stream No.	Stream Name	Cowardin[a]	Rosgen[b]	P/I[c]	I/U[d]	Substrate[e]	Avg. Depth (ft)[f]	Avg. Width (ft)[f]
S13	Black Swamp	R3	D	P	I	S/O	6.0	5.0
S14a	UT to SW Prong Slocum Creek	R4	C/D	I	I	S/O	1.0	15.0
S14b	UT to SW Prong Slocum Creek	R4	G	I	I	S/O	1.5	3.0
S15	Black Swamp	R3	E	P	I	S/O	4.0	10.0
S16a	UT to SW Prong Slocum Creek	R3	E/G	P	I	S	2.0	3.0
S16b	UT to SW Prong Slocum Creek	R3	G	P	I	S	2.0	3.0
S17	Southwest Prong Slocum Creek	R3	D	P	I	S/O	3.0	8.0
S18a	UT to SW Prong Slocum Creek	R3	B	P	I	S	3.0	1.0
S18b	UT to SW Prong Slocum Creek	R3	B	P	I	S	3.0	1.0
S19a	UT to SW Prong Slocum Creek	R3	C	P	I	S/O	5.0	1.5
S19b	UT to SW Prong Slocum Creek	R3	E	P	I	S/O	5.0	1.5
S20a	UT to SW Prong Slocum Creek	R3	E/G	P	I	S/G	5.0	5.0
S20b	UT to SW Prong Slocum Creek	R3	E/G	P	I	S/G	5.0	5.0
S21	UT to Black Swamp	R4	C	I	I	S/O	1.5	2.0

Table 3.18a Continues.

Table 3.18a. Streams within the Project Study Area (May 2007) Continued

Stream No.	Stream Name	Cowardin[a]	Rosgen[b]	P/I[c]	I/U[d]	Substrate[e]	Avg. Depth (ft)[f]	Avg. Width (ft)[f]
S22	Tucker Creek	R3	E/G	P	I	S	3.0	5.0
S23	UT to Tucker Creek	R4	DA	I	I	S/Si	1.5	12.0
S24	UT to Tucker Creek	R4	G	I	I	S	8.0	4.0
S25	UT to Tucker Creek	R4	G	I	I	S/O	4.0	3.0
S26	UT to Tucker Creek	R4	C	I	I	S/O	8.0	3.0
S27	UT to Tucker Creek	R4	G	I	I	S/O	6.0	4.0
S28	UT to Tucker Creek	R4	D	I	I	S/O	3.0	2.0
S29	UT to Goodwin Creek	R4	G	I	I	S	6.0	4.0
S30a	Tucker Creek	R3	E	P	I	S/O	2.0	6.0
S30b	Tucker Creek	R3	E	P	I	S/O	2.0	6.0
S30c	Tucker Creek	R3	E	P	I	S/O	2.0	6.0

[a] Stream Type: **R3** upper perennial; **R4** intermittent.
[b] Rosgen natural stream channel classification system.
[c] P= perennial stream, I= intermittent stream.
[d] I= important, U= unimportant.
[e] S= sand, O= organic, G= gravel, Si= silt.
[f] Average widths and depths are taken at the top of bank.

Wetlands

Since wetlands are also considered "Waters of the United States" by these regulations, these areas were identified and are described below.

Wetlands have been defined as:

> Those areas that are inundated or saturated by ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas [33 CFR 328.3(b) (1986)].

The USACE requires the presence of three parameters (hydrophytic vegetation, hydric soils, and evidence of jurisdictional hydrology) to support a jurisdictional wetland determination.

The wetland areas present within the project study area are primarily identified as palustrine in nature as defined by Cowardin *et al.* (1979)[32], and as identified on National Wetland Inventory mapping. Palustrine systems include all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, and all such wetlands occur in tidal areas where salinity due to ocean-derived salts is below 0.5 percent. Some wetland systems are defined as palustrine but are influenced hydrologically by adjacent streams through periodic overbank flooding and are considered riparian wetlands. The riparian wetlands are commonly referred to as riverine wetlands, not to be confused with the Riverine system of Cowardin *et al*. (1979)[32]. Non-riparian wetlands are not typically influenced by overbank flooding and are commonly referred to as non-riverine wetlands.

Wetlands within the project study area vary in vegetative composition, depending in part on hydrologic regime and site-specific disturbances. Three general wetland types were identified within the project study area, and are described below.

Palustrine forested (PFO) – These areas are identified as forested jurisdictional wetlands that are palustrine in nature. Vegetation within this wetland type varies throughout the project study area. This wetland type includes the jurisdictional portions of the vegetative communities Pine Flatwoods (hydric), Pine/Hardwood Forest, Streamhead Pocosin (tree dominated), Swamp Forest (along large streams), Swamp Forest (along small streams), Swamp Forest (in ponds), and Pine Plantation (hydric). Specific descriptions of each of these communities are presented in Section 3.5.2.1.

Palustrine scrub-shrub (PSS) – These areas are identified as scrub-shrub jurisdictional wetlands that are palustrine in nature. Vegetation within this wetland type varies throughout the project study area. This wetland type includes jurisdictional portions of the shrub-dominated stages of the vegetative communities Streamhead Pocosin (shrub dominated), Powerline Corridor (hydric), Pine Plantation (hydric), and Successional/Ruderal Habitat. Specific descriptions of each of these communities are presented in Section 3.5.2.1.

Palustrine emergent (PEM) – These areas are identified as emergent jurisdictional wetland areas that are palustrine in nature. Vegetation within this wetland type varies throughout the project study area, but is marked by the presence of herbaceous vegetation and a lack of tree and shrub sized vegetation. This wetland type includes jurisdictional portions of the herbaceous-dominated phases of the vegetative communities Powerline Corridor (hydric) and Successional/Ruderal Habitat. Specific descriptions of each of these communities are presented in Section 3.5.2.1.

The system used for the wetland analysis was the *Guidance for Rating the Values of Wetlands in North Carolina: Fourth Version* (DEM 1995[51]) used by the N.C. Division of Water Quality (DWQ). The procedure rates wetland value according to six attributes: water storage, bank/shoreline stabilization, pollutant removal, wildlife habitat, aquatic life value, and recreational/educational value. Attributes are weighted to enhance the results in favor of water quality value. Pollutant removal is weighted to be the most important wetland attribute, while water storage, bank/shoreline stabilization, and aquatic life values are given equal weight as secondary attributes. Wildlife habitat and recreation/education are given minimal credit. Scores range from 0 to 100; higher scores indicate higher wetland values.

For purposes of this study, wetland values derived from the N.C. Division of Water Quality rating system range from 6 to 90 (Wetland Rating Worksheets can be found in the Natural Resources Technical Report (May 2007)[22]. A score within the 60-100 range is usually considered high quality. High quality wetlands within the project study area include the undisturbed areas associated with large swamp systems and large undisturbed pine flatwoods and pocosin systems. All other wetlands within the project study area were not considered high quality because they are highly-impacted areas associated with pine plantations and successional communities or they are small depressional areas associated with streams but are disturbed in nature.

Table 3.18b lists the wetlands identified within the detailed study corridors and shown in Figures 3-11 A to 3-11 E. This table includes the Cowardin classification, DWQ rating, and whether they are considered riparian or non-riparian. As noted in Section 3.5, jurisdictional classifications have been field reviewed by USACE officials.

Table 3.18b. Wetlands within the Project Study Area

Wetlands Number	Cowardin Classification[a]	DWQ Rating	Riparian or Non-Riparian	Wetlands Number	Cowardin Classification[a]	DWQ Rating	Riparian or Non-Riparian
W1	PFO7B	26	Non-riparian	W26	PFO4B	8	Non-riparian
W2	PFO6/7B	24	Non-riparian	W27	PFO6C	89	Riparian
W3	PFO6/7B	24	Non-riparian	W28	PFO4B	10	Non-riparian
W4	PFO4B	24	Non-riparian	W29	PSS6B	26	Riparian
W5	PFO4B	24	Non-riparian	W30	PSS6B	26	Non-riparian
W6	PFO4B	24	Non-riparian	W31	PFO4B	8	Non-riparian
W7	PFO6F, PFO4B	45	Non-riparian, Riparian	W32	PFO6F	60	Non-riparian
W8	PFO4B	20	Non-riparian	W33	PFO6F	49	Riparian
W9	PFO6/7B	20	Riparian	W34	PSS6B	58	Riparian
W10	PFO4A, PEM1B	19	Riparian	W35	PFO6/7F	45	Non-riparian
W11	PSS4B	10	Non-riparian	W36	PFO6C	90	Riparian
W12	PFO6/7A, PSS4B	18	Riparian	W37	PFO1/4A	78	Riparian
W13	PFO6F, PFO1/4A	78	Riparian	W38	PFO1/4A	26	Riparian
W14	PFO4B	31	Non-riparian	W39	PFO4B	26	Non-riparian
W15	PFO4B	22	Non-riparian	W40	PFO4B	26	Non-riparian
W16	PFO4B	22	Non-riparian	W41	PFO6C	26	Non-riparian
W17	PFO4B	12	Non-riparian	W42	PFO6/7B	51	Non-riparian
W18	PFO6F, PFO1/4A	40	Riparian	W43	PFO6C	51	Non-riparian
W19	PFO1/4A	26	Riparian	W44	PFO6/7B	51	Non-riparian
W20	PFO1/4A	21	Riparian	W45	PFO6C	51	Non-riparian
W21	PFO1/4A	21	Riparian	W46	PFO4B	38	Non-riparian
W22	PFO6/7B	26	Riparian	W47	PFO6/7C	66	Non-riparian
W23	PFO6/7B	13	Non-riparian	W48	PFO6C	51	Non-riparian
W24	PFO4B	28	Riparian	W49	PFO6C	51	Non-riparian
W25	PFO4C	50	Non-riparian	W50	PFO4B, PEM1C	51	Non-riparian

[a] Wetland Type: **PFO** palustrine, forested; **PEM** palustrine, emergent; **PSS** palustrine, scrub-shrub

Table 3.18b Continues.

Table 3.18b. Wetlands within the Project Study Area Continued

Wetlands Number	Cowardin Classification[a]	DWQ Rating	Riparian or Non-Riparian	Wetlands Number	Cowardin Classification[a]	DWQ Rating	Riparian or Non-Riparian
W51	PFO6/7C	35	Non-riparian	W72	PFO6C	75	Non-riparian
W52	PFO4B	15	Non-riparian	W73	PFO1B	75	Non-riparian
W53	PFO6/7B	40	Non-riparian	W74	PFO6C	75	Non-riparian
W54	PFO1/4A	85	Non-riparian	W75	PFO6C	75	Riparian
W55	PFO6/7B	40	Non-riparian	W76	PFO6C	75	Riparian
W56	PFO6/7B	18	Non-riparian	W77	PFO6C	75	Riparian
W57	PFO4B	18	Non-riparian	W78	PFO6F	75	Non-riparian
W58	PFO6/7B	41	Non-riparian	W79	PFO6F	75	Non-riparian
W59	PFO1/4A	63	Non-riparian	W80	PFO6/7B	75	Non-riparian
W60	PFO4B	14	Non-riparian	W81	PFO6/7B	75	Non-riparian
W61	PFO4B	14	Non-riparian	W82	PFO6/7B	75	Non-riparian
W62	PFO1B	38	Non-riparian	W83	PFO4B	75	Non-riparian
W63	PFO4B	21	Non-riparian	W84	PFO6C	45	Riparian
W64	PFO4B	21	Non-riparian	W85	PFO6C	45	Non-riparian
W65	PFO1/4A	26	Non-riparian	W86	PFO6/7B	6	Non-riparian
W66	PFO4B	16	Non-riparian	W87	PSS6C	53	Riparian
W67	PFO4B, PEM1B	23	Non-riparian	W88	PSS6C	49	Riparian
W68	PSS4B	23	Non-riparian	W89	PSS3/4B	33	Non-riparian
W69	PFO4B, PSS4B	23	Non-riparian	W90	PSS3/4B	27	Non-riparian
W70	PFO6C	75	Non-riparian	W91	PSS6C	53	Riparian
W71	PFO6C	75	Non-riparian				

[a] Wetland Type: **PFO** palustrine, forested; **PEM** palustrine, emergent; **PSS** palustrine, scrub-shrub

3.5.4.2. Buffer Areas

The project study area is located within the Neuse River Drainage Basin. Features within the project study corridors that are mapped as either a blue-line stream channel or open water feature on the most recent version of either the USGS topographic quadrangle or the county soil survey are subject to the Neuse River Basin Buffer Rules unless review by N.C. Division of Water Quality (DWQ) confirms these features are not present in the field. These Buffer Rules restrict land use within a 50-foot zone surrounding the stream.

On October 14, 2004, an N.C. Division of Water Quality representative reviewed selected features and confirmed which of these would be exempt from the Neuse River Basin Buffer Rules. One feature identified as a stream on the jurisdictional maps (feature S9 on Figure 3-11 B) was determined to be exempt in regards to applicability of the Neuse River Basin Buffer Rules. All other features identified as streams on the jurisdictional features maps were determined to be streams subject to applicability of the Neuse River Basin Buffer Rules. Several features identified as blue-line stream channels on the USGS topographic quadrangle or the county survey were determined to be wetlands rather than streams and therefore exempt from the Neuse River Basin Buffer Rules. These features were delineated as wetlands and are labeled on the jurisdictional features maps as wetland features W47 (including W48/W49 and W50/51) (Figure 3-11 C), W27 (in part) (Figures 3-11 B and 3-11 C), W19/W21 (Figure 3-11 B), W23 (Figure 3-11 C), and W53 (Figure 3-11 C).

3.5.4.3. Protected Species

3.5.4.3.1. Federally-Protected and Federally-Listed Species

All protected species surveys and evaluations within the project corridors were conducted by Environmental Services, Inc. with the exception of the surveys and evaluations for the red-cockaded woodpecker and the bald eagle which were prepared by Dr. J. H. Carter III & Associates, Inc.

3.5.4.3.1.1. Species Protected By Section 7 of the Endangered Species Act

Species with the federal classification of Endangered (E), Threatened (T), or officially Proposed (P) for such listing are protected under Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543). Species listed as Threatened due to Similarity of Appearance [T(S/A)] are not subject to Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS). Table 3.19 presents the federally-protected species listed for Craven County as of September 22, 2010 and Carteret County as of March 21, 2011 (USFWS list).

Table 3.19. Federally-Protected Species in Craven and Carteret Counties

(USFWS County List Updates: Craven – 22 September 2010; Carteret – 21 March 2011)

Common Name	Scientific Name	Federal Status[a]	County Present[b]
Shortnose sturgeon	*Acipenser brevirostrum*	E	Ca
American alligator	*Alligator mississippiensis*	T(S/A)	Cr, Ca
Loggerhead sea turtle	*Caretta caretta*	T	Ca
Green sea turtle	*Chelonia mydas*	T	Ca
Leatherback sea turtle	*Dermochelys coriacea*	E	Cr, Ca
Hawksbill sea turtle	*Eretmochelys imbricata*	E	Ca
Kemp's ridley sea turtle	*Lepidochelys kempii*	E	Ca
Piping plover	*Charadrius melodus*	T	Ca
Red-cockaded woodpecker	*Picoides borealis*	E	Cr, Ca
Roseate tern	*Sterna dougallii dougallii*	T	Ca
West Indian Manatee	*Trichechus manatus*	E	Cr, Ca
Sensitive jointvetch	*Aeschynomene virginica*	T	Cr
Seabeach amaranth	*Amaranthus pumilus*	T	Ca
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E	Cr, Ca

[a] E - Endangered; T- Threatened; T(S/A) - Threatened due to Similarity of Appearance
[b] Cr - Craven County, Ca - Carteret County

Shortnose sturgeon (*Acipenser brevirostrum***)** – E (Date Listed: 11 March 1967)

This species is an anadromous, bottom-feeding fish which spends most of the year in estuarine environments and moves into fresh water only when spawning (NMFS 1998a). Sturgeons are unmistakable in appearance. Size, snout characteristics, and the absence of scutes between the anal

fin and lateral row of scutes distinguish shortnose sturgeon from Atlantic sturgeon (*A. oxyrhynchus*) which occurs within the same range (Rohde *et al*. 1994[39]). Adult shortnose sturgeon range in size from approximately 1.4 to 3.6 feet and have a short snout and wide mouth (Rohde *et al*. 1994[39]). This species occurs in Atlantic seaboard rivers from the St. Johns River, Florida, to eastern Canada.

Shortnose sturgeon occupy different habitats and occur at different depths at different times of the year; seasonal habitat requirements described here are based on Burkhead and Jenkins (1991)[52]. In the fall and winter shortnose sturgeon are typically found in estuaries and lower sections of large rivers at depths of 33 to 100 feet; some adults reportedly move into the Atlantic as well. In the summer, adults are found in waters three to six feet deep. Shortnose sturgeon migrate upstream to spawn near the fall line at sites having swift water flow over gravel and rubble. Juveniles reportedly remain in deeper portions of the lower reaches of rivers in areas just above the salt wedge.

American alligator (*Alligator mississippiensis*) – T S/A (Date Listed: 11 March 1967)
This species is a large reptile with a broad snout, a short neck, a heavy body, and a laterally-compressed tail. Adults are blackish or dark gray, but faint yellowish crossbands are sometimes evident. The young are black with conspicuous yellow crossbands. The American alligator inhabits fresh water swamps, marshes, abandoned rice fields, ponds, lakes, and backwaters of large rivers. Females lay eggs in June and hatchlings emerge in late summer or early fall (Martof *et al.* 1980[35]). American alligator is listed as threatened based on the similarity in appearance to other federally-listed crocodilians; however, there are no other crocodilians within North Carolina.

Sea Turtles

Loggerhead sea turtle (*Caretta caretta)* – T (Date Listed: 28 July 1978)
Green sea turtle (*Chelonia mydas*) – T (Date Listed: 28 July 1978)
Leatherback sea turtle (*Dermochelys coriacea*) – E (Date Listed: 2 June 1970)
Hawksbill sea turtle (*Eretmochelys imbricata)* – E (Date Listed: 2 June 1970)
Kemp's ridley sea turtle (*Lepidochelys kempii)* – E (Date Listed: 2 December 1970)

Five marine turtles are listed for Carteret County: loggerhead sea turtle, green sea turtle, leatherback

sea turtle, hawksbill sea turtle, and Kemp's ridley sea turtle. One marine turtle is listed for Craven County: leatherback sea turtle. All five species have similar habitat requirements and are treated together.

The loggerhead sea turtle is the most common sea turtle on the coast of the North Carolina and is most numerous from late April to October. This species averages 31 to 47 inches in length and weighs from 170 to 500 pounds (lbs) (Martof *et al*. 1980[35]). The loggerhead sea turtle is temperate or subtropical in nature, and is primarily oceanic, but it may also stray into freshwater bays, sounds, and large rivers. Nesting habitat for loggerhead sea turtles consists of ocean beaches.

The green sea turtle is most commonly found in the Caribbean where it breeds on sandy beaches, although individuals, usually immatures, are occasionally found along the North Carolina coast and the species has been documented as rarely nesting in North Carolina. The green sea turtle reaches lengths of 30 to 60 inches and weights of 220 to 650 lbs, and has a smooth, heart-shaped shell (Martof *et al*. 1980[35]). Green sea turtles are omnivorous, primarily eating jellyfish and seaweeds (NMFS 1998b[53]).

Although primarily tropical in nature, the range of the leatherback sea turtle may extend to Nova Scotia and Newfoundland (Martof *et al*. 1980[35]). The leatherback sea turtle sometimes moves into shallow bays, estuaries, and even river mouths. The leatherback sea turtle is distinguishable by its larger size [46 to 70-inch carapace, 650 to 1,500 lbs] and a ridged shell of soft, leathery skin. The leatherback sea turtle feeds extensively on jellyfish, although its diet often includes other sea animals and seaweed. The leatherback sea turtle typically nests on sandy beaches in tropical areas.

The hawksbill turtle is a small to medium-sized sea turtle that is distinguished from other sea turtles by a beak-like mouth, two claws on each flipper, and, when on land, an alternating gait, unlike the leatherback and green sea turtles. Hawksbill turtles are found in tropical ocean habitats and only rarely wander to the shores of North Carolina (Martof *et al*. 1980[35]). Nesting typically occurs on beaches in tropical oceans, typically underneath vegetation (NMFS 1993[54]).

The Kemp's ridley sea turtle is the smallest of the sea turtles with a carapace 23 to 30 inches in length, and weighing 79 to 110 pounds. It is generally considered the most endangered species of sea turtle in the world (Palmer and Braswell 1995[55]). This species ranges from the Gulf of Mexico and the east coast, to Nova Scotia and Europe. In addition to its small size, this species is discernible by the heart-shaped carapace and gray coloration. Kemp's ridley sea turtle prefers shallow coastal waters, including sounds and the lower portions of large rivers, where it feeds on crabs, shrimp, snails, clams, and some saltwater plants. Nearly all members of this species are believed to nest on a short strand of ocean beach in the state of Tamaulipas, Mexico.

Piping Plover (*Charadrius melodus*) – T (Date Listed: 11 December 1985)

This species is a small shorebird with a light beige back, a black tail with a white edge, and white chest. These birds are the smallest of the plovers found in North Carolina, measuring only six to eight inches in length (Golder and Parnell 1987[56]). These small Nearctic birds occur along beaches above the high tide line, sand flats at the ends of sand spits and barrier islands, gently sloping foredunes, blowout areas behind primary dunes, and washover areas cut into or between dunes (USFWS 1996a). Nests are most often on open, wide, sandy stretches of beach similar to those associated with inlets and capes. Piping plovers usually remain alone or in small flocks on the drier portions of beaches and mudflats (Potter *et al.* 1980[36]). This species is migratory, but some individuals nest in North Carolina, and others migrate to spend the winter in the state. Critical Habitat has been designated for wintering piping plovers along selected beaches within Carteret County (USFWS 2007[57]).

Red-cockaded woodpecker (RCW) (*Picoides borealis*) – E (Date Listed: 13 October 1970)

The RCW is a small, non-migratory woodpecker endemic to mature, fire-maintained pine forests in the southeastern U.S., where it was historically common. RCWs measure seven to eight and one half inches long, have a black cap, prominent white cheeks and a black-and-white, horizontally barred back. Adult males have red markings (cockades) behind the ear, but the cockades are difficult to see (USFWS 2003[58]). Prime nesting habitat includes open, mature southern pine forests dominated by longleaf, loblolly, pond, slash or other southern pine species greater than 60 years of age with little or no mid- or understory development (USFWS 2003[58]). Pine flatwoods and pine-

dominated savannas, which have been maintained by frequent natural fires, serve as ideal nesting and foraging habitat for the RCW. Development of a thick understory may result in abandonment of cavity trees. Foraging habitat is comprised of open pine or pine/mixed hardwood stands 30 years of age or older (USFWS 2003[58]).

Nest/roost cavities are excavated into the heartwood of living pine trees that are typically older than 60 years of age (USFWS 2003[58]). The RCW excavates resin wells into the cambium around, above and below the cavity entrance, resulting in a shiny, resinous buildup around the cavity. An aggregate of cavity trees is called a cluster and may include one to more than twenty cavity trees. A cluster is occupied by a group of RCWs typically consisting of a breeding male and female and often one or more helpers, usually male offspring from previous years (USFWS 2003[58]),Walters *et al.* 1988a[59]).

In 1992, a Croatan National Forest (CNF) RCW Management Plan[60] was developed by Dr. Jeff Walters of NC State University (NCSU) and Warren Starnes, a CNF biologist (at the time), which proposed to link the fragmented RCW population on the CNF. In the winter of 1992/1993, the USFS contracted the NCSU RCW Research Project to create nine RCW recruitment clusters with artificial cavities and provision cavities within 16 existing inactive clusters on the CNF. The artificial cavity provisioning was the first phase in a five phase plan to link the five subpopulations (as defined by Walters and Starnes[60]) on the CNF and to stabilize isolated clusters on the CNF. The population linkage design was eventually incorporated into The Croatan National Forest Land and Resource and Management Plan 2002[11]. The 2002 Plan emphasizes recovery of RCWs on the CNF using cavity provisioning to attract new RCW breeding groups to existing unoccupied clusters or to newly created clusters. The subsequent four phases were not implemented according to the timeline suggested in the 1992 Management Plan[60].

According to an extensive biological analysis of the RCW in the project area conducted by Dr. J. H. Carter III & Associates, Inc. (JCA) that was completed in December 2007 for the NCDOT, Project Development and Environmental Analysis Branch, Natural Environment Unit[61], one or more of the three detailed study corridors will affect foraging habitat for four existing RCW clusters, one recruitment cluster, one future recruitment cluster and four habitat management areas (HMAs)

proposed for future RCW recruitment clusters. Foraging habitat analyses (FHAs) were conducted to evaluate the direct effects from each alternative on the four existing RCW clusters, the one recruitment cluster, and the one future recruitment cluster. Future potential habitat for each HMA was also evaluated. Secondary and cumulative effects of each alternative were analyzed for all existing and future recruitment clusters. In October 2010, JCA biologists updated the activity status of the affected clusters and re-evaluated midstory measurements. The results of this analysis were submitted to NCDOT in an Addendum to the Biological Alternatives Analysis for Red-cockaded Woodpecker and Bald Eagle Impacts, US Highway 70 Bypass (R-1015), Craven County, North Carolina (JCA 2011[62]) in May 2011 and are included in Chapter 4, Section 4.1.9.3.

Roseate tern (*Sterna dougallii dougallii*) – T (Date Listed: 2 November 1987)

This species is a medium-sized tern, 14 to 17 inches long with a long, deeply-forked, white tail which exceeds the wing length when the bird is at rest. In breeding plumage, the roseate tern has a black bill and cap, light gray mantle, red legs, and a rosy tinge on the chest and belly. Tern prey consists of small coastal fish which are caught by diving on them from the air. The roseate tern is a rare coastal migrant from late March to mid May and from late July to October (Potter *et al.* 1980[36]). The nest of this colonial, ground-nesting seabird is generally a depression on open sand with shells or grasses, usually on the upper beach or dune areas. This species was documented as nesting in Carteret County in 1973 (Potter *et al.* 1980[36]).

West Indian Manatee (*Trichechus manatus*) – E (Date Listed: 11 March 1967)

This species is a large, gray or brown aquatic mammal that averages 10 to 13 feet in length and weighs up to 1,000 pounds. During summer months, manatees migrate from their normal Florida wintering areas to as far north as coastal Virginia. These mammals inhabit warm waters, both fresh and salt, where their diet consists mostly of aquatic vegetation (Webster *et al.* 1985[37]).

Sensitive jointvetch (*Aeschynomene virginica*) – T (Date Listed: 20 May 1992)

This species is a robust, bushy-branched, annual legume often exceeding three feet in height. Young stems have bristly hairs with large swollen bases (Leonard 1985[63]). The alternate, compound leaves are even-pinnate, approximately 1.25 to 2 inches wide, with 30 to 56 toothless leaflets (Radford *et*

al. 1968[30]). Flowers are bright greenish-yellow with red veins, about 0.5 inch long, and are subtended by bractlets with toothed margins (Leonard 1985[63]). The flowers are produced on few-flowered racemes form July to October. The jointed legume (loment) is about two inches long, has 6 to 10 segments, and a 0.5 to 1-inch stalk. Habitat for this species in North Carolina consists of moist to wet coastal roadside ditches and moist fields that are nearly tidal (USFWS 1995a[64]), especially in full sun (Leonard 1985[63]). This species seems to favor microhabitats where there is a reduction in competition from other plant species, and usually some form of soil disturbance (USFWS 1995a).

Seabeach amaranth (*Amaranthus pumilus*) – T (Date Listed: 7 April 1993)

This species is a herb that grows on barrier island beaches. It is a succulent annual that is sprawling or trailing and may reach two feet or more in length (Radford *et al.* 1968[30]). Inconspicuous flowers and fruits are produced in the leaf axils, typically beginning in July and continuing until frost. Primary habitat for seabeach amaranth consists of bare sand, especially on over wash flats at accreting ends of islands, and lower foredunes and upper strands of non-eroding beaches. The only remaining large populations are in coastal North Carolina (USFWS 1996b[65]).

Rough-leaved loosestrife (*Lysimachia asperulaefolia*) – E (Date Listed: 12 June 1987)

This species is a rhizomatous perennial that often reaches the height of two feet; its leaves are sessile and entire, in whorls of three to four. Five-petaled yellow flowers, approximately 0.5-inch across, are produced on a loose terminal raceme from late May to June; seeds are formed by August, but the small, rounded capsules do not dehisce until October. Preferred habitat of the rough-leaved loosestrife consists of the ecotone between longleaf pine savannas and wetter, shrubby areas, where lack of canopy vegetation allows abundant sunlight into the herb layer (USFWS 1995b[66]). The loosestrife is endemic to Coastal Plain and Sandhill regions of the Carolinas. This species is fire maintained; suppression of naturally-occurring fires has contributed to the loss of habitat in our state. Drainage of habitat may also have adverse effects on the plant (USFWS 1995b[66]).

3.5.4.3.1.2. Bald and Golden Eagle Protection Act

Bald Eagle (*Haliaeetus leucocephalus*) – The Bald Eagle is protected under the Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668d, 54 Stat. 250**)** as amended -- Approved June 8, 1940, and amended by P.L 86-70 (73 Stat. 143) June 25, 1959; P.L. 87-884 (76 Stat. 1346) October 24, 1962; P.L. 92-535 (86 Stat. 1064) October 23, 1972; and P.L. 95-616 (92 Stat. 3114) November 8, 1978. The Bald Eagle was formerly listed as a threatened species and protected under Section 7 of the Endangered Species Act of 1973 (listed as threatened on March 11, 1967 and delisted in August 2007). The Bald and Golden Eagle Protection Act (referred to as the Eagle Act) is now the primary regulation that provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Eagle Act, or regulations issued pursuant thereto, and strengthened enforcement measures.

The bald eagle is a large, brown North American fish eagle in the hawk family (*Accipitridae*). It can range from 27-35 inches in length and weigh from seven to fourteen pounds. Its wingspan is almost seven feet. The bald eagle's plumage is mostly dark brown and adults have a pure white head and tail. Both sexes look alike. Juveniles have dark brown heads and white mottling on the belly, wings and tail. Adult plumage is obtained in the fourth or fifth year (USFWS 1989[67]).

The bald eagle is found throughout the lower 48 states of the United States and in Alaska and Canada. It typically inhabits mature conifer forests close to clean bodies of water populated with fish, most often rivers, estuaries, coasts or large lakes. It is sometimes a predator, catching surface fish and other prey in its talons, but more often a scavenger, eating carrion from the ground (e.g., dead fish washed up onshore) (USFWS 1989[67]).

Bald eagles usually first breed at age four to five years and may mate for life. The nesting season in the southeast extends from October to May (USFWS 2007b[68]). Nests are typically built in the tops of very tall conifers located near water. Eagles may live 30 or more years in the wild and often return to within 100 miles of their birthplace to nest (USFWS 1989[67]).

Biologists from Dr. J. H. Carter III & Associates, Inc. surveyed each of the three detailed study corridors and a 660-foot radius around the corridors for bald eagle nests by helicopter in January 2011. To ensure 100 percent visual coverage, the corridors were flown using a grid system (both north/south and east/west). Transects were oriented depending on the prevailing wind and spaced 250 to 500 feet apart depending on stand density. No eagle nests were found during the aerial surveys. However, one sub-adultbald eagle was observed flying outside of the 660-foot radius survey area north of the Bypass study corridors.

In order to avoid disturbing nesting bald eagles, the National Bald Eagle Management Guidelines (USFWS 2007)[69] recommend 1) keeping a distance (at least 330 feet or 660 feet) between a proposed activity and an eagle nest (distance buffer), 2) maintaining a preferably forested (or natural) area between an activity and a nest tree (landscape buffer), and 3) avoiding certain activities during the breeding season. The buffer areas serve to minimize visual and auditory effects associated with human activities near nest sites.

The USFWS guidelines recommend that if road construction activities will be visible to an eagle nest, construction activities should be at least 660 feet from the nest. In addition, landscape buffers are recommended. Construction activities that are not visible to a nest should occur at least 330 feet away from a nest and should be conducted outside the breeding season (USFWS 2007[68]).

Eagle monitoring data provided by the North Carolina Wildlife Resources Commission listed 12 nests in Craven County and two in Carteret County in 2010. Two of these 14 nests are located in the vicinity of the project. One nest is located approximately 1.5 miles east of the project study corridor on the Cherry Point Marine Corps Air Station and the other nest is approximately 3.5 miles northwest of the project site near East Prong Brice Creek on CNF property. None of the known nests are located within the 660-foot radius around the survey corridors. Additionally, construction activities for the proposed Havelock Bypass will not occur within 330 feet of, or be visible from, any known nest trees.

3.5.4.3.1.3. Species of Concern

The U.S. Fish and Wildlife Service (USFWS) list also includes a category of species designated as "Federal Species of Concern" (FSC). The FSC designation provides no federal protection under the Endangered Species Act for the species listed. However, these are listed since they may attain federally-protected status in the future. Table 3.20 includes the eighteen FSC species listed for Craven County, the twenty-four species for Carteret County, their state designations, and whether potential habitat for those species is present within the project study corridors. One additional FSC species identified as occurring in Carteret County, many-flowered grass pink (*Calopogon multiflorus*), and two additional FSC species identified as occurring in Craven County, coastal goldenrod (*Solidago villosicarpa*) and southeastern myotis (*Myotis austroriparius*)are also presented in Table 3.20. The USFWS county lists have not yet been updated to include these species.

Twenty-one FSC species with potential habitat within the study corridors are listed in Table 3.20. Three FSC species; the American eel, the black-throated green warbler, and the spring-flowering goldenrod, were observed within the project study corridors during field investigations. Another FSC species, Bachman's sparrow (*Aimophila aestivalis*), was observed adjacent to the project study corridors. NCDOT biologists also documented the southeastern bat just outside the study corridor. According to North Carolina Natural Heritage Program records, the southern hognose snake (*Heterodon simus*) was documented within the Croatan National Forest east of the Alternate 2 corridor and Lake Road, near an existing railroad crossing. Spring-flowering goldenrod has been documented throughout the project study corridors. Intensive surveys during the U.S. Forest Service (USFS) Proposed, Endangered, Threatened, and Sensitive (PETS) species investigation discussed below, indicated the spring-flowering goldenrod is a more numerous and widespread species than previously documented.

Table 3.20. Federal Species of Concern

(USFWS County List Updates: Craven – 22 September 2010; Carteret – 21 March 2011)

Common Name	Scientific Name	County Listed[a]	State Designation[b]	Potential Habitat[c]
American eel	*Anguilla rostrata*	Cr, Ca	W1	Yes
Bachman's Sparrow	*Aimophila aestivalis*	Cr, Ca	SC	Yes
Black rail	*Laterallus jamaicensis*	Cr, Ca	SR	No
Black-throated green warbler	*Dendroica virens waynei*	Cr, Ca	SR	Yes
Bridle shiner	*Notropis bifrenatus*	Cr	SC (PE)	Yes
Carolina crawfish frog	*Rana capito capito*	Ca	T	Yes
Carolina madtom	*Noturus furiosis*	Cr	SC (PT)	No
Eastern Henslow's sparrow	*Ammodramus henslowii susurrans*	Ca	SR	Yes
Eastern painted bunting	*Passerina ciris ciris*	Ca	SR	No
Mimic glass lizard	*Ophisaurus mimicus*	Ca	SC	Yes
Northern diamondback terrapin	*Malaclemys terrapin terrapin*	Ca	SC	No
Southeastern myotis [d]	*Myotis austroriparius*	Cr	SC	Yes
Southern hognose snake	*Heterodon simus*	Cr, Ca	SC	Yes
A skipper	*Atrytonopsis* sp. 1	Ca	SR	No
Annointed sallow noctuid moth	*Pyreferra ceromatica*	Cr	SR	Yes
Buchholz's dart moth	*Agrotis buchholzi*	Cr, Ca	SR	Yes
Carter's noctuid moth	*Spartiniphaga carterae*	Ca	SR	Yes
Eastern beard grass (arogos) skipper	*Atrytone arogos arogos*	Ca	SR	Yes
Venus flytrap cutworm	*Hemipachnobia subporphyrea*	Ca	SR	Yes
Coastal beaksedge	*Rhynchospora pleiantha*	Ca	T	No
Coastal goldenrod [d]	*Solidago villosicarpa*	Cr	E	No
Dune blue curls	*Trichostema* sp. 1	Ca	SR-L	No
Godfrey's sandwort	*Minuartia godfreyi*	Cr	E	No
Grassleaf arrowhead	*Sagittaria weatherbiana*	Cr	SR-T	Yes
Loose watermilfoil	*Myriophyllum laxum*	Cr, Ca	T	No
Many-flower grass pink [d]	*Calopogon multiflorus*	Ca	E	Yes
Pickering's dawnflower	*Stylisma pickeringii* var. *pickeringii*	Ca	E	No
Pondspice	*Litsea aestivalis*	Cr, Ca	SR-T	Yes
Raven's boxseed	*Ludwigia ravenii*	Cr, Ca	SR-T	Yes
Savanna campylopus	*Campylopus carolinae*	Ca	SR-T	Yes
Spring-flowering goldenrod	*Solidago verna*	Cr, Ca	T	Yes
Venus flytrap	*Dionaea muscipula*	Cr, Ca	SR-L, SC	Yes
Wagner's (Carolina) spleenwort	*Asplenium heteroresiliens*	Cr	E	No
White wicky	*Kalmia cuneata*	Cr	W1	No

[a] Cr= Craven county; Ca= Carteret County.

[b] **E** – Endangered; **T** – Threatened; **SC** – Special Concern; **SR** – Significantly Rare; **PT** – Proposed Threatened; **PE** – Proposed Endangered; **SR-L** – Significantly Rare, range of species is limited to North Carolina and adjacent states; **SR-T** – Significantly Rare, species is rare throughout its range; W1 – Watch List, species believed to be rare and of conservation concern.

[c] Potential habitat based on Franklin and Finnegan (2008), LeGrand, *et al.* (2008), and other literature previously cited.

[d] Species not included on the current FSC list available from USFWS but are included based on data available from the USFS and NCNHP documenting these species in Carteret and Craven Counties.

3.5.4.3.2. State-Protected Species

Species of mammals, birds, reptiles, amphibians, and plants with the North Carolina status of Endangered (E), Threatened (T), and Special Concern (SC) receive limited protection under the North Carolina Endangered Species Act (G.S. 113-331 *et seq.*) and the North Carolina Plant Protection Act of 1979 (G.S. 106-202.12 *et seq.*). No state-protected species, other than those noted under the Federal Protected Species or Federal Species of Concern accounts (previously listed) or U.S. Forest Service (USFS) Proposed, Endangered, Threatened, and Sensitive (PETS) species accounts (listed below) have been documented in North Carolina Natural Heritage Program records or were observed during field investigations within the project study corridors.

3.5.4.3.3. U.S. Forest Service Proposed, Endangered, Threatened, and Sensitive (PETS) Species

In addition to plant and animal species receiving protection under the Endangered Species Act, the U.S. Forest Service (USFS) maintains their own list of Proposed, Endangered, Threatened, and Sensitive (PETS) species for the Croatan National Forest (CNF) and considers these species when determining impacts to National Forest System (NFS) lands. Since all of the study alternatives cross NSF lands, a special use permit from the USFS will be required to provide the lands for the proposed project. Prior to approving a special use permit for the project, the USFS requires that the project study area be evaluated for PETS species. The North Carolina Department of Transportation (NCDOT), Division of Highways, Planning and Environmental Analysis Branch, Natural Environment Unit, coordinated with the USFS to determine which PETS species were to be evaluated. The surveys and evaluations were conducted by Environmental Services, Inc. and reviewed by NCDOT and the USFS.

Throughout the evaluation, the USFS has been amending and revising its list of PETS species as new scientific data regarding species distributions on the CNF becomes available. The USFS identified 30 PETS species with a high probability of occurring that were to be evaluated in the Environmental Assessment for the proposed project in 1996. At that time the USFS indicated that 73 PETS species were listed for consideration on the CNF. When additional detailed evaluations were

initiated in 2002 that list was amended to include 175 species. In January 2005, September 2007, May 2008, and October 2010 the USFS further amended the PETS list removing species and requesting that additional species be incorporated into the project analysis.

The 189 species on the PETS species lists provided by USFS in October 2010 have been evaluated using at a minimum habitat analysis and records review. Initial habitat assessments, including field evaluations for the USFS PETS species were conducted in 2004 for the species listed at that time. Species surveys requested by the USFS were conducted during the 2005 growing season and results of these surveys were provided to the USFS in December 2006. An evaluation of additional USFS PETS species was completed in May 2008 for species added to the PETS lists. Surveys were conducted at the request of USFS for species with higher conservation priority, and efforts were made to field-verify known occurrences. Remaining species were included in the evaluation based on presence of suitable habitat. Habitat assessments for species added to the 2010 PETS lists have utilized the detailed habitat descriptions found in Section 3.5.2.1 to determine if habitat is present in the project study area. NCDOT will conduct a complete reevaluation of PETS species determined to have suitable habitat in the project study area prior to the completion of the Final Environmental Impact Statement. Table 3.21a presents the 98 plant species that are currently being evaluated as PETS species, and Table 3.21b presents the 91 animal species that are currently being evaluated as PETS species for the CNF (October 2010 lists). Tables 3.21a and 3.21b list all the evaluated USFS PETS species, habitat information for each species, and the potential for suitable habitat in the study area. The most current results of the PETS habitat evaluations are summarized here.

Table 3.21a. USFS PETS Plant Species for the Croatan National Forest (October 2010 List)

Scientific Name	Common Name	USFS Status [a]	Habitat Type	Habitat Present (Study Area)
Aeschynomene virginica	Sensitive jointvetch	T	Tidally influenced marshes and creeks and ditches	No
Agalinis virgata	Branched gerardia	LR	Savannas and depression ponds	Yes
Agrostis altissima	Tall bentgrass	LR	Wet savannas	Yes
Andropogon mohrii	Bog bluestem	LR	Wet savannas	Yes
Arenaria lanuginosa var. *lanuginosa*	Spreading sandwort	LR	Maritime grasslands and forests, sandy sites	No
Aristida simpliciflora	Chapman's three-awn	LR	Wet savannas	Yes
Arnoglossum ovatum var. *lanceolatum*	Savanna milkweed	LR	Wet savannas	Yes
Asclepias pedicellata	Stalked milkweed	LR	Dry savanna and moist flatwoods	Yes
Asplenium heteroresiliens	Carolina spleenwort	S	Marl, coquina limestone outcrops	No
Boltonia asteroides	White Doll's lily	LR	Clay-lined Carolina bays, marshes, savannas, bogs	Yes
Calopogon multiflorus	Many-flower grass pink	S	Savannas and sandhills	Yes
Campylopus carolinae	Savanna campylopus	S	Savanna	Yes
Cardamine longii	Long's bittercress	S	Tidal marshes, tidal cypress-gum forests	No
Carex basiantha	Widow sedge	LR	Marl, mesic forests and bottomlands over calcareous rocks	Yes
Carex emmonsii	Emmon's sedge	LR	Moist woods	Yes
Carex lupuliformis	Hop-like sedge	LR	Mesic bottomlands, especially in calcareous or mafic areas	Yes
Cirsium lecontei	Leconte's thistle	LR	Savannas	Yes
Cladium mariscoides	Twig-rush	LR	Bog marshes, brackish fens, sandhill seeps	No
Cleistes bifaria	Small spreading pogonia	S	Savannas, dry meadows	Yes
Clematis catesbyana	Coastal virgin's-bower	LR	Dunes, maritime forest edge, dolomite	No
Corallorhiza wisteriana	Spring coral-root	LR	Moist to dry nutrient-rich forests, especially over limestone, mafic rocks or shell-rich sands	Yes
Coreopsis helianthoides	Beadle's coreopsis	LR	Swamp, peaty wetlands	Yes
Crocanthemum carolinianum	Carolina sunrose	LR	Sandhills pinelands and dry savannas	Yes
Cylindrocolea rhizantha	A liverwort	S	Marl outcrops	No
Cystopteris tennesseensis	Tennessee bladder-fern	LR	Marl, calcareous rock outcrops	No
Desmodium fernaldii	Fernald's tick-trefoil	LR	Dry to mesic mixed pine-hardwood forest, pine savannas	Yes
Dichanthelium hirstii	Hirst's panic grass	S	Cypress savannas	No
Dichanthelium sp. *9*	Hidden-flowered witch grass	LR	Pocosins, wet meadows, ditchlines	Yes
Dichanthelium spretum	Eaton's witch grass	LR	Wet sands and peaty bogs, savannas	Yes
Dionaea muscipula	Venus flytrap	S	Savannas, seepage bogs, pocosin edges with little competition	Yes
Eleocharis robbinsii	Robbin's spikerush	LR	Ponds, lakes, Carolina bays	No
Eurybia spectabilis	Showy aster	LR	Pine barrens, woodland borders	No
Fissidens hallii	Hall's pocket moss	S	On bark in cypress-gum swamps	Yes
Frullania donnellii	A liverwort	S	Ilex bark in marshes	No
Hibiscus aculeatus	Comfortroot	LR	Bay forests, sand ridges, roadsides	Yes
Isoetes microvela	Quillwort	S	Emergent or calcareous riverbanks	No
Lachnocaulon beyrichianum	Southern bogbutton	S	Sandhills	No

[a] E – Endangered; LR- Locally Rare; S – Sensitive; T – Threatened.

Table 3.21a. Continued

Scientific Name	Common Name	USFS Status [a]	Habitat Type	Habitat Present (Study Area)
Leersia lenticularis	Catchfly cutgrass	LR	Low moist woods	Yes
Lejeunea bermudiana	A liverwort	LR	On marl outcrops and on decaying logs in blackwater swamps	Yes
Lejeunea dimorphophylla	A liverwort	S	On bark in maritime forests	No
Litsea aestivalis	Pondspice	S	Limesink ponds and other pools	Yes
Lobelia boykinii	Boykin's lobelia	S	Depression ponds, meadows, clay-based cypress savannas	Yes
Ludwigia linifolia	Flaxleaf seedbox	LR	Limesink ponds	No
Ludwigia ravenii	Raven's seedbox	S	Savannas, swamps, marshes, wet open areas	Yes
Lysimachia asperulaefolia	Rough-leaved loosestrife	E	Pocosin/savanna ecotones	Yes
Lysimachia loomisii	Loomis's loosestrife	S	Moist to wet savannas and pocosin ecotones	Yes
Macbridea caroliniana	Birds-in-a-nest (Carolina bogmint)	S	Blackwater swamps, savannas	Yes
Malaxis spicata	Florida adder's mouth	LR	Maritime swamp forest, calcareous mucky outer coastal plain swamps	Yes
Metzgeria unicigera	A liverwort	S	On bark in maritime forests	No
Minuartia godfreyi	Godfrey's sandwort	S	Tidal freshwater marshes	No
Myriophyllum laxum	Loose watermilfoil	S	Limesink ponds, natural lakes	No
Nuphar sagittifolia	Narrowleaf cowlily	S	Blackwater streams, rivers, and lakes	Yes
Oplismenus hirtellus ssp. *setarius*	Shortleaf basket grass	LR	Maritime forests, bottomlands	Yes
Oxypolis ternata	Piedmont cowbane	S	Pine savannas, sandhill seeps	Yes
Parietaria praetermissa	Large-seed pellitory	S	Shell middens, disturbed sites, maritime forest	No
Parnassia caroliniana	Carolina grass-of-parnassus	S	Wet savannas	Yes
Paspalum dissectum	Mudbank crown grass	LR	Mudbanks, open wet areas, wet ditches	Yes
Peltandra sagittifolia	Spoonflower	LR	Pocosins, wet peat-dominated sites	Yes
Persicaria hirsuta	Hairy smartweed	LR	Limesink ponds, clay-lined Carolina bays, blackwater stream edges	Yes
Pinguicula pumila	Small butterwort	LR	Savannas	Yes
Plagiochila ludoviaciana	A liverwort	LR	On bark in swamps and maritime forests	Yes
Plagiochila miradorensis var. *miradorensis*	A liverwort	LR	On bark in maritime forests and swamps	Yes
Plantago sparsiflora	Pineland plantain	S	Wet savannas	Yes
Platanthera integra	Yellow fringeless orchid	S	Savannas	Yes
Platanthera nivea	Snowy orchid	LR	Wet savannas	Yes
Polygala hookeri	Hooker's milkwort	S	Savannas	Yes
Ponthieva racemosa	Shadow-witch	LR	Blackwater forests and swamps over calcareous rock (marl)	Yes
Quercus minima	Dwarf live oak	LR	Pine flatwoods, coastal fringe sandhills	Yes
Rhexia aristosa	Awned meadow-beauty	S	Clay-lined Carolina bays, limesink ponds	No
Rhynchospora alba	Northern white beaksedge	LR	Limesink ponds, pocosin openings	No
Rhynchospora breviseta	Short-bristled beaksedge	S	Wet savannas, may colonize disturbed areas/roadsides	Yes

[a] E – Endangered; LR- Locally Rare; S – Sensitive; T – Threatened.

Table 3.21a. Continued

Scientific Name	Common Name	USFS Status [a]	Habitat Type	Habitat Present (Study Area)
Rhynchospora harperi	Harper's beaksedge	LR	Limesink ponds and cypress savannas	No
Rhynchospora macra	Southern white beaksedge	S	Seepage or sphagnum bogs in frequently burned streamhead pocosins	Yes
Rhynchospora microcarpa	Southern beaksedge	LR	Limesink ponds, maritime grasslands, clay-lined Carolina bays	No
Rhynchospora pleiantha	Coastal beaksedge	S	Sandy margins of limesink ponds	No
Rhynchospora thornei	Thorne's beaksedge	S	Wet savannas	Yes
Sagittaria chapmanii	Chapman's arrowhead	S	Limesink ponds with drawdown	No
Sagittaria weatherbiana	Grassleaf arrowhead	S	Fresh to slightly brackish marshes, swamps and ponds	Yes
Schoenoplectus etuberculatus	Canby's bulrush	LR	On peat in depression ponds, in flowing blackwater streams	Yes
Scirpus lineatus	Drooping bulrush	LR	Low rich swamp forests over coquina limestone	Yes
Scleria baldwinii	Baldwin's nutrush	LR	Wet savannas associated with longleaf pine, pond pine, and pondcypress	Yes
Sclerolepis uniflora	One-flower hardscale	LR	Limesink ponds, blackwater floodplains, clay-lined Carolina bays	Yes
Solidago leavenworthii	Leavenworth's goldenrod	LR	Savannas, clay-based Carolina bays, peaty seeps, pocosin borders	Yes
Solidago pulchra	Carolina goldenrod	S	Savannas	Yes
Solidago tortiflora	Twisted-leaf goldenrod	LR	Dry savannas and moist flatwoods	Yes
Solidago verna	Spring-flowering goldenrod	S	Moist pine savannas, lower slopes in sandhills, roadsides in pinelands	Yes
Solidago villosicarpa	Coastal goldenrod	S	Maritime, edge of coastal fringe evergreen forest in outer coastal plain	No
Sphagnum fitzgeraldii	Fitzgerald's peatmoss	S	Pocosins and savannas	Yes
Sphagnum macrophyllum var. *floridanum* (=*S. cribrosum*)	Florida peatmoss	S	Blackwater streams, ditches	Yes
Sphagnum torreyanum	Giant peatmoss	LR	Millponds, beaver ponds	Yes
Spiranthes eatonii	Eaton's ladies'-tresses	LR	Wet savannas	Yes
Spiranthes longilabris	Giant spiral orchid	S	Wet savannas	Yes
Teloschistes flavicans	Sunrise lichen	S	Maritime forest	No
Thalictrum macrostylum	Piedmont meadowrue	S	Bogs, wet woods, tidal freshwater marshes, associated with circumneutral soils and mafic outcrops over olivine	Yes
Tofieldia glabra	Carolina asphodel	S	Wet pine savannas and sandhill seeps, savanna-pocosin ecotones	Yes
Utricularia olivacea	Dwarf bladderwort	LR	Limesink ponds, beaver ponds	Yes
Xyris diffiformis var. *floridana*	Florida yellow-eyed grass	LR	Savannas	Yes
Xyris stricta	A yellow-eyed grass	LR	Savannas, depression ponds, depressional meadows, ditches	Yes

[a] E – Endangered; LR- Locally Rare; S – Sensitive; T – Threatened.

Table 3.21b. USFS PETS Animal Species for the Croatan National Forest (October 2010 List)

Scientific Name	Common Name	USFS Status [a]	Habitat Type	Habitat Present (Study Area)
MAMMALS				
Canis rufus	Red wolf	E	Forests, shrublands, coastal prairies, marshes with heavy vegetative cover	No[b]
Condylura cristata pop. 1	Star-nosed mole (coastal plain population)	LR	Moist meadows, bogs, swamps, bottomlands	No[c]
Corynorhinus rafinesquii	Rafinesque's big-eared bat	S	Abandoned structures, caves, hollow trees, loose bark trees near wooded areas	Yes
Myotis austroriparius	Southeastern myotis	LR	Roosts in buildings and hollow trees, forages near water	Yes
Neotoma floridana floridana	Eastern woodrat (coastal plain population)	LR	Lowland deciduous forest with dense palmetto cover, low wet areas, marsh	Yes
Peromyscus leucopus buxtoni	Buxton Woods white-footed mouse	LR	Maritime forests in Cape Hatteras area	No
Peromyscus leucopus easti	Pungo white-footed mouse	LR	Thickets of myrtle and poison ivy at marsh edge	No
Puma concolor couguar	Eastern cougar	E	Extensive forests and remote areas	No[d]
Sorex sp. 1	An undescribed shrew	LR	Early successional fields, possibly low pocosin	No[c]
Trichechus manatus	West Indian manatee	E	Warm waters of estuaries and river mouths	No
BIRDS				
Aimophila aestivalis	Bachman's sparrow	LR	Open pine woods with grassy cover	Yes
Ammodramus henslowii	Eastern Henslow's sparrow	LR	Clearcut pocosins, damp weedy fields	Yes
Botaurus lentiginosus	American bittern	LR	Freshwater or brackish marshes, lake and pond edges with emergent vegetation	No
Charadrius melodus	Piping plover	T	Sandy upper beaches	No
Circus cyaneus	Northern harrier	LR	Marshes, meadows, grasslands	No
Dendroica kirtlandii	Kirtland's warbler	E	Jack pine forests	No[e]
Dendroica virens waynei	Black-throated green warbler (coastal plain population)	LR	Nonriverine wetland forests, especially where white cedar or cypress are mixed with hardwoods	Yes
Falco peregrinus	Peregrine falcon	S	Cliffs, bay, sound, tidal flats, river mouth, herbaceous wetland	No
Gelochelidon nilotica	Gull-billed tern	LR	Coastlines, salt marshes, estuaries, sand flats on maritime islands	No
Haliaeetus leucocephalus	Bald eagle	S	Large bodies of water with mature trees for perching	Yes
Himantopus mexicanus	Black-necked stilt	LR	Fresh or brackish ponds	Yes
Hydroprogne caspia	Caspian tern	LR	Seacoasts, bays, estuaries, lakes, marshes, and rivers	No[c]

[a] E – Endangered; LR- Locally Rare; S – Sensitive; T – Threatened; TS/A – Threatened due to similarity of appearance.
[b] Red wolves are extirpated from North Carolina except for an experimental population on the Albemarle Peninsula and there are no documented occurrences in Craven, Carteret, or Jones Counties, not carried forward for further evaluation.
[c] No documented occurrence in Craven, Carteret, or Jones Counties per USFS 2010, not carried forward for further evaluation.
[d] Eastern cougar is extirpated from North Carolina, not carried forward for further evaluation.
[e] Kirtland's warbler migrates through but does not breed or winter in North Carolina, not carried forward for further evaluation.
[f] Bachman's warbler has no documented current occurrences in North Carolina and is possibly extinct as extensive searches across its potential range have not resulted in a documented occurrence, not carried forward for further evaluation.
[g] NCDOT and NCWRC biologists have determined that streams in the project study area are too acidic to provide suitable habitat for freshwater mussels.

Table 3.21b. Continued

Scientific Name	Common Name	USFS Status [a]	Habitat Type	Habitat Present (Study Area)
Laterallus jamaicensis	Black rail	LR	Salt, brackish, and freshwater marshes; pond borders, wet meadows, grassy swamps	No
Mycteria americana	Wood stork	E	Freshwater or brackish marshes, swamps, lagoons, ponds, flooded fields, nests in trees over water or on islands	No[c]
Passerina ciris ciris	Eastern painted bunting	LR	Maritime shrub thickets, forest edges	No
Phalacrocorax auritus	Double-crested cormorant	LR	Lakes, ponds, rivers, lagoons, swamps, and coastal bays with scattered trees for nesting	No
Picoides borealis	Red-cockaded woodpecker	E	Pine savannas	Yes
Plegadis falcinellus	Glossy ibis	LR	Forests or thickets on maritime islands	No
Porphyrio martinica	Purple gallinule	LR	Freshwater ponds and rivers with floating vegetation	No
Sterna dougallii	Roseate tern	E	Seacoasts, bays, estuaries, sand flats on maritime islands	No
Vermivora bachmanii	Bachman's warbler	E	Moist hardwood forests, swamps, canebrakes	No[f]
REPTILES AND AMPHIBIANS				
Alligator mississippiensis	American alligator	T S/A	Fresh and brackish marshes, ponds, lakes, rivers, swamps	Yes
Ambystoma tigrinum	Eastern tiger salamander	LR	Breeds in fish-free semi-permanent ponds; forages adjacent sandy pinelands	No[c]
Caretta caretta	Loggerhead seaturtle	T	Nests on beaches, forages in ocean/sounds	No
Chelonia mydas	Green seaturtle	T	Nests on beaches, forages in ocean/sounds	No
Crotalus adamanteus	Eastern diamondback rattlesnake	LR	Pine flatwoods, savannas, pine-oak sandhills	Yes
Dermochelys coriacea	Leatherback seaturtle	E	Ocean, rarely in sounds	No
Eretmochelys imbricata	Hawksbill seaturtle	E	Ocean, very rarely in sounds	No
Eurycea quadridigitata	Dwarf salamander	LR	Pocosins, Carolina bays, pine flatwoods, savannas, wetland habitats	No[c]
Heterodon simus	Southern hognose snake	LR	Sandy woods, particularly pine-oak sandhills	Yes
Lampropeltis getula sticticeps	Outer Banks kingsnake	LR	Maritime forests, thickets, and grasslands on the Outer Banks	No
Lepidochelys kempii	Kemp's Ridley seaturtle	E	Oceans and sounds	No
Malaclemys terrapin	Northern diamondback terrapin	LR	Coastal marshes, tidal flats, coves, estuaries, lagoons	No[c]

[a] E – Endangered; LR- Locally Rare; S – Sensitive; T – Threatened; TS/A – Threatened due to similarity of appearance.
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[c] No documented occurrence in Craven, Carteret, or Jones Counties per USFS 2010, not carried forward for further evaluation.
[d] Eastern cougar is extirpated from North Carolina, not carried forward for further evaluation.
[e] Kirtland's warbler migrates through but does not breed or winter in North Carolina, not carried forward for further evaluation.
[f] Bachman's warbler has no documented current occurrences in North Carolina and is possibly extinct as extensive searches across its potential range have not resulted in a documented occurrence, not carried forward for further evaluation.
[g] NCDOT and NCWRC biologists have determined that streams in the project study area are too acidic to provide suitable habitat for freshwater mussels.

Table 3.21b. Continued

Scientific Name	Common Name	USFS Status [a]	Habitat Type	Habitat Present (Study Area_
Micrurus fulvius	Eastern coral snake	LR	Pine-oak sandhill, sandy flatwoods, maritime forests	No[c]
Nerodia sipedon williamengelsi	Carolina salt marsh snake	S	Seaside, estuaries	No
Ophisaurus mimicus	Mimic glass lizard	S	Pine savannas	Yes
Rana capito capito	Carolina gopher frog	S	Dry turkey oak-pine associations, sandy areas in pine savannas	Yes
Rana sylvatica pop.3	Wood frog (coastal plain population)	LR	Mesic to moist hardwood forests	No
Regina rigida	Glossy crayfish snake	LR	Marshes, cypress ponds, other wetlands	Yes
Seminatrix pygaea	Black swamp snake	LR	Lush vegetation of ponds, ditches, sluggish streams	Yes
INSECTS				
Acronicta perblanda	Cypress daggermoth	LR	Cypress swamps	Yes
Acronicta sinescripta	A dagger moth	LR	Savannas and flatwoods	Yes
Agrotis carolina	A dart moth	LR	Open longleaf pine or longleaf pine-oak savanna with pyxie-moss	Yes
Amblyscirtes alternata	Dusky roadside skipper	LR	Open grassy pine flatwoods, savannas, sandhill ridges	Yes
Apamea mixta	A noctuid moth	LR	Savannas, wet meadows	No[c]
Apantensis sp. 1 nr. *carlotta*	A tiger moth	LR	Savannas and sandhill seeps	Yes
Atrytone arogos arogos	Arogos skipper	S	Mesic to boggy reedgrass savannas	Yes
Atrytonopsis sp. 1	An undescribed skipper	LR	Dunes and sandy flats	No
Baetisca obesa	A mayfly	LR	Lower Tar River	No[c]
Bleptina sangamonia	A noctuid moth	LR	Dry longleaf pine communties	Yes
Calephelis virginiensis	Little metalmark	LR	Grassy fields, savannas, marshes	Yes
Callophrys irus	Frosted elfin	LR	Grassy openings or burn scars in barrens and savannas, ROW and powerlines	Yes
Chlorochroa dismalia	Dismal swamp stink bug	LR	Canebrakes	Yes
Datana robusta	A prominent moth	LR	Savannas, flatwoods, and sandhills	No[c]
Euphyes berryi	Berry's skipper	LR	Wet prairies, marshes, savannas with pitcher plants	Yes
Euphyes bimacula	Two-dotted skipper	LR	Wet savannas, bogs, sedge areas near wet woods	Yes
Euphyes dukesi dukesi	Duke's skipper	S	Sedge patches in forested swamps, shaded ditches, woods edge	Yes
Faronta aleada	A noctuid moth	LR	Maritime grasslands	No
Gabara sp. 1	A noctuid moth	LR	Savannas	No[c]
Hemipachnobia subporphyrea	Venus flytrap cutworm moth	S	Large stands of venus flytraps in wet pine savannas, around pocosins	Yes

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[g] NCDOT and NCWRC biologists have determined that streams in the project study area are too acidic to provide suitable habitat for freshwater mussels.

Table 3.21b. Continued

Scientific Name	Common Name	USFS Status [a]	Habitat Type	Habitat Present (Study Area)
Hesperia attalus slossonae	Dotted skipper	S	Xeric natural communities on sterile white sands (or disturbances within)	No
Hypomecis buchholzaria	Buchholz's gray	LR	Fire-maintained glades and pine barrens, xeric scrub-oak	No
Papilio cresphontes	Giant swallowtail	LR	Primarily coastal in maritime forests or thickets	No
Pyreferra ceromatica	Anointed sallow moth	LR	Flatwoods and pocosins, ecotones between mesic woodland and bottomlands	Yes
Spartiniphaga carterae	Carter's noctuid moth	S	Pine barren reed grass, edges of pocosins and wet wiregrass savannas	Yes
Tornos cinctarius	A gray moth	LR	Savannas and sandhills	No[c]
FRESHWATER FISH, MOLLUSKS, AND CRUSTACEANS				
Acipenser brevirostrum	Shortnose sturgeon	E	Brackish water of large rivers and estuaries; spawns in freshwater areas	No
Acipenser oxyrhynchus	Atlantic sturgeon	S	Coastal waters, estuaries, large rivers	No
Elliptio folliculata	Pod lance	LR	Coastal Plain, mainly Lake Waccamaw	No[c]
Ferrissia hendersoni	Blackwater ancylid	LR	Mainly margins of Carolina Bay lakes	No[c]
Fundulus confluentus	Marsh killifish	LR	Fresh to brackish waters along coast	No
Fundulus luciae	Spotfin killifish	LR	Ponds and pools along coast	No
Lampetra aepyptera	Least brook lamprey	LR	Tar and Neuse drainages	No[c]
Lampsilis sp. 2	Chameleon lampmussel	LR	Neuse, Tar, and Cape Fear systems	No[c]
Lasmigona subviridus	Green floater	LR	Tar, Neuse, and Cape Fear systems	No[g]
Leptodea ochracea	Tidewater mucket	LR	Systems primarily in coastal plain, abundant in Lake Waccamaw	No[c]
Lynceus gracilicornis	Graceful clam shrimp	LR	Temporary ponds, pools, and ditches	Yes
Notropis bifrenatus	Bridle shiner	LR	Stream near lower Neuse River	Yes
Noturus furiosus	Carolina madtom	LR	Tar and Neuse drainages, small to medium rivers	No
Sphaerium simile	Grooved fingernail clam	LR	White Oak River	No
Strophitus undulatus	Creeper	LR	Tar, Neuse, Cape Fear, and other systems	No[g]

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[b] Red wolves are extirpated from North Carolina except for an experimental population on the Albemarle Peninsula and there are no documented occurrences in Craven, Carteret, or Jones Counties, not carried forward for further evaluation.
[c] No documented occurrence in Craven, Carteret, or Jones Counties per USFS 2010, not carried forward for further evaluation.
[d] Eastern cougar is extirpated from North Carolina, not carried forward for further evaluation.
[e] Kirtland's warbler migrates through but does not breed or winter in North Carolina, not carried forward for further evaluation.
[f] Bachman's warbler has no documented current occurrences in North Carolina and is possibly extinct as extensive searches across its potential range have not resulted in a documented occurrence, not carried forward for further evaluation.
[g] NCDOT and NCWRC biologists have determined that streams in the project study area are too acidic to provide suitable habitat for freshwater mussels.

There are 70 PETS plant species and 34 PETS animal species for which potentially suitable habitat was identified in at least one of the detailed study corridors or within the NFS lands that will be isolated from contiguous NFS lands by a corridor. Potential effects to these species are discussed in Chapter 4, Section 4.1.9.3.

3.5.4.4. Essential Fish Habitat (EFH)

Any significant stream or river in a county under the jurisdiction of the N.C. Coastal Area Management Act (CAMA) may be considered Essential Fish Habitat (EFH) unless otherwise documented by the National Oceanic and Atmospheric Administration Fisheries (NOAA-Fisheries). During agency review of the proposed project, the U.S. Army Corps of Engineers (USACE) makes the initial determination of whether or not a proposed project "may adversely affect" EFH. This determination by the USACE is submitted to NOAA-Fisheries for their review and comment. NOAA-Fisheries will then determine if additional consultation is necessary regarding the proposed project or if they concur with the USACE's decision. NOAA-Fisheries advises using the Draft List of Essential Fish Habitat Species by Waterbody in North Carolina (NOAA-Fisheries 2009) to determine those species subject to review in a given project study area. No streams or wetlands within the project study area are tidal in nature nor have been identified as a waterbody containing EFH (NOAA-Fisheries 2009).

3.5.4.5. N.C. Coastal Area Management Act Areas of Environmental Concern

Areas of Environmental Concern (AEC) are the foundation of the Coastal Resources Commission's (CRC) permitting program for coastal development. An AEC is an area of natural importance. It may have environmental, social, economic or aesthetic values that make it valuable to the State. The CRC classifies areas as AECs to protect them from uncontrolled development, which may cause irreversible damage to property, public health or the environment. AECs cover almost all coastal waters and about three percent of the land in the 20 coastal counties. Craven and Carteret Counties are counties covered by the Coastal Area Management Act (CAMA).

There are no AEC within the project study area; however, since this project is expected to result in fill in wetlands, NCDOT will be required to submit a Consistency Certification document to the North Carolina Division of Coastal Management demonstrating how the proposed project would be considered consistent with the State's coastal management program.

3.5.4.6. Anadromous Fish Habitat

The East Prong and Southwest Prong Slocum Creek have been identified as anadromous fish spawning areas. Additional portions of Goodwin Creek and Tucker Creek downstream from the project study corridors have also been identified as anadromous fish spawning areas. Culverts under US 70, the railroad, and other roads are expected to limit the potential for anadromous fish for utilizing stream segments within the project study corridors. The North Carolina Wildlife Resources Commission (NCWRC) has requested an in-water work moratorium for February 15 to June 15 for East Prong and Southwest Prong Slocum Creek throughout the study area. Goodwin Creek and Tucker Creek upstream of the US 70 structure will not require a moratorium; however, if the current structures are replaced or extended downstream, a February 15 to June 15 moratorium will apply.

3.5.4.7. Submerged Aquatic Vegetation

There are no known areas of submerged aquatic vegetation within the project study area.

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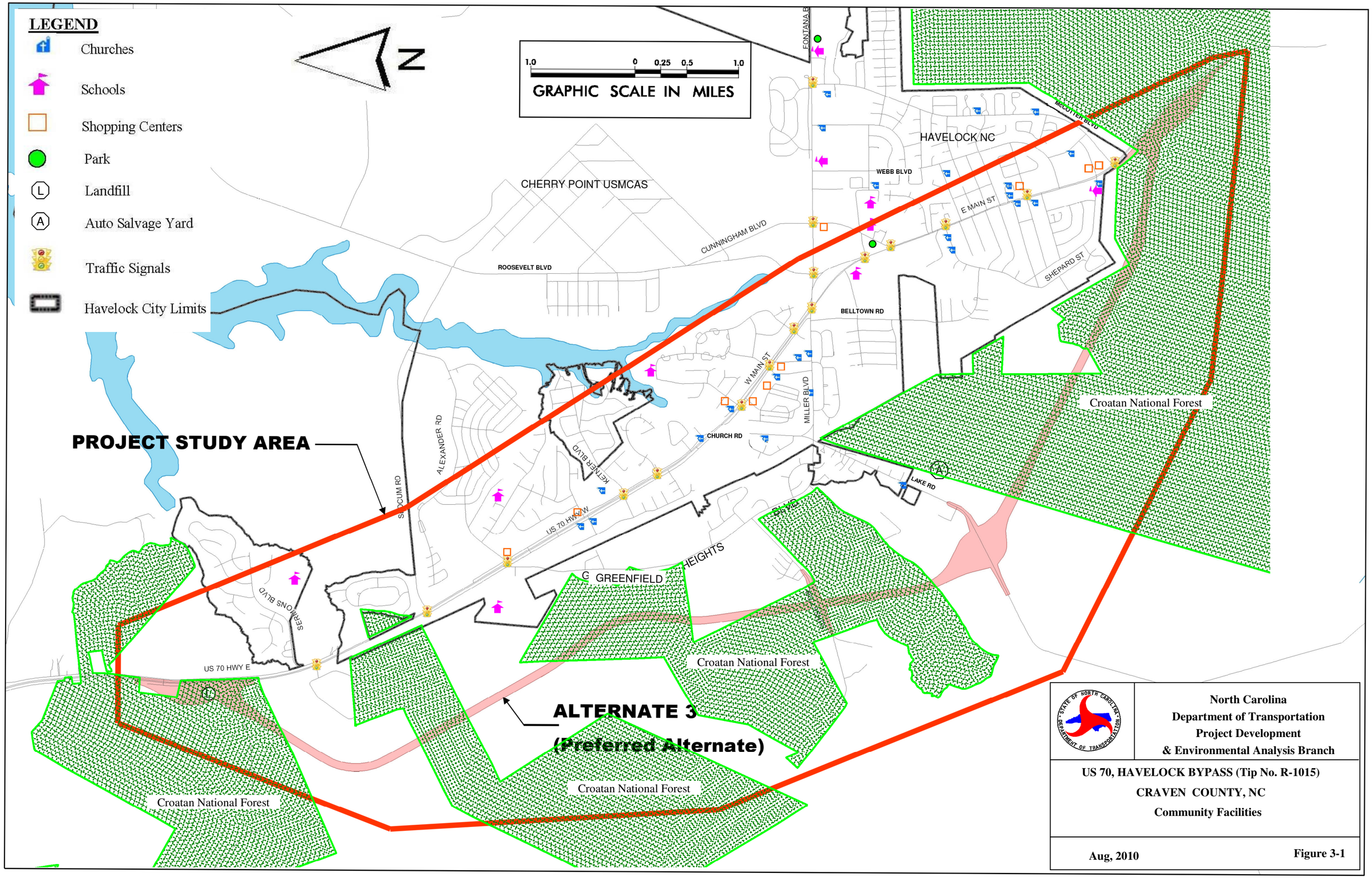


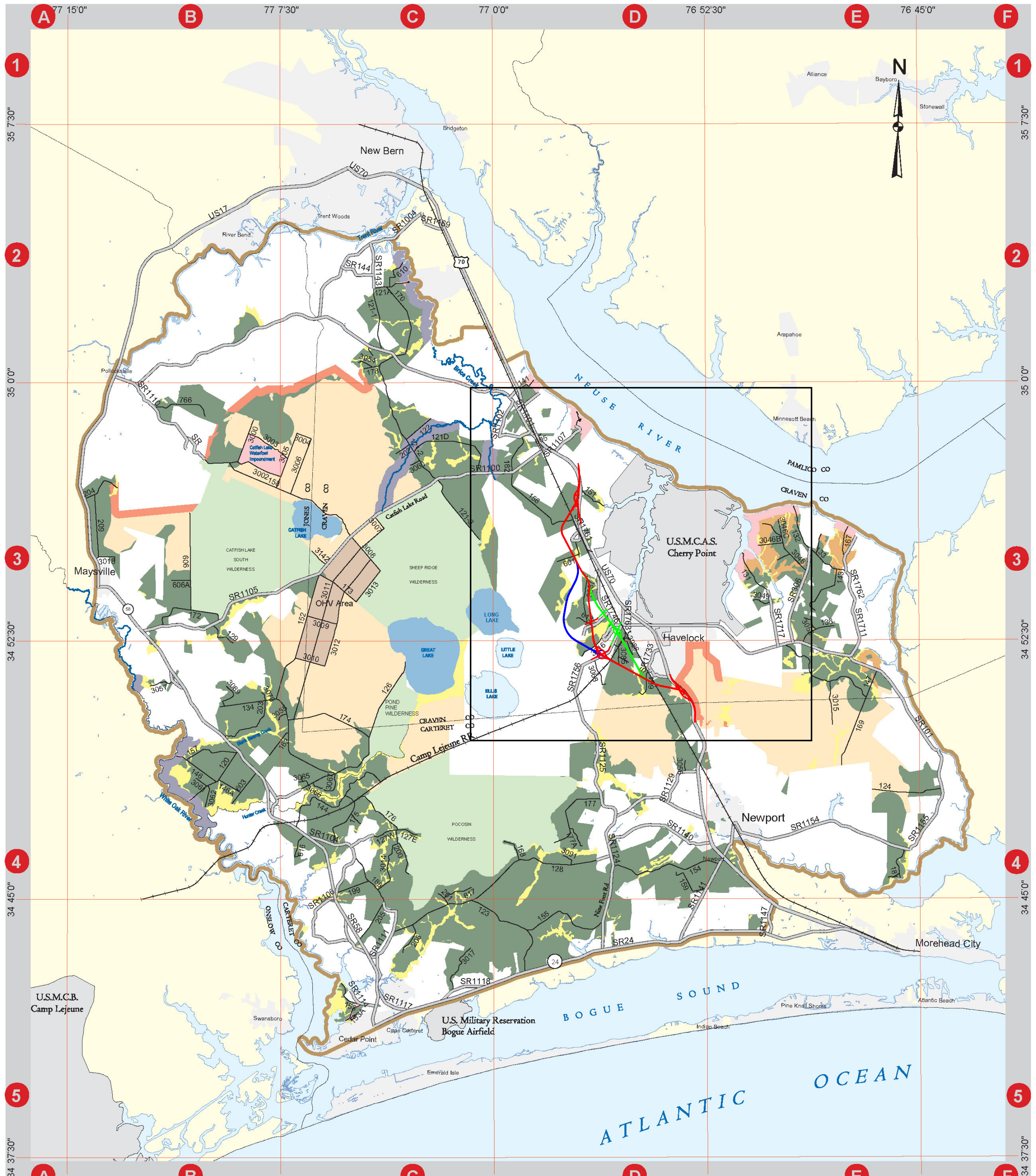
North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Community Facilities

Aug, 2010

Figure 3-1

Croatan National Forest
Land & Resource Management Plan 2002
Management Prescriptions and Locations



Legend

- Proclaimed Boundary
- Major Roads
- Roads
- Municipalities
- Military Reservations

Primary Management Prescription

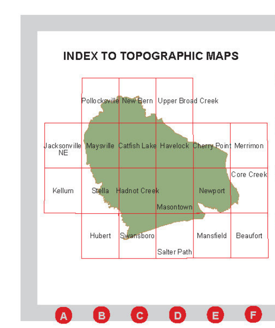
- Pocosin Lakes Management
- Wilderness Management
- River Corridors Eligible for W&S River Status
- Hardwood Cypress Wetland Management
- RCW Habitat Management
- Wildland/Urban Interface Corridors
- Upland Hardwood Management
- Black Bear Habitat Management
- Developed Area Mgmt; inc Water-based Rec.
- OHV

Disclaimer: The Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. They may be: developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being revised, etc. Using GIS products for purposes other than intended may yield inaccurate or misleading results. The Forest Service reserves the right to correct, update, modify or replace GIS products without notification.

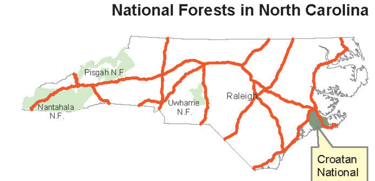
1:126,720

0 0.5 1 2 3 4 5 Miles

1 inch equals 2 miles

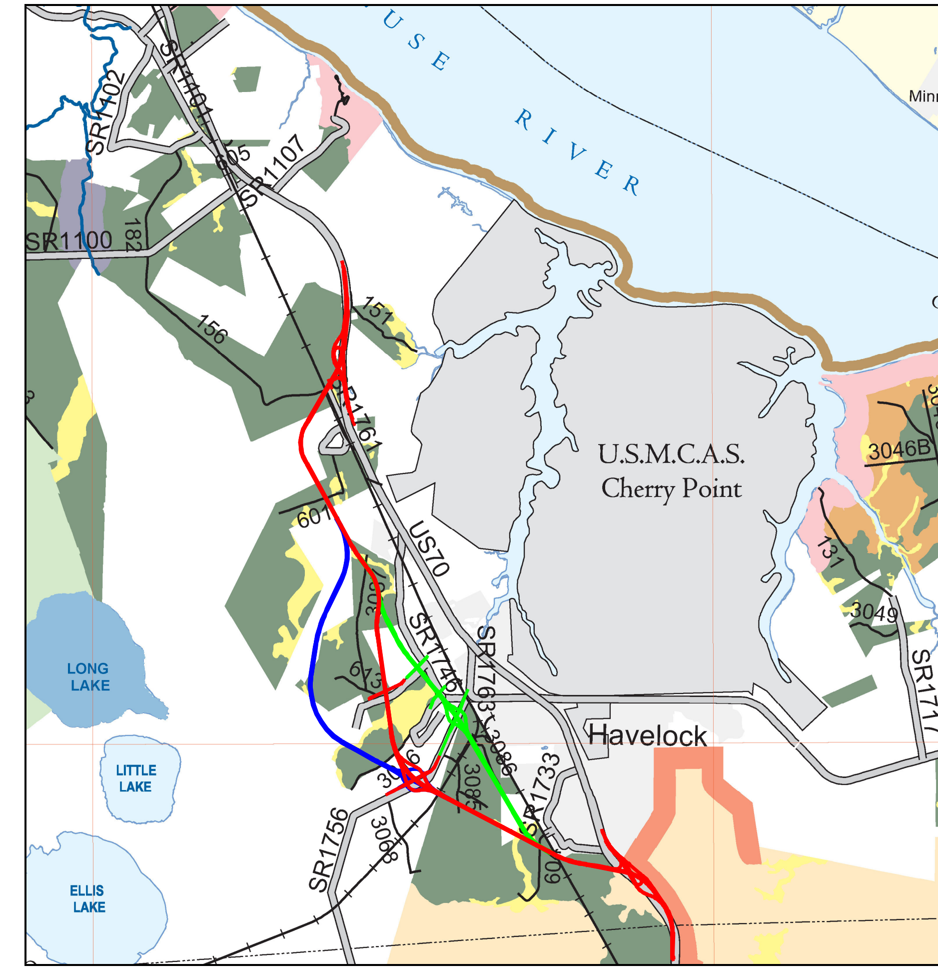


VICINITY MAP
National Forests in North Carolina



INSET

1 0 1 2 MILES
0.5



LEGEND

ALTERNATE 1	(blue line)
ALTERNATE 2	(green line)
ALTERNATE 3	(red line)

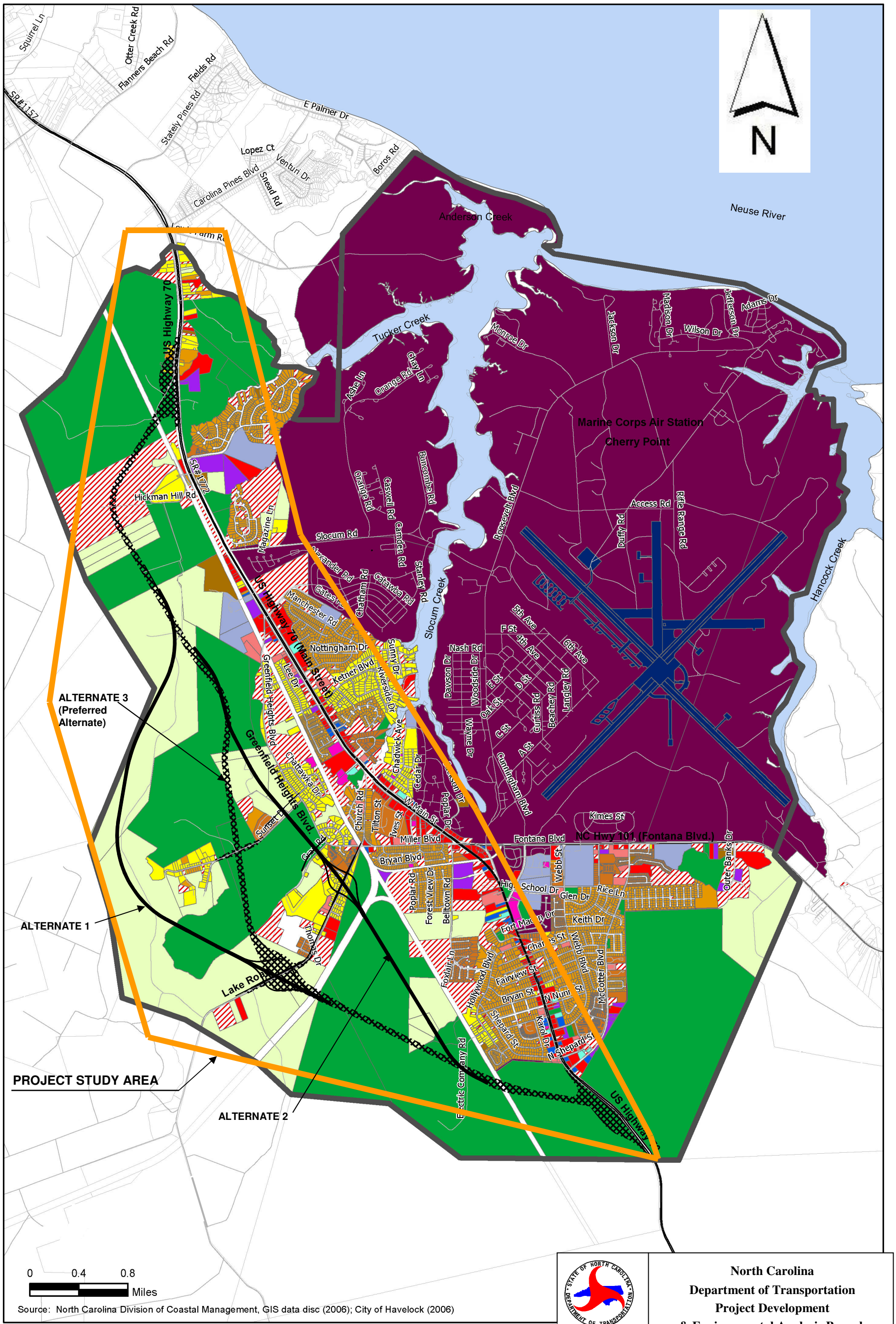
North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)

CRAVEN COUNTY, NC

Croatan National Forest
Land & Resource Management Plan 2002

Nov, 2009 Figure 3-2

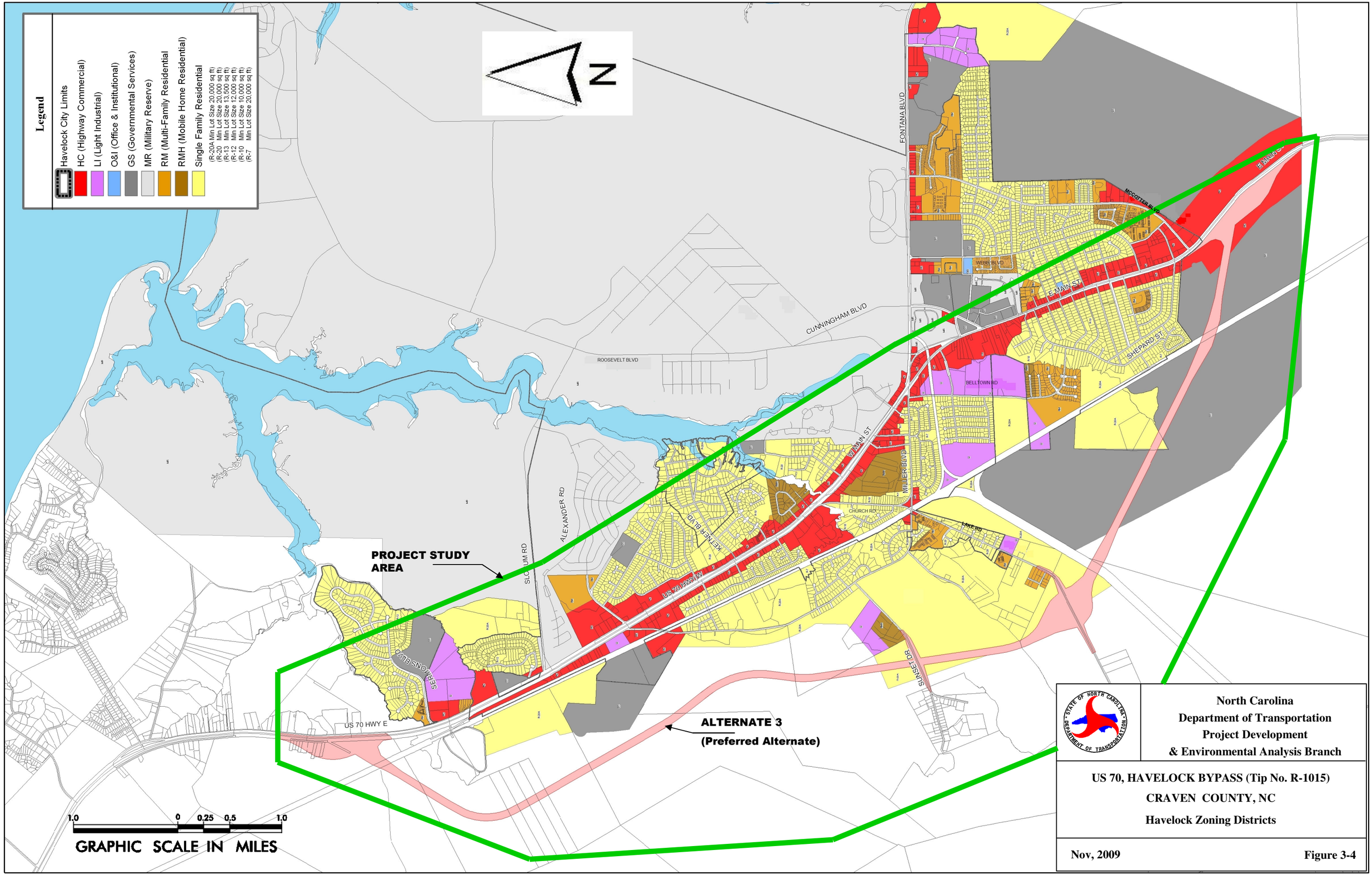


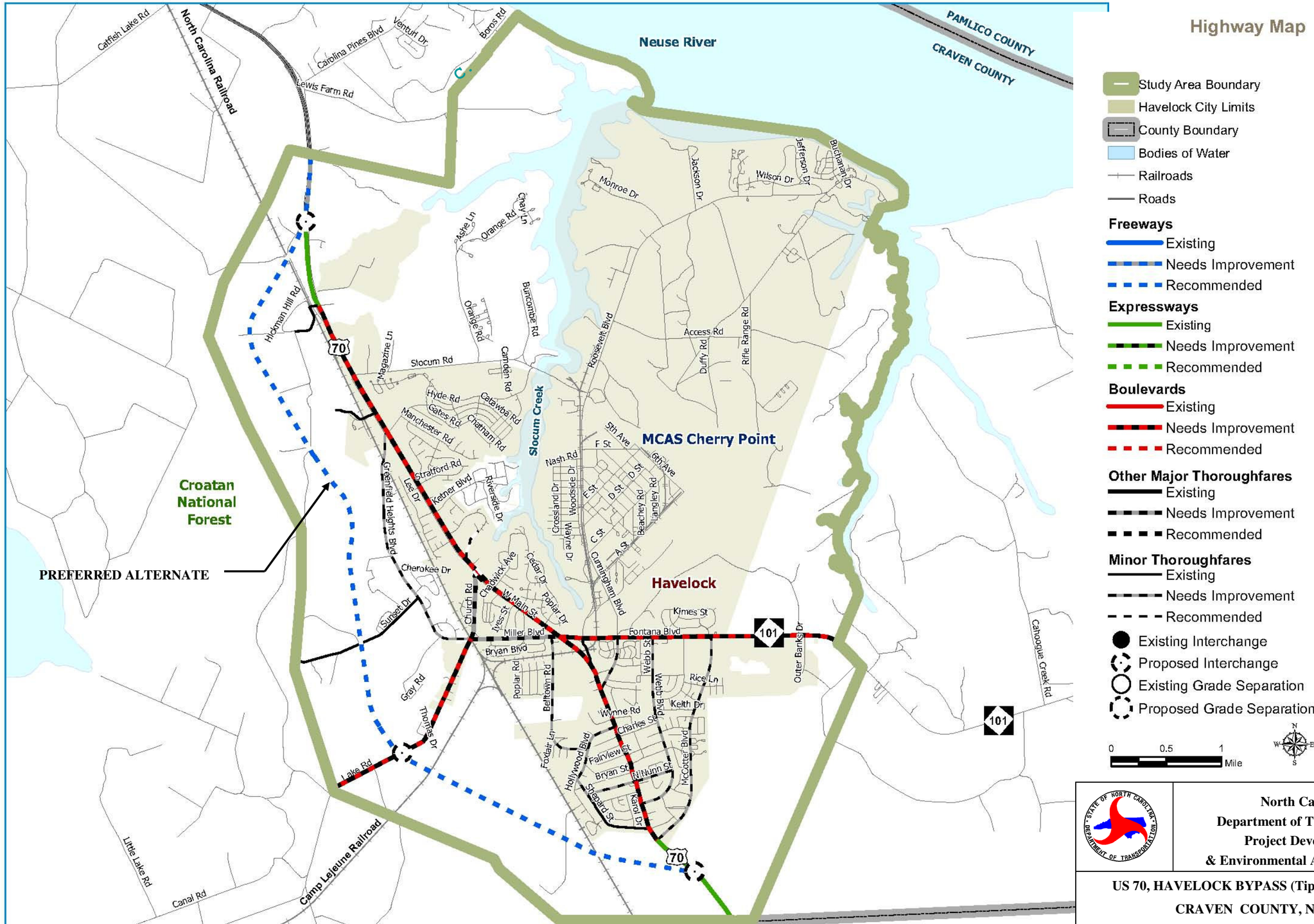
North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Havelock Land Use

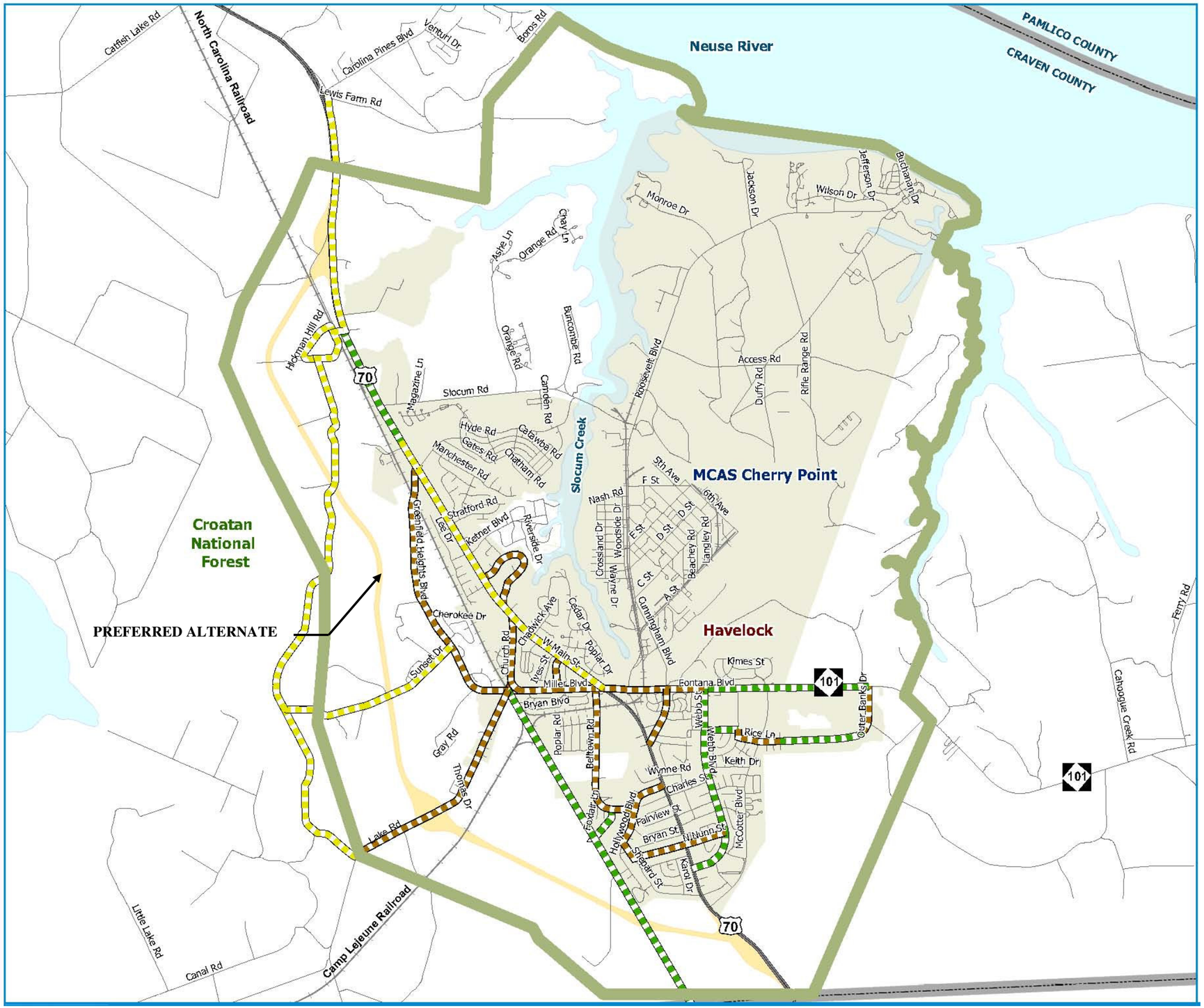
Mar, 2010

Figure 3-3


Legend
Havelock City Limits
HC (Highway Commercial)
LI (Light Industrial)
O&I (Office & Institutional)
GS (Governmental Services)
MR (Military Reserve)
RM (Multi-Family Residential
RMH (Mobile Home Residential)
Single Family Residential
(R-20A Min Lot Size 20,000 sq ft)
(R-20 Min Lot Size 20,000 sq ft)
(R-15 Min Lot Size 15,000 sq ft)
(R-12 Min Lot Size 12,000 sq ft)
(R-10 Min Lot Size 10,000 sq ft)
(R-7 Min Lot Size 20,000 sq ft)
N
PROJECT STUDY AREA
ALTERNATE 3
(Preferred Alternate)
FONTANA BLVD
CUNNINGHAM BLVD
ROOSEVELT BLVD
ALEXANDER RD
SLOCUM RD
MCCOTTER BLVD
E MAIN ST
WEBB BLVD
SHEPARD ST
BELLTOWN RD
W MAIN ST
MILLER BLVD
CHURCH RD
LAKE RD
KELNER BLVD
US 70 HWY W
SUNSET DR
SEAMONS BLVD
US 70 HWY E
1.0 0 0.25 0.5 1.0
GRAPHIC SCALE IN MILES
North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch
US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Havelock Zoning Districts
Nov, 2009
Figure 3-4



	North Carolina Department of Transportation Project Development & Environmental Analysis Branch
US 70, HAVELOCK BYPASS (Tip No. R-1015) CRAVEN COUNTY, NC Havelock Comprehensive Transportation / Land Use Plan	
April, 2007	Highway Map Figure 3-5



Bicycle Map

- Study Area Boundary
- Havelock City Limits
- County Boundary
- Bodies of Water
- Proposed US 70 Bypass Corridor
- Railroads
- Roads
- Proposed Signed Bike Route

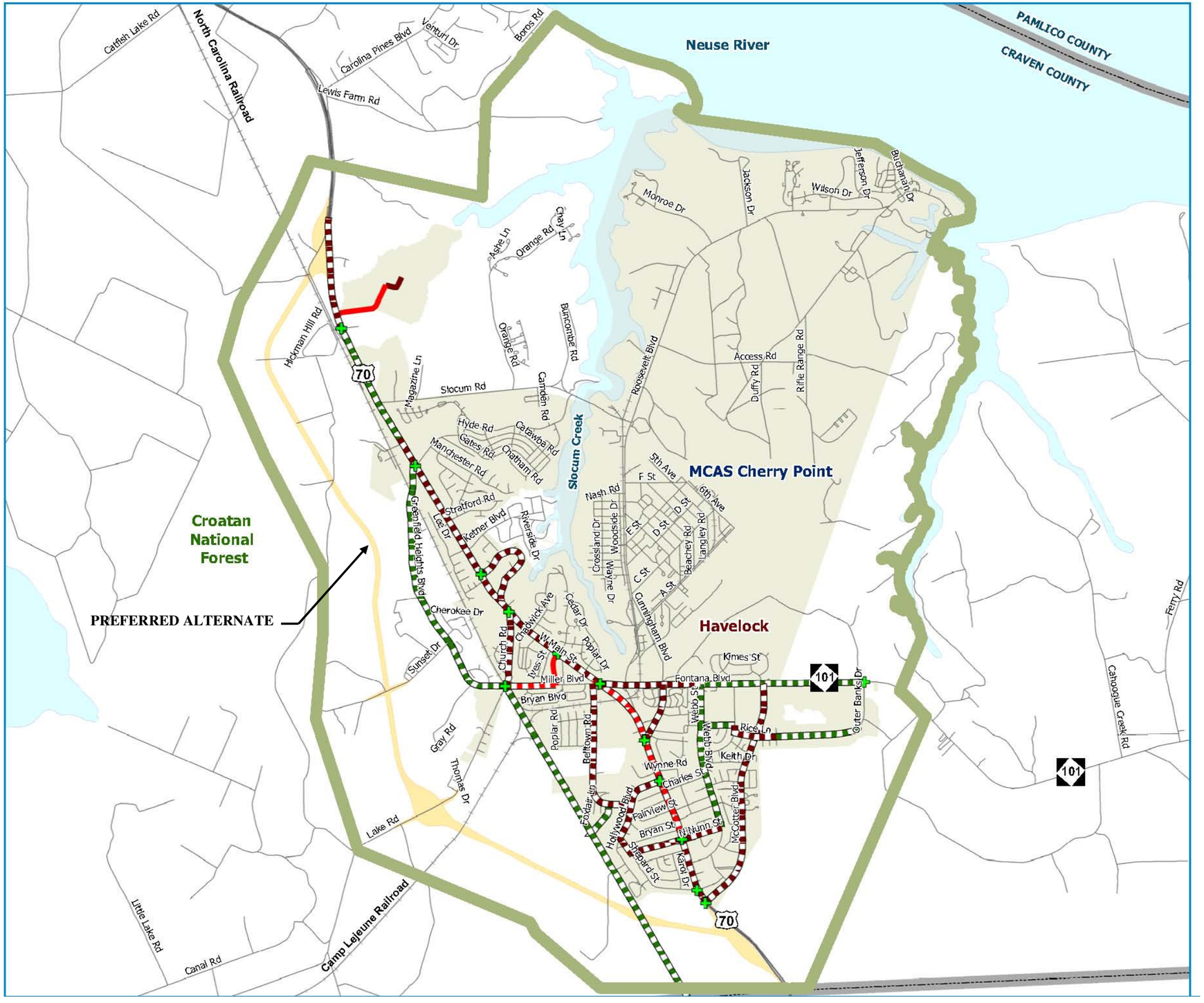
On Road
- Existing
- Needs Improvement
- Recommended

Off Road
- Existing
- Needs Improvement
- Recommended

0 0.5 1 Mile

N W E S

	North Carolina Department of Transportation Project Development & Environmental Analysis Branch
US 70, HAVELOCK BYPASS (Tip No. R-1015) CRAVEN COUNTY, NC Havelock Comprehensive Transportation / Land Use Plan	
April, 2007	**Bicycle Map** **Figure 3-6**



Pedestrian Map

- Study Area Boundary
- Havelock City Limits
- County Boundary
- Bodies of Water
- Proposed US 70 Bypass Corridor
- Railroads
- Roads
- Proposed 10' Multiuse Path
- Existing Sidewalk (One Side)
- Existing Sidewalk (Both Sides)
- Proposed Sidewalk (Additional)
- Proposed Sidewalk (Both Sides)
- Safe Crossing Needed

0 0.5 1 Mile

N W E S

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Havelock Comprehensive Transportation / Land Use Plan

April,2007 **Pedestrian Map** **Figure 3-7**

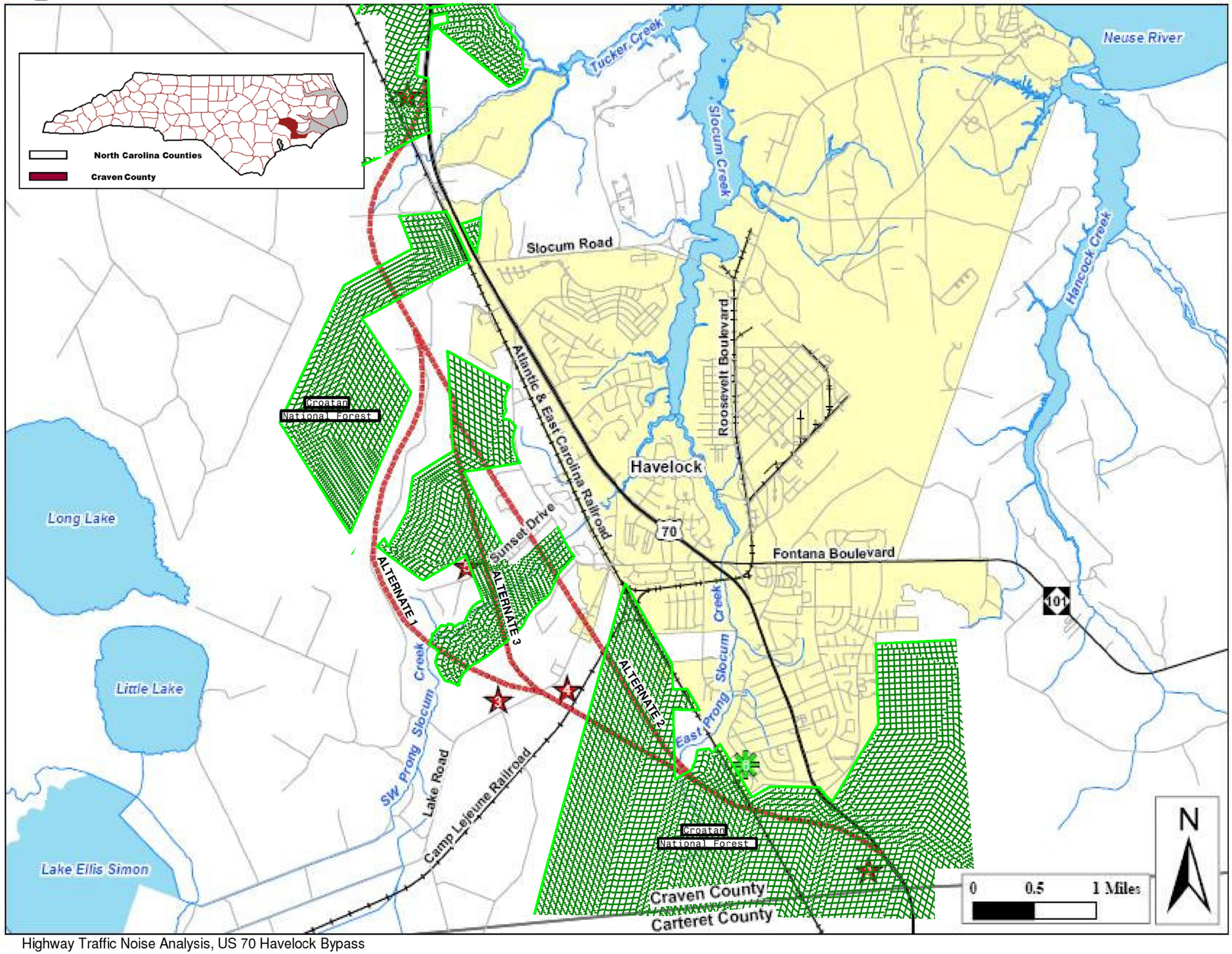


Figure N2. Noise Reading Locations

- TIP R-1015
- Major Roads
- Roads
- Railroads
- Streams & Creeks
- Rivers & Water Bodies
- City of Havelock Boundary
- County Boundary
- Traffic Noise Reading Locations
- Ambient Background Noise Reading Locations

Notes: The noise reading locations for 2-1 and 2-2 are in the same approximate location and represented by one symbol.

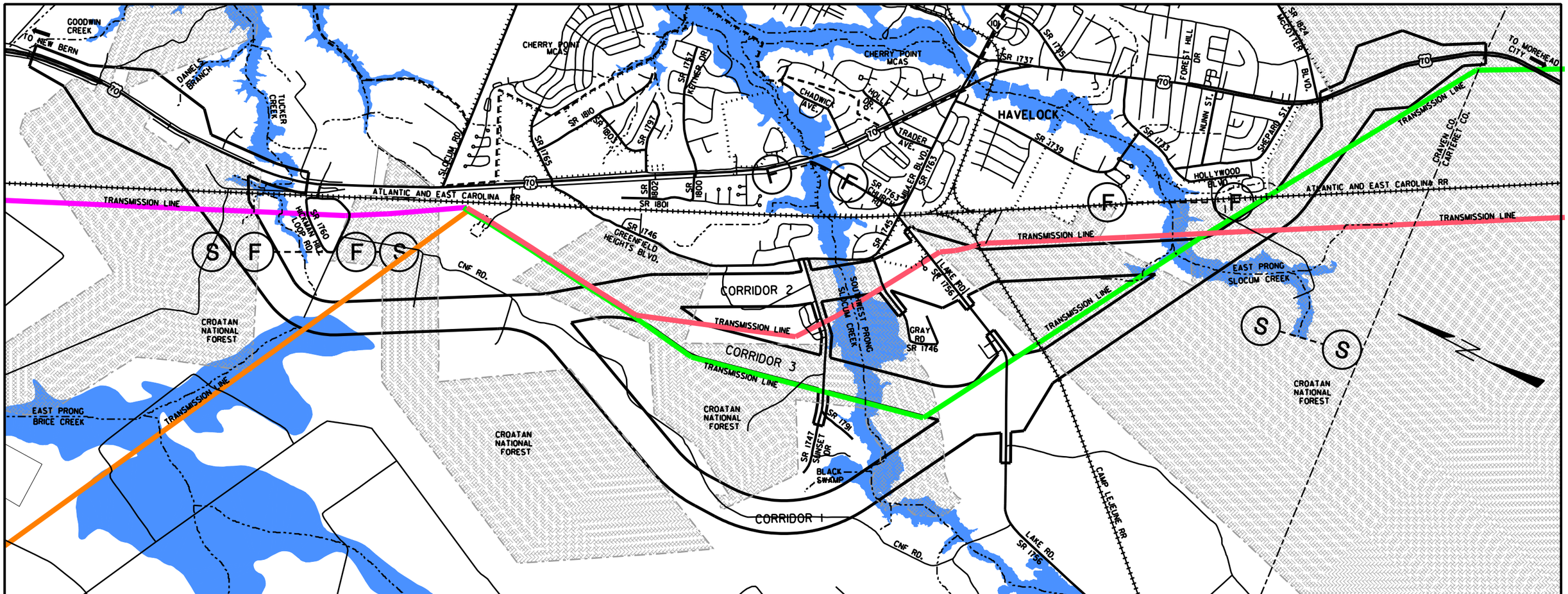
TIP R-1015 alignments are shown for representational purposes only. The final alignment has not yet been determined.

Map Sources:
North Carolina Department of Transportation
Environmental Systems Research Institute (ESRI)
Ko & Associates, P.C.

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Noise Reading Locations

Aug, 2010 | Figure 3-8



LEGEND

LIMITS OF 100 YEAR FLOODPLAINS

F ------ F LIMIT OF FLOODWAY

S ------ S DETAILED FLOOD STUDY LIMITS

500 0 500 1000
GRAPHIC SCALE IN METERS

0 1000 3000 5000
GRAPHIC SCALE IN FEET

MAP LEGEND

COUNTY LINE

CITY LIMITS

MARINE CORPS AIR STATION

NATIONAL FOREST SYSTEM LANDS

STREAM

HAVELOCK-NEW BERN 230KV Line

HAVELOCK-MOREHEAD WILDWOOD 230KV Line

HAVELOCK-MOREHEAD WILDWOOD 115KV Line

HAVELOCK-NEW BERN 115KV Line

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Floodplains and
High Voltage Transmission Lines

Aug, 2010 **Figure 3-9**

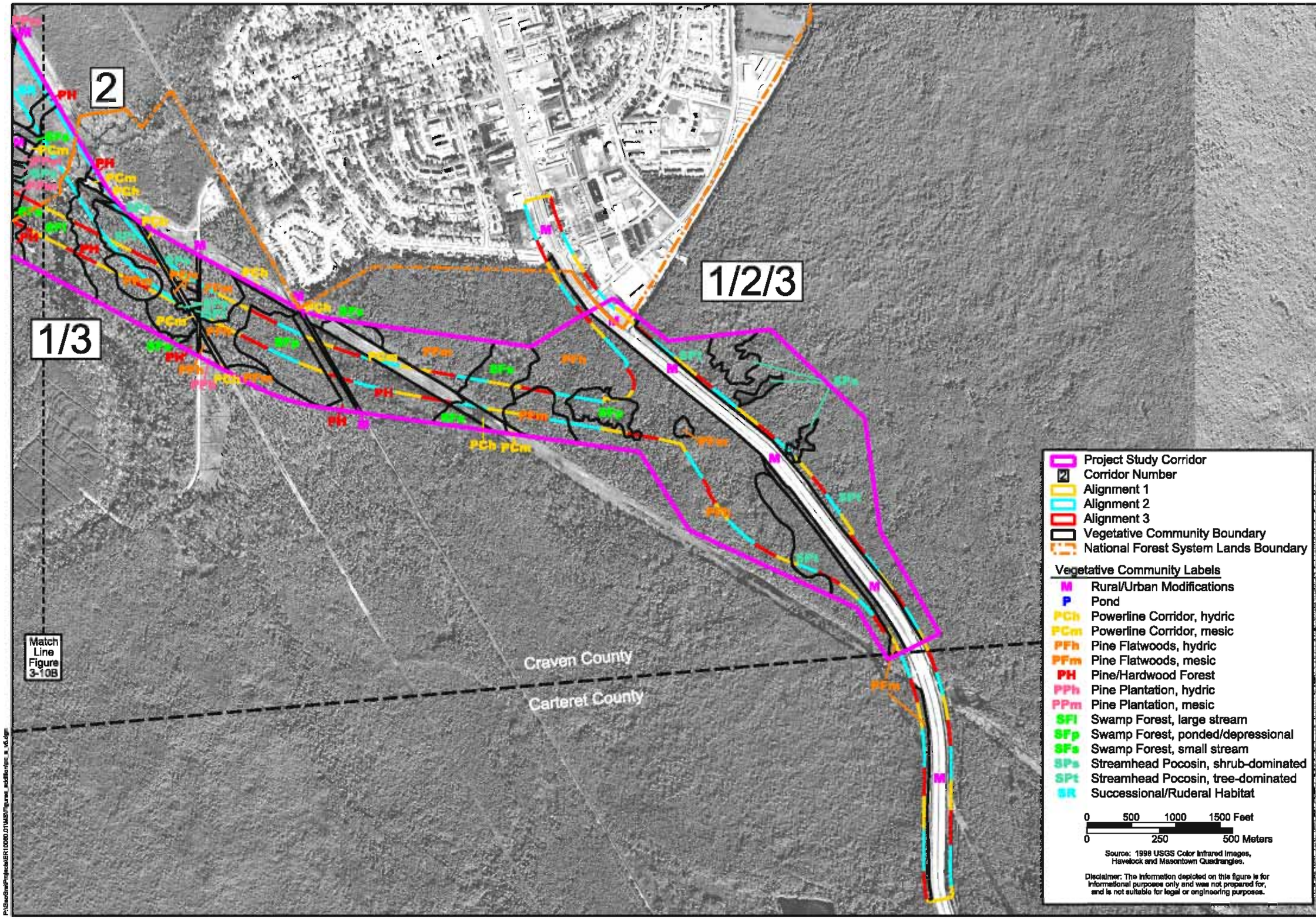


Figure: 3-10A
Project: ER10060.01
Date: Apr 2011

Vegetative Communities
US 70 Havelock PETS Evaluation Summary
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

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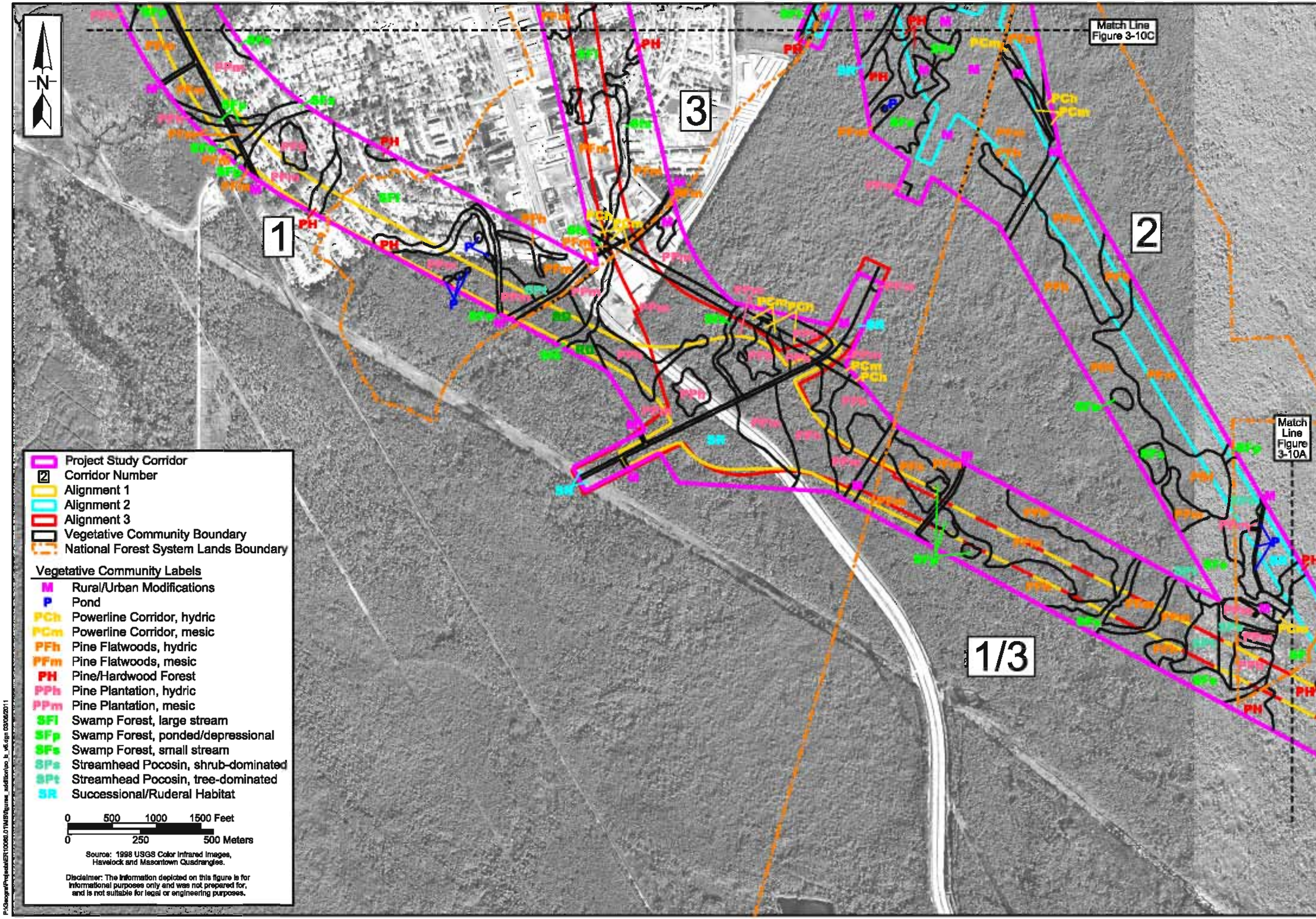

Figure: 3-10B
Project: ER10060.01
Date: Apr 2011

Vegetative Communities
Us 70 Havelock Bypass DEIS
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

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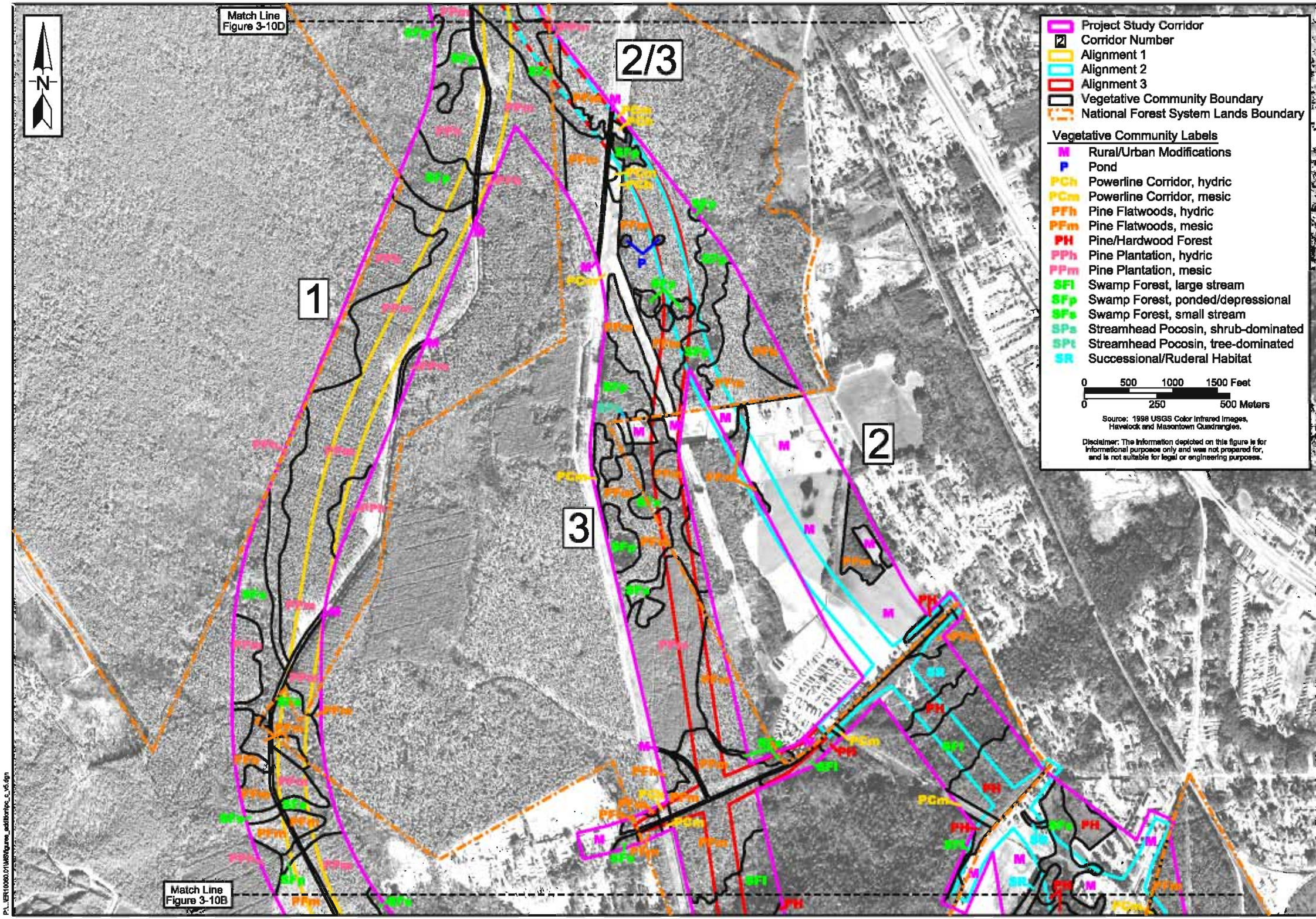

Figure: 3-10C
Project: ER10060.01
Date: Apr 2011

Vegetative Communities
Us 70 Havelock Bypass DEIS
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

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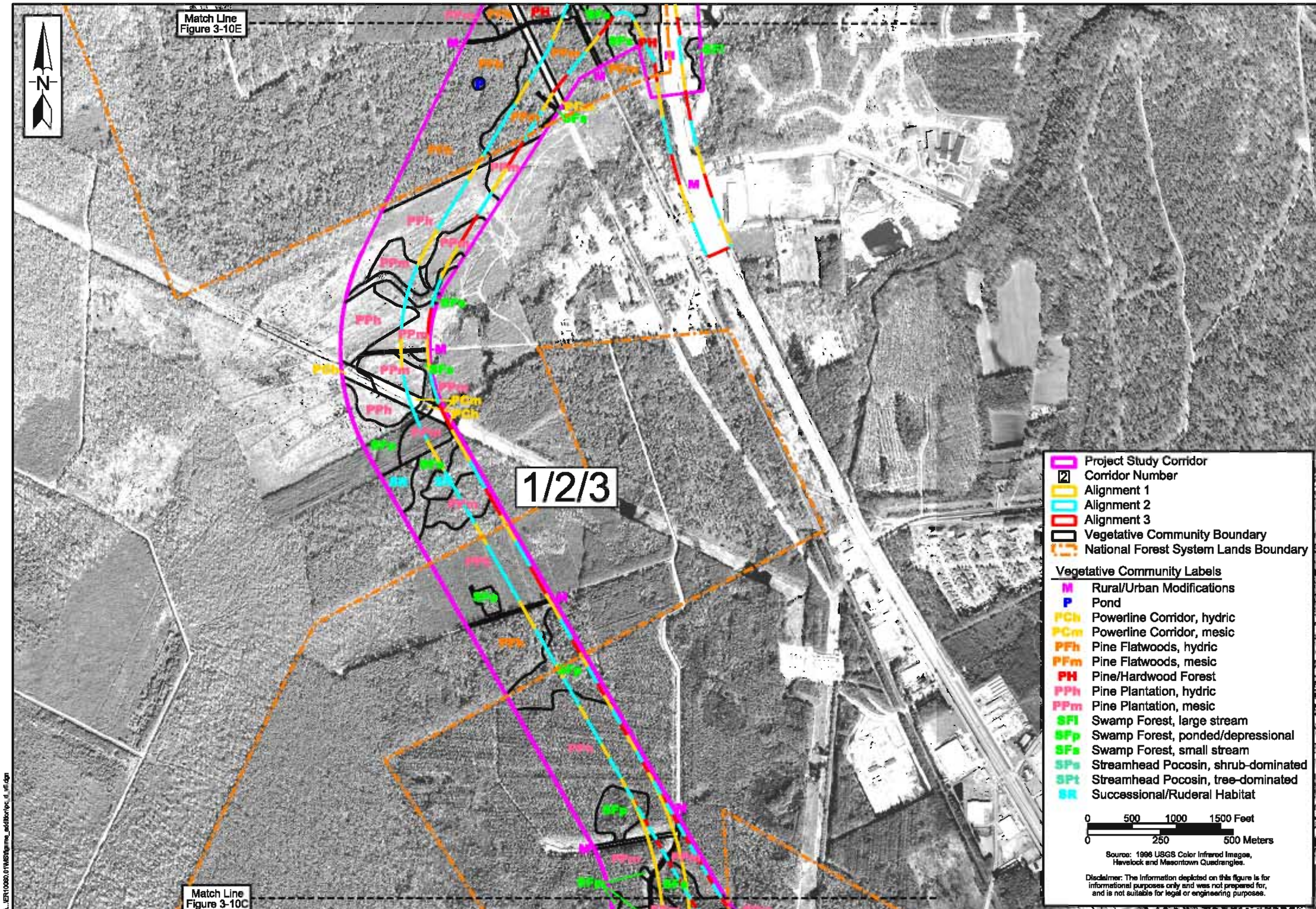

Figure: 3-10D
Project: ER10060.01
Date: Apr 2011

Vegetative Communities
US 70 Havelock Bypass DEIS
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

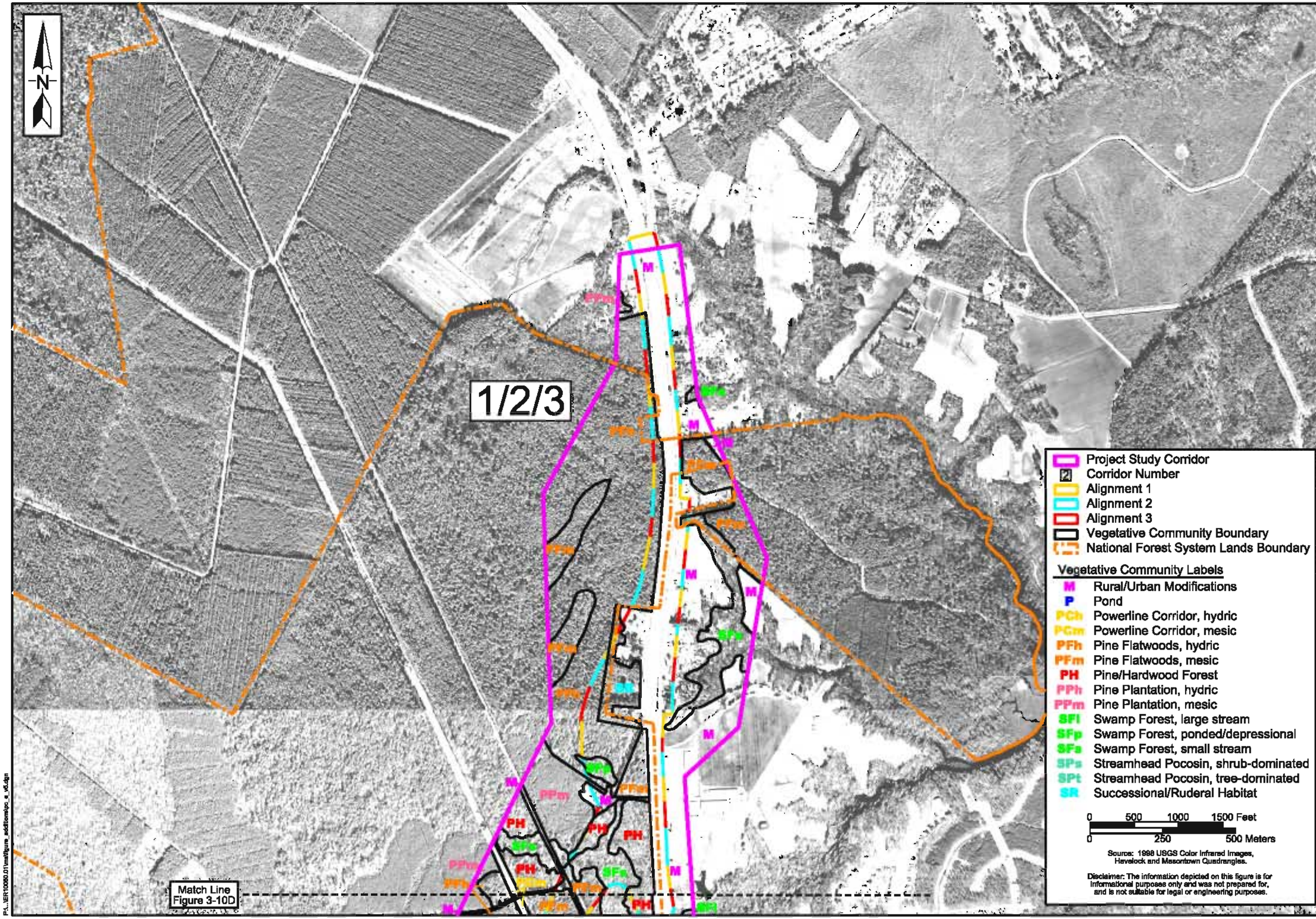

Figure: 3-10E
Project:ER10060.01
Date: Apr 2011

Vegetative Communities
Us 70 Havelock Bypass DEIS
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

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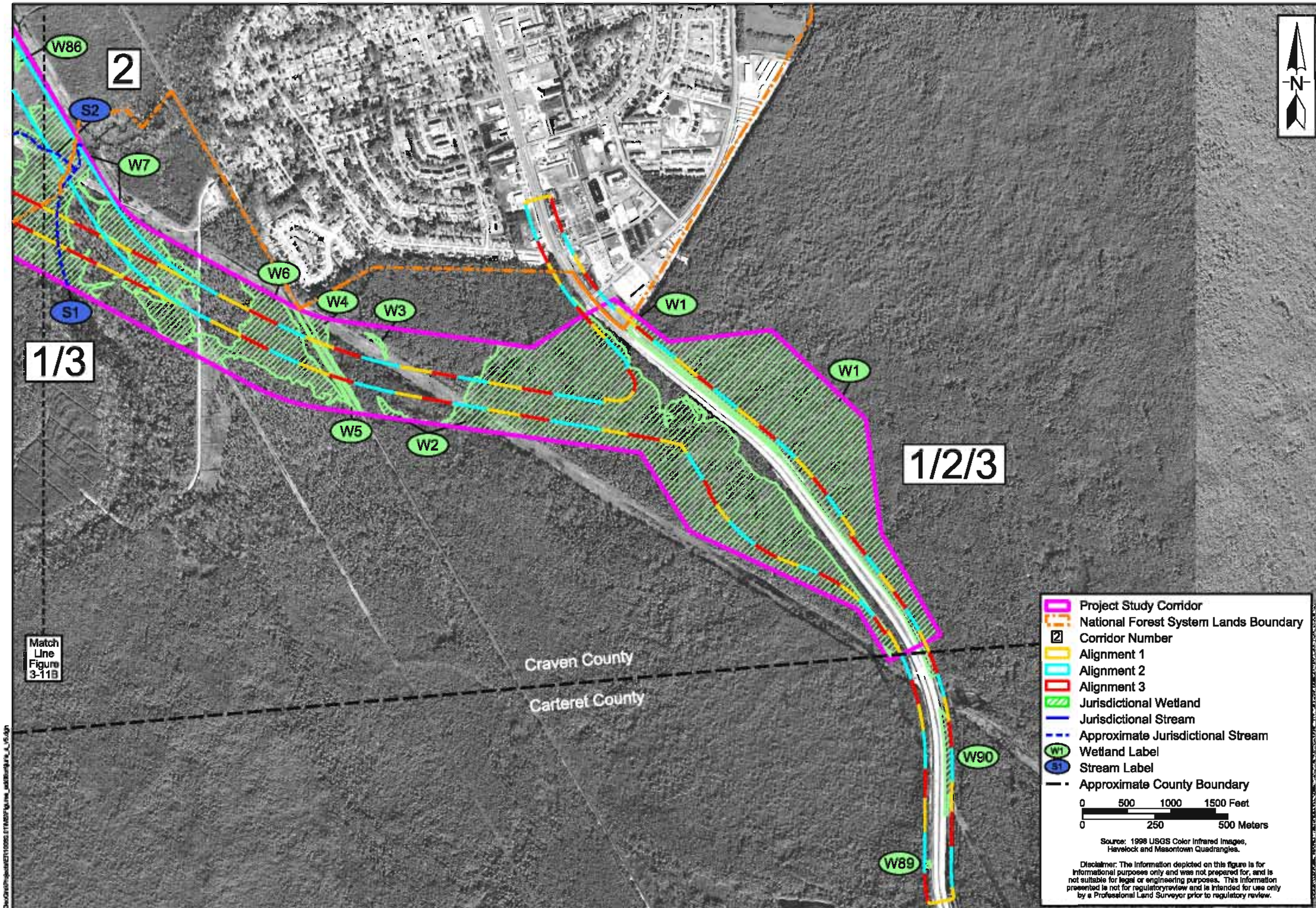

Figure: 3-11A
Project:ER10060.01
Date: Apr 2011

General Jurisdictional Layout
US 70 Havelock Bypass DEIS
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

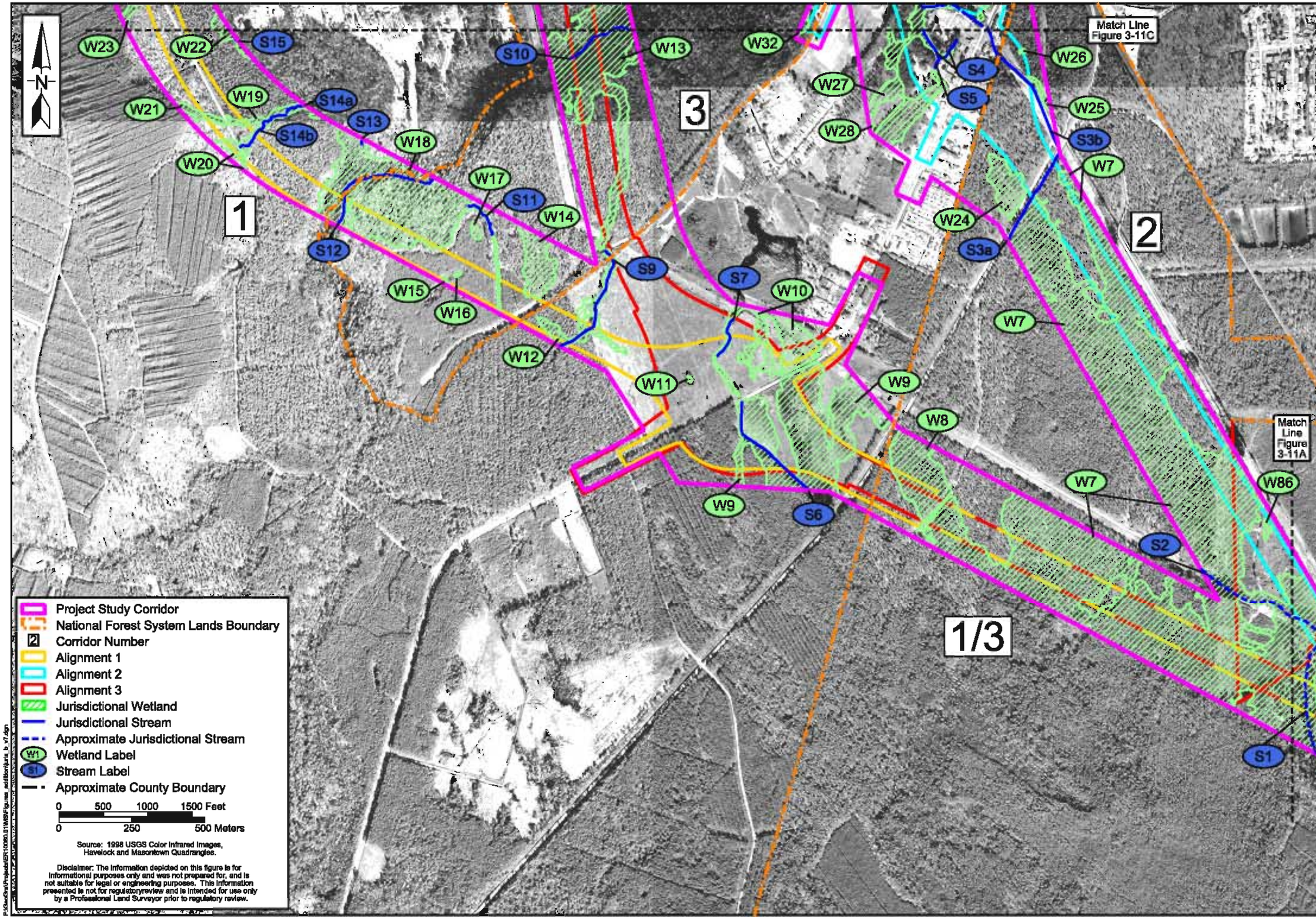

Figure: 3-11B
Project: ER10060.01
Date: Apr 2011

General Jurisdictional Layout
US 70 Havelock Bypass DEIS
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

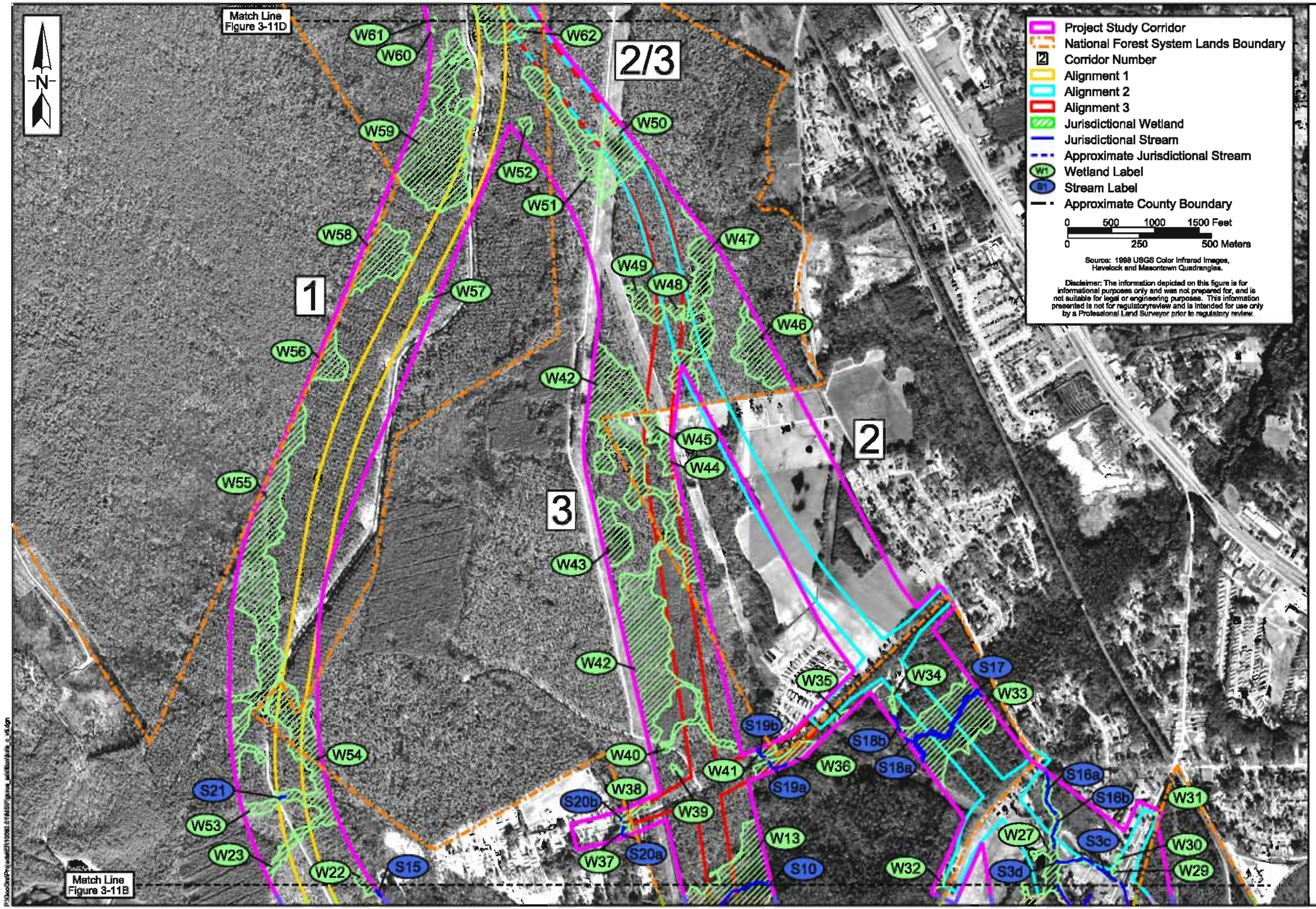

Figure: 3-11C
Project:ER10060.01
Date: Apr 2011

General Jurisdictional Layout
US 70 Havelock Bypass DEIS
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

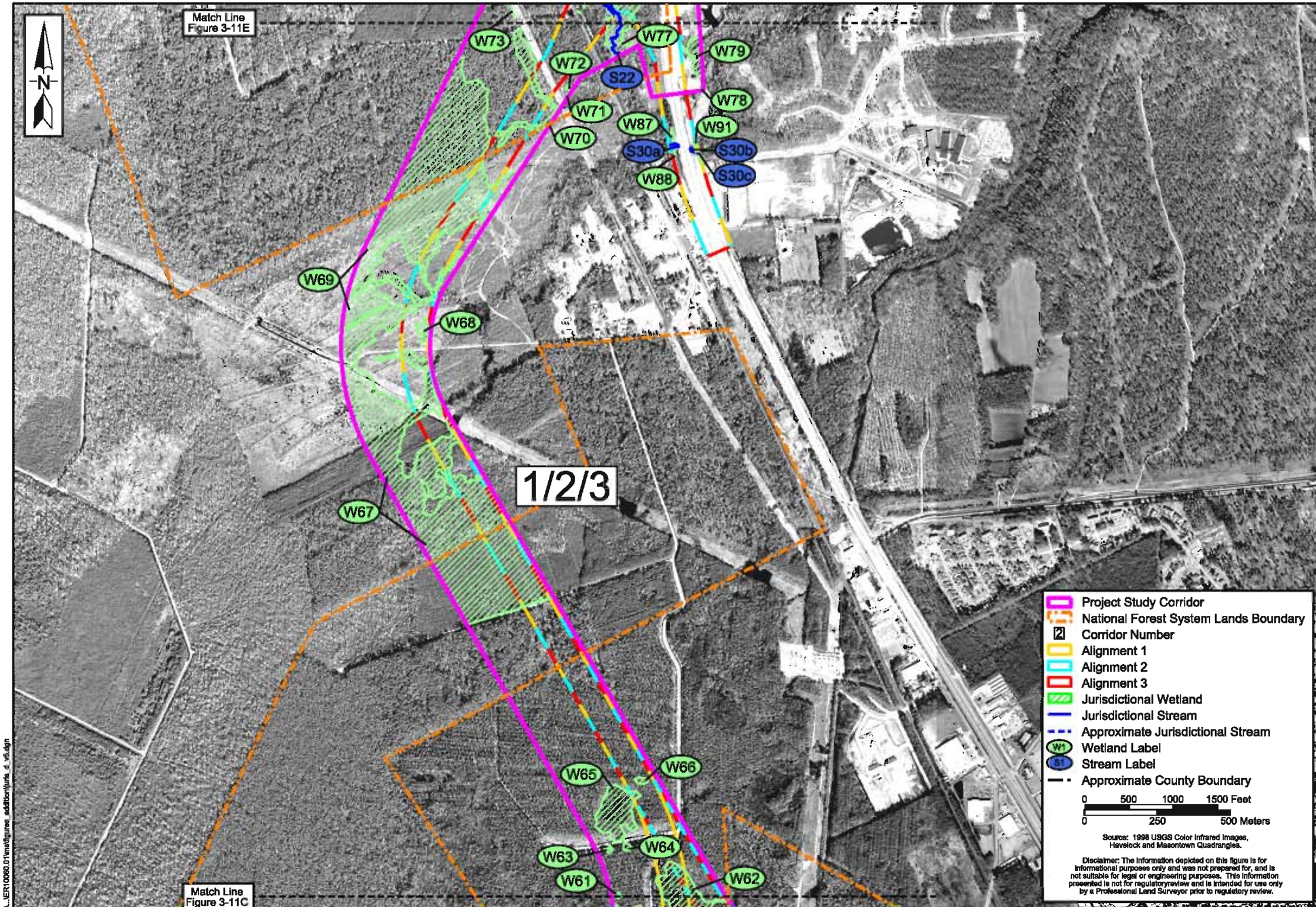

Figure: 3-11D
Project: ER10060.01
Date: Apr 2011

General Jurisdictional Layout
US 70 Havelock Bypass DEIS
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

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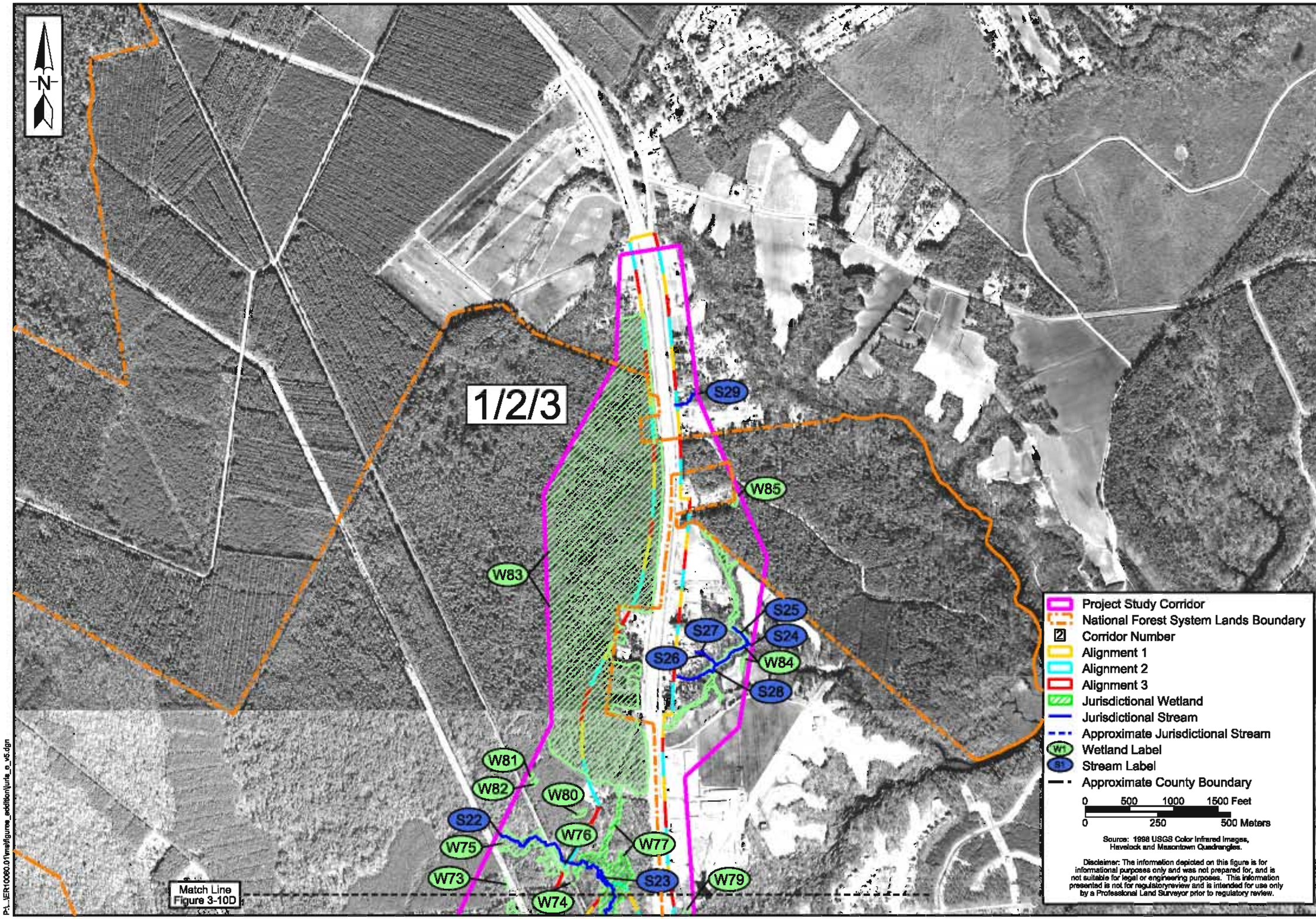

Figure: 3-11E
Project:ER10060.01
Date: Apr 2011

General Jurisdictional Layout
US 70 Havelock Bypass DEIS
Havelock, Craven County, North Carolina
T.I.P. No. R-1015

Environmental Services, Inc.

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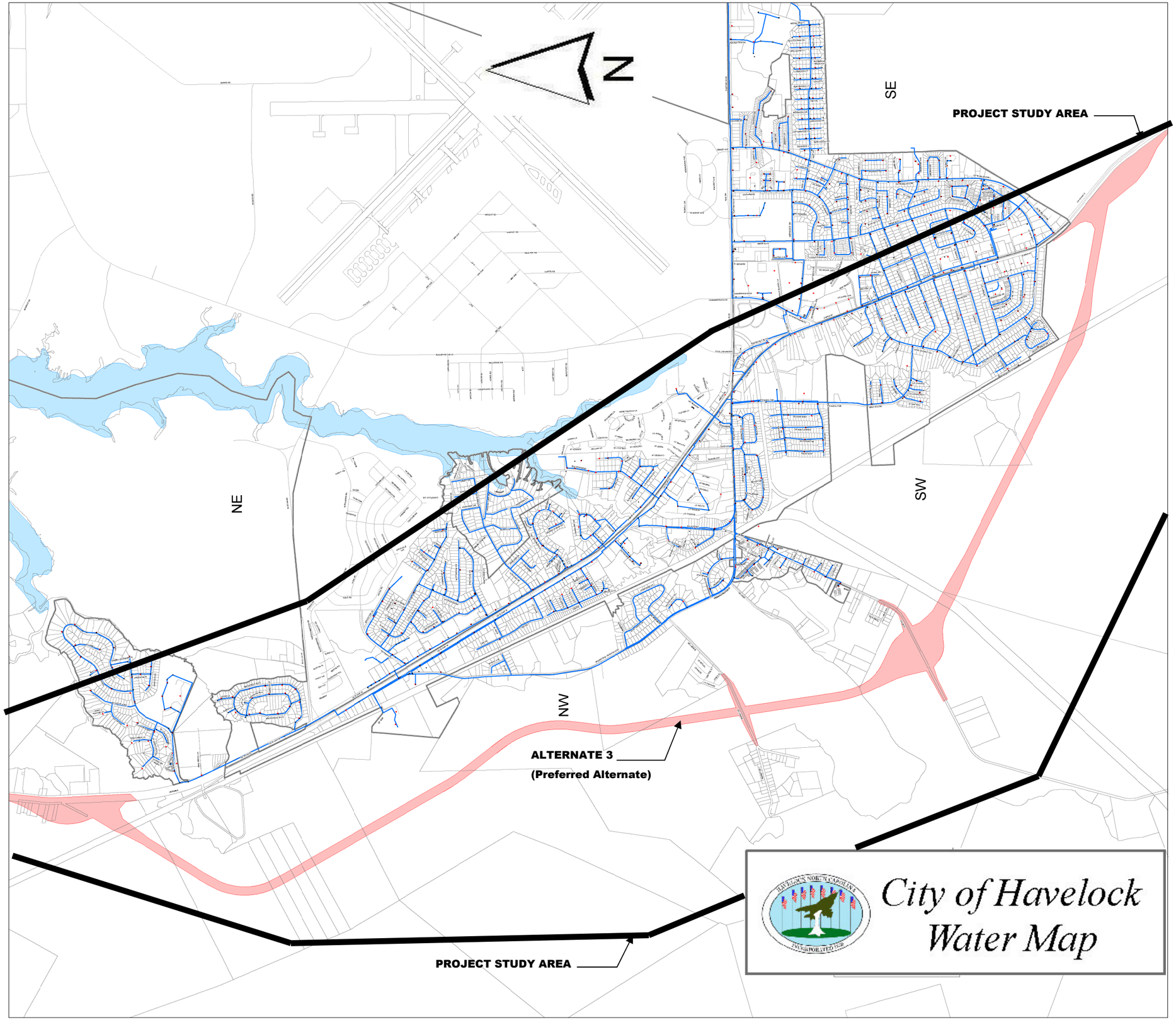

City of Havelock Water Map

valves

FIRE_HYDRANTS

City_Districts

Craven_Parcels

Bypass

Waterbodies

1.0 0 0.25 0.5 1.0

GRAPHIC SCALE IN MILES

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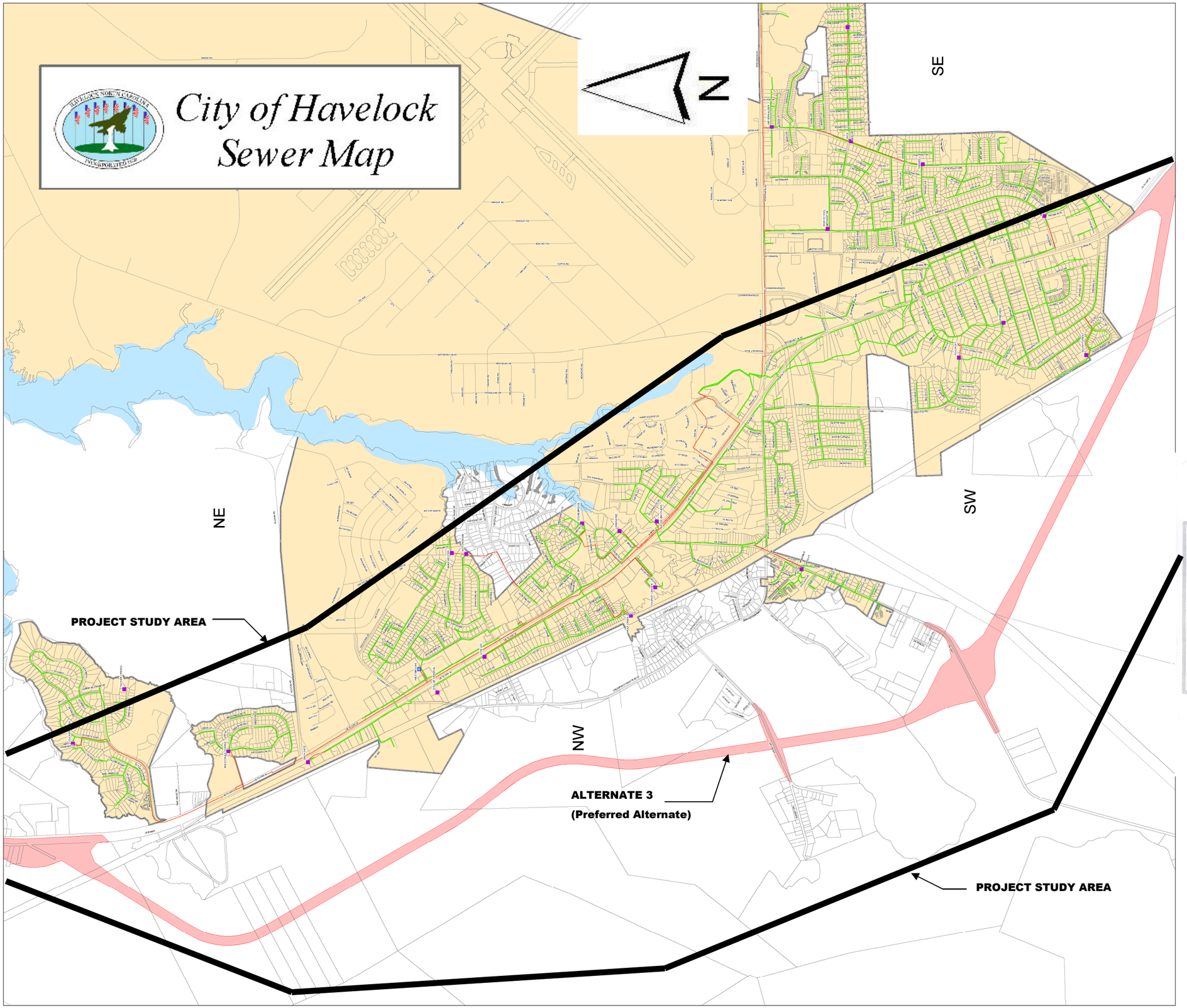
North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Havelock Municipal Water

October, 2007 **Figure 3-12**



LIFT_STATIONS
sewerline
forcemain
Craven_Parcels
Waterbodies
City_limitsHavOnly
Bypass

1.0 0 0.25 0.5 1.0
GRAPHIC SCALE IN MILES

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North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Havelock Municipal Sewer

October, 2007 **Figure 3-13**

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

This section discusses the probable social, economic, and environmental effects of the alternatives and the measures to mitigate adverse impacts.

4.1. Direct Impacts

4.1.1. Human Environment

Many of the direct impacts to the human environment in this section are from the 2008 Community Impact Assessment, STIP Project R-1015[1], prepared by HNTB North Carolina, PC for the N.C. Department of Transportation, Division of Highways, Project Development and Environmental Analysis Branch.

4.1.1.1. Community

The construction of a controlled-access freeway can impact existing development by creating a barrier bisecting neighborhoods or business communities. As noted in Section 3.1.4, areas with significant widespread community cohesion are not prevalent in the City of Havelock. Other than the 49-lot, Marman Terrace, residential subdivision discussed in Section 4.1.1.2 below, there are no prominent dense neighborhoods that will be disrupted by the construction of the Havelock Bypass. Due to the principally rural character of the study area consisting mostly of forested government lands, the community cohesion impacts of the Havelock Bypass will be limited to the areas surrounding the few existing routes that cross the detailed study corridors. Local traffic access will be maintained and there will be no changes in emergency response times for the affected communities.

The proposed bypass would create a physical barrier between existing houses along Gray Road in

Note: Endnotes are presented at the end of this Chapter

the case of Bypass Alternate 2, Sunset Drive in the case of Bypass Alternates 2 and 3, and Lake Road for all three bypass alternatives. The impacts will be minimal with the proposed grade-separated crossings at these locations.

All three bypass alternatives would create a physical barrier through lands owned by the National Forest System in the Croatan National Forest, making the management of prescribed fires more difficult; however, some fragmentation of these forest lands has already occurred north of Lake Road. Representatives from the U.S. States Forest Service suggested, in interviews conducted in 2005, the bypass may expedite the movement of fire equipment and personnel. Representatives of the local EMS/Fire Service indicated that the proposed bypass would have a neutral effect on emergency services.

The interchange at Lake Road could attract higher density development, thereby increasing traffic in a rural area, changing travel patterns, and reducing the rural character of the area. However, some participants of the Citizens Informational Workshops held in the mid-1990s indicated the desire for development.

4.1.1.2. Relocations

As the displacement of existing land uses is necessary for project right-of-way, the displacement of residences and businesses are often unavoidable impacts of highway projects.

Table 4.1 summarizes the number of estimated relocations associated with Alternates 1, 2 and 3. The January 2009 relocation reports for each of the bypass alternatives are included in Appendix D. According to the relocation reports, it is anticipated that adequate relocation replacement facilities for the residences and businesses are available for any of the considered bypass alternatives.

Table 4.1. Estimated Relocations

Alternate	Residential	Business	Other	Employees
1	13	1	1	5
2	133	3	1	10
3 (Preferred)	16	1	1	5

Residential Relocations

As shown in Table 4.1, Alternate 2 requires the relocation of an estimated 133 residences. Of these, 58 are owner occupied and 75 are rented. Most of these are located along Lake Road. Eighteen (13.5 percent) are minority residences. Sixty-six (49 percent of the total) are estimated to have an annual household income between $35,000 and $50,000. None are estimated to have an annual household income less than $25,000.

Alternate 3 requires the relocation of an estimated 16 residences. Five of these are owned and eleven are rented. None of these are minority residences. Eight (50 percent of the total) are estimated to have an annual household income more than $50,000. None are estimated to have an annual household income less than $25,000.

Alternate 1, which is farthest from the City, requires the relocation of an estimated 13 residences. Five of these are owned and eight are rented. None of these are minority residences. Eight (62 percent of the total) are estimated to have an annual household income between $35,000 and $50,000. None are estimated to have an annual household income less than $25,000.

Business Relocations

Alternates 1, 2, and 3 will displace the Craven County Waste Transfer facility located in an area near the northwestern terminus of the project that is common to all three bypass alternatives. Although

not classified as a business (noted as "Other" in Table 4.1), this facility has three employees. Craven County leases the property where this facility is located from the Croatan National Forest. Alternates 1, 2, and 3 will also impact the Liberty Motel, a small business with two employees located near the northern terminus of the project. Alternate 2 will also displace two small businesses, Hugh's Tow Service and Firewood (two employees), and a salvage yard (three employees).

Community Cohesion

The only existing route crossed by Alternate 1 is SR 1756 (Lake Road). No relocations are anticipated at this location. Since very few residences are west of this interchange, limited community impacts are anticipated along Lake Road as a result of implementing Alternate 1. Except for the project termini, the remainder of Alternate 1 is in undeveloped areas and will not affect community cohesion.

Alternate 2 is closer to the City of Havelock and impacts more developed properties than Alternates 1 and 3. Crossing three local routes, Alternate 2 has the most community cohesion impacts of the considered bypass alternatives. The proposed Alternate 2 interchange with SR 1756 (Lake Road) is just east of the center of the 49-lot Marman Terrace residential subdivision. Alternate 2 displaces 80 percent of this neighborhood community of single-family homes along both sides of Lake Road. The Lake Road Baptist Church is located west of the interchange, opposite from the remaining neighborhoods along Lake Road to the east.

Alternate 2 also crosses both SR 1747 (Sunset Drive) and SR 1746 (Gray Road) that serve scattered rural residential development. Grade separations over the bypass are proposed at these crossings. At the proposed Gray Road crossing, two to three residential relocations are anticipated. At the proposed Sunset Drive crossing, as many as 12 residential relocations are anticipated at the Greenfield Mobile Home Park. Existing access to the mobile home park may also be impacted by the change in the grade along Sunset Drive necessary to accommodate the proposed grade separation. Although the local traffic service along all of these routes will be maintained, the necessary topography modifications will alter the visual appearance at these locations.

Alternate 3 (the Preferred Alternative) located between Alternates 1 and 2, crosses SR 1756 (Lake Road) and SR 1747 (Sunset Drive). Since the proposed SR 1756 (Lake Road) interchange is in the same location as Alternate 1, community cohesion impacts to the Lake Road area will be similar to those discussed for Alternate 1. No residences are anticipated to be relocated at this location. Since very few residences are located west of this interchange, limited community impacts are anticipated along Lake Road as a result of implementing Alternate 3. As many as three relocations are anticipated at the Greenfield Mobile Home Park as a result of implementing Alternate 3.

Within the areas common to all three corridors, near existing US 70 at the northwestern and southeastern termini, the community cohesion impacts of the project will be the same. On the southwest side of existing US 70 at the northwestern project terminus, an entire small community consisting of six properties will be taken by the project right-of-way. Due to the presence of the existing, four-lane divided US 70, and the non-continuous service roads parallel to US 70, the proposed project is not expected to alter the community cohesion of the remaining properties in this area. At the southeastern terminus of the project, no residential or business communities exist in the area common to all of the corridors.

Relocation Assistance Program

It is the policy of the NCDOT to ensure that comparable replacement housing would be available prior to construction of highway projects. Furthermore, the North Carolina Board of Transportation has approved the following three programs to minimize the inconvenience of relocations:

* Relocation Assistance,
* Relocation Moving Payments, and
* Relocation Replacement Housing Payments or Rent Supplement.

With the Relocation Assistance Program, experienced NCDOT staff will be available to assist relocatees with information such as availability and prices of homes, mobile homes, or businesses

for sale or rent, and financing or other housing programs. The relocations Moving Payments Program, in general, provides for payment of actual moving expenses encountered in relocation. Where relocation will force an owner or tenant to purchase or rent property of higher cost or to lose a favorable financing arrangement (in case 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 assistance advisory services without regard to race, color, religion, sex, or national origin. The NCDOT will so 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 will be given 90 days to vacate from the date that the offer of relocation benefits is made. 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 or replacement housing offered will be within the financial means of the families and individuals displaced, and 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 or 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 displacees 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 a policy of the state that no person will be displaced by the NCDOT's construction projects unless and until comparable or adequate replacement housing has been offered or provided for each displacee within a reasonable period of time prior to 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 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. It is not felt that this program will be necessary on this project since there appear to be adequate opportunities for relocation within the area.

4.1.1.3. Community Facilities

The travel patterns to any church, cemetery, or other community facility will not be disrupted by any of the bypass alternatives. There will be very little disruption in travel patterns since no public roads will be bisected by any of the alternatives. The only locations where travel patterns will be altered are near the interchanges with existing US 70 at both ends of the project.

At the northern project terminus, the design and control of access of the proposed US 70 interchange requires closing four median crossovers along existing US 70, prohibiting U-turns as well as connections with three service roads. Two of these service roads, SR 1158 and SR 1163 are located along the western side of existing US 70. SR 1158 and the development it serves will be removed by the project construction. The crossover connecting to the southern end of SR 1163 will be closed, but this 0.7-mile route connects to US 70 at two locations north of the effected area. SR 1162, a 1.4-mile service road along the eastern side of existing US 70, will be affected by all of the proposed crossover closings. However, SR 1162 connects to existing US 70 at three locations north of the interchange. To reconnect SR 1162 to existing US 70 south of the interchange, another service road, SR 1772, will be extended 1230 feet northward.

At the southern project terminus, the interchange with existing US 70 will require closing two median crossovers that allow U-turns but do not connect to other routes.

4.1.1.3.1. Schools

None of the bypass alternatives is anticipated to adversely impact access to any public school. The existing heavy traffic volumes carried by existing US 70, and the numerous traffic signals often result in congestion and slow travel through the City. The proposed bypass will redirect most of the through-traffic around Havelock, thereby reducing congestion and travel times for school traffic.

4.1.1.3.2. Churches

The reduction of through-traffic along existing US 70 will improve access to most of the area churches, cemeteries and businesses. One community facility, the Lake Road Baptist Church (formerly Crystal Pines Baptist Church), will be affected but not relocated by Alternate 2. With Alternate 2, the Lake Road Baptist Church is located west of the Lake Road interchange, opposite from the remaining neighborhoods along Lake Road to the east. No known community resources are located in Alternate 1 or Alternate 3 (the Preferred Alternative) alignments.

4.1.1.3.3. Parks & Recreational Facilities

No parks or recreational facilities are located within any of the bypass corridors. The proposed US 70 Havelock Bypass is anticipated to reduce travel times to many public facilities. The ability to reach schools, recreational areas, community centers, and local government offices located within the area will improve as through-traffic is removed from existing US 70.

4.1.1.3.4. Emergency Response Services (Police, Fire & Emergency Services)

Police and fire protection for the local community and the Croatan National Forest will not be adversely affected by the construction of any of the bypass alternatives. Representatives of the local EMS/Fire Service indicated that the proposed bypass would have a neutral effect on emergency services. Since the bypass alternatives will have full control of access with an interchange at Lake Road (an area with adequate existing emergency response times), the bypass alternatives will not dramatically change emergency response times within the study area. The bypass alternatives could create a physical barrier through lands in the Croatan National Forest, making management of prescribed fires more difficult. However, representatives from the U.S. Forest Service indicated that the bypass may expedite the movement of fire equipment and personnel.

4.1.2. Title VI of the 1964 Civil Rights Act and Environmental Justice

As described in Section 3.1.5, Title VI of the Civil Rights Act of 1964[2] requires there be no discrimination in Federally-assisted programs, and Executive Order Executive Order 12898[3] directs all federal agencies to determine whether a proposed action will have a disproportionately high and adverse impact on minority and/or low income populations. Only one population group, a predominantly African-American neighborhood was identified in close proximity to the detailed study corridors. This neighborhood surrounding Hickman Hill Loop Road, is located adjacent to existing US 70 near the northwestern terminus of the proposed project. All of the bypass study alternatives share the same corridor in this area. None of the properties along Hickman Hill Loop Road are within the detailed study corridor, and no disproportionately high and adverse impacts to this neighborhood have been identified.

Based on the January 2009 relocation reports from NCDOT, the only bypass alternative that relocates minorities is Alternate 2. Alternate 2 relocates a total of 133 residences. Only 18 (13.5 percent) of the 133 are minorities. There are no minority relocations in the Alternate 1 or Alternate 3 (the Preferred Alternative) alignments. Based on the relocation reports, there are no households affected by any of the bypass alternatives with annual incomes less than $25,000. None of the detailed study alternatives will directly impact the senior facilities identified within the Direct Community Impact Area (DCIA). Because of the distance of the senior facilities and the Cherry Point MCAS from the detailed study corridors, the project will not have disproportionately high and adverse effects on the young or elderly.

As noted in Section 3.1.5, three schools within the DCIA have minority populations greater than 50 percent. None of these schools are directly affected and due to their distance from the proposed alternatives, none of these schools should experience adverse or disproportionate effects from the proposed Havelock Bypass.

Impacts to minority, low-income and elderly populations do not appear to be disproportionately high and adverse. Benefits and burdens resulting from the proposed project are anticipated to be equitably

distributed throughout the community. Public involvement and outreach activities must ensure full and fair participation of all potentially-affected communities in the project decision-making process.

4.1.3. Economic

Improved access between the areas north and west of Havelock and the coastal area of Carteret County is a primary economic benefit resulting from the construction of the Havelock Bypass. The users of the US 70 corridor through Havelock will benefit from the enhanced travel speeds offered along the bypass. Bypassing the existing traffic signals and congestion will result in reduced travel times and vehicle operating costs.

The bypass will divert through-traffic from existing US 70 potentially resulting in some negative economic impacts to selected local highway-oriented businesses in Havelock. These businesses are located along existing US 70 and receive a large portion of their income from drive-by customers. However, a substantial volume of local traffic will remain along existing US 70 to support these businesses. Negative economic impacts are expected to be minimal. Other businesses along existing US 70 that do not depend on drive-by customers will benefit by the reduced traffic congestion and improved accessibility.

Property values may change as a result of the construction of this project. The small amount of existing residential properties immediately adjacent to the bypass may experience a decrease in value especially during the construction of the project. However, some of these properties near the US 70 and Lake Road interchanges may experience an increase in value due to potential business development opportunities. The required project right-of-way will remove lands from the property tax base.

The construction of the Havelock Bypass is anticipated to benefit the local economy during the construction period by creating new jobs and the need for services for the construction workers.

The economic impacts of the three bypass alternatives may vary slightly. Alternate 1 and Alternate 3

(the Preferred Alternative) should have the least economic impact to the tax base since they will remove the least amount of private property from the tax base and Alternate 2 the most.

4.1.4. Land Use and Transportation Planning

Craven County and the City of Havelock have both recently completed new land use plans. The land use plan for Craven County and the City of Havelock and were prepared in accordance with Coastal Area Management Act (CAMA) requirements and certified by the Coastal Resources Commission (CRC) in October 2009. The current and former land use plans endorse the US 70 Havelock Bypass project. Both support the construction of a US 70 Bypass along the western edge of the City of Havelock and considered the probable effects of the bypass during the development of these land use plans. It is not expected that any of the bypass alternatives will conflict with the goals set forth in these land use plans.

4.1.4.1 Land Use Plans

The 2009 CAMA Core Land Use Plan Craven County[4] and the City of Havelock 2030 Comprehensive Plan[5] provide the most current land use plans for the study area. Although the City of Havelock was not a participant in the Craven County plan, this plan notes the County's support for projects which will improve hurricane evacuation routes and improve access to the Marine Corps Air Station Cherry Point. The City of Havelock 2030 Comprehensive Plan[5] has adopted elements from the Draft Havelock Comprehensive Transportation/Land Use Plan[6] and shows the proposed bypass (the Preferred Alternate 3) on the land use maps. The Plan vision states that widespread community support exists for preserving the integrity of established neighborhoods and that this allows City officials opportunities to promote the City as a vibrant urban landscape with an identifiable city center, establish land use controls for protecting the investment in the proposed bypass, a set a new vision that will transform Main Street (existing US 70) back into a community asset upon completion of the bypass.

The U.S. Forest Service also provides land use planning for the lands within the Croatan National

Forest (CNF). The Croatan National Forest Land and Resource and Management Plan 2002[7], prepared by the U.S. Forest Service, guides the natural resource management activities and establishes management standards within the Croatan National Forest (CNF). The US 70 Bypass is specifically mentioned in this Plan as an activity that would provide public benefit.

4.1.4.1.1. Existing Land Use & Zoning

According to the 2006 City of Havelock Land Use Plan, the largest land use in the detailed study corridors is the CNF. The next largest use is agricultural including private forested lands. There is some residential use along the existing roadways crossed by the bypass alternatives. The displacement of these uses is necessary for the project right-of-way. All three of the bypass alternatives will require a right-of-way approximately 250 feet wide with additional width at the interchanges. The following land use areas were determined from the 2006 City of Havelock Land Use Plan.

Alternate 1 would require approximately 387 acres of land within the right-of-way. Approximately 357 acres are currently forested or agricultural, and approximately 30 acres are zoned for other uses. Alternate 2 would require approximately 350 acres of land within the right-of-way. Approximately 282 acres are forested or agricultural lands, and approximately 69 acres are zoned for other uses. Alternate 3 (the Preferred Alternative) would require approximately 385 acres of land within the right-of-way. Approximately 354 acres of this area are currently forested and approximately 31 acres are zoned for other uses.

In the Croatan National Forest Land And Resource Management Plan (December 2002)[7] the U.S. Forest Service (USFS) identifies many issues of concern in the management of the Croatan National Forest (CNF). The CNF is managed for multiple purposes. According to this plan, the vision for the Forest is to manage for healthy natural communities and processes, and provide for human uses and values within the context of sustainability. According to the parcel data provided by the USFS in 2009, approximately 189, 225 and 240 acres of the current CNF would be within the proposed right of way of Alternates 1, 2, and 3 respectively.

Although most of the study corridor lands are undeveloped and forested, increasing residential development on the private lands is limiting the ability to properly manage the forested areas by prescribed burning. The City land use plan recognizes the existing land use is changing regardless of

the project. The proposed controlled-access bypass will likely serve as an outer boundary for development on the western side of Havelock, separating the developing area from the existing silviculture in the rural areas further from the City.

Most of the lands within the bypass study corridors are adjacent to the Havelock ETJ and were included in a proposed ETJ in the City of Havelock 2030 Comprehensive Plan[5]. The City of Havelock's planning jurisdiction assumed for preparing the City's Comprehensive Plan includes all of the lands within the bypass study corridors. The majority of these lands are within a proposed ETJ located west of the current limits.

4.1.4.1.2. Compatibility with Future Land Use Plans

As previously noted, the City of Havelock 2030 Comprehensive Plan[5] includes all of the lands in the detailed study corridors for the project. The future land use map in this Plan shows the general location of the proposed bypass along the preferred Alternate 3 study corridor. Most of the future land use adjacent to this corridor is shown as National Forest or agriculture. There is a residential area along SR 1747 (Sunset Drive). The plan indicates that some National Forest System lands between Greenfield Heights Boulevard and the proposed bypass could become available for new development while noting that direct connections to the bypass will be limited to proposed interchanges. The plan states that areas for future commercial development will be limited to proposed interchange locations and suggests the City should consider a small area plan for the SR 1756 (Lake Road) interchange area. The plan also states that comprehensive planning, zoning and subdivision ordinances, as well as capital improvements providing water and sewer, will regulate what, where and when development occurs along the bypass.

In the National Forest, the City land use plan calls for only those uses consistent with the Croatan National Forest Land And Resource Management Plan (December 2002)[7]. The U.S. Forest Service (USFS) has been involved in the planning of the Havelock Bypass since 1992, and has coordinated with NCDOT to assess the anticipated impacts of the proposed Havelock Bypass on the management of wildlife habitat and recreational land uses within the CNF portions of the project study area.

4.1.5. Transportation Plans

4.1.5.1. Compatibility with Highway Plans

The US 70 Havelock Bypass is shown around the southwestern side of the City in both the City of Havelock Thoroughfare Plan[8], adopted in November 1993 and the more current 2007 Draft Havelock Comprehensive Transportation/Land Use Plan[6] (see Figure 3-5). As proposed in these highway plans, each of the US 70 Bypass alternatives provides a controlled-access bypass with interchanges at each end with existing US 70 and at SR 1756 (Lake Road). The illustrated line on the current Havelock Comprehensive Transportation Highway Map shows the bypass connecting to existing US 70 north and south of the City of Havelock at approximately the same location as that of Alternate 3, the Preferred Alternative. The 1993 City of Havelock Thoroughfare Plan[8] differs in that the thoroughfare plan locates the northern end of the bypass to the northeast side of existing US 70 and includes an interchange at Slocum Road to serve the Cherry Point Marine Corps Air Station. The City of Havelock Thoroughfare Plan[8] corridor alignment was considered in the preliminary planning and eliminated from further consideration when it was discovered the corridor contained a large area of wetlands, a recently-upgraded military housing community, a large power substation, and a new elementary school. The proximity of Slocum Road, an adjacent railroad siding, and existing US 70 prohibit a cost effective interchange from being constructed at this location. South of Slocum Road, Alternate 3 (the Preferred Alternative) closely resembles the route illustrated in the City of Havelock Thoroughfare Plan[8]. Alternates 1 and 3 join at the Lake Road interchange and share a common alignment to the southeastern project terminus. North of the proposed Lake Road interchange, Alternate 1 is located farther west compared to the 1993 thoroughfare plan alignment.

Alternate 2 closely parallels another proposed major thoroughfare shown on the 1993 plan around the southwest side of the City from existing SR 1746 (Greenfield Heights Boulevard) near Gray Road to existing US 70 at SR 1824 (McCotter Boulevard). This parallel facility was proposed to provide local access around the southwest side of the City that will not be provided by the controlled-access bypass. This facility is not a part of the new Comprehensive Plan.

The City of Havelock Thoroughfare Plan[8] shows another proposed major thoroughfare from existing US 70 in the vicinity of SR 1735 (Cunningham Boulevard) to Lake Road at the interchange with the proposed bypass. This route is proposed to connect to Lake Road in the vicinity of Alternates 1 and 3. This thoroughfare is also not a part of the new draft Comprehensive Plan.

The proposed bypass alternatives fully comply with the vision of the North Carolina Strategic Highway Corridors Plan to provide a controlled access, median-divided freeway along US 70 between Morehead City and Raleigh.

4.1.5.2. Compatibility with Railroad Plans

Near the northwestern and southeastern termini of the project, Alternates 1, 2, and 3 will cross over the North Carolina Railroad (operated by the Norfolk Southern Corporation). All three bypass alternatives also cross over the Camp Lejeune Railroad (also operated by the Norfolk Southern Corporation) within the Croatan National Forest just south of SR 1756 (Lake Road). Each of these crossings will be grade-separated and provide adequate horizontal and vertical clearances over the railroads. Therefore, none of the bypass alternatives will permanently impact railroad service.

4.1.5.3. Compatibility with Bicycle/Pedestrian Plans

Although there are no existing sidewalks or designated bicycle routes in the study area, Figure 3-6 shows a proposed signed bicycle route along SR 1747 (Sunset Drive) and a recommended on-road route along SR 1756 (Lake Road). The grade separation at Sunset Drive and the interchange at Lake Road will not prohibit the development of these routes. However, all of the bypass alternatives cross a private unpaved road accessing both National Forest System lands and Weyerhaeuser property at the northern end of the proposed project. This gated, unimproved, private road is shown on Figure 3-6 as a proposed signed bicycle route. No arrangements have been made to convert this private road to a public facility. This road is proposed to be ended on both sides of the project, thereby eliminating this proposed signed bicycle route.

4.1.5.4. Compatibility with other Plans (Port & Air)

The construction of the US 70 Havelock Bypass will improve travel time and remove through-traffic, especially truck traffic, from the existing congested US 70 Corridor through urban Havelock. Shorter travel time and the potential of safer travel along a freeway facility should enhance the attractiveness of the Morehead City Port facilities and of the Jacksonville and Kinston airports.

None of the project alternatives directly affect the physical assets of the Port of Morehead City or those of airfields in Jacksonville or Kinston.

4.1.6. Physical Environment

4.1.6.1. Noise

An analysis was performed to determine the effect on traffic noise levels in the immediate project area as a result of building the proposed US 70 Havelock Bypass west of Havelock. The analysis includes an inventory of existing noise-sensitive land uses and a field survey of ambient (existing) noise levels in the project study area. It also includes a comparison of the predicted noise levels and the ambient noise levels to determine if traffic noise impacts can be expected resulting from the proposed project. Traffic noise impacts are determined from the current procedures for the abatement of highway traffic noise and construction noise, appearing as Part 772 of Title 23 of the Code of Federal Regulations. If traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating the traffic noise impacts. The complete analysis, Highway Traffic Noise Analysis, US 70 Havelock Bypass, June 2006[9], was prepared by Ko and Associates and is available for review at the NCDOT Project Development and Environmental Analysis Branch.

Noise Abatement Criteria - The Federal Highway Administration (FHWA) has developed Noise Abatement Criteria (NAC) and procedures to be used in the planning and design of highways to determine whether highway noise levels are or are not compatible with various land uses. The abatement criteria and procedures are set forth in the aforementioned Federal reference (Title 23

CFR Part 772). A summary of the noise abatement criteria for various land uses is presented in Table 4.2. The Leq, or equivalent sound level, is the level of constant sound, which in a given situation and time period, has the same energy as does time varying sound. In other words, the fluctuating sound levels of traffic noise are represented in terms of a steady noise level with the same energy content.

Procedure for Predicting Future Noise Levels - In general, the traffic environment is comprised of a number of variables that describe different classes and volumes of vehicles (cars, trucks, motor cycles) driving at different speeds through a continually-changing highway configuration and surrounding terrain. Due to the complexity of the problems, certain assumptions and simplifications must be made to predict highway traffic noise. The procedure used to predict future noise levels in this study was the Traffic Noise Model (TNM) 2.5. The TNM traffic noise prediction model uses the number and types of vehicles on the planned roadway, their speeds, the physical characteristics of the roadway (curves, hills, depressed, elevated, etc.), receiver locations and heights, and, if applicable, barrier type, barrier ground elevation, and barrier top elevation. This project proposes to build the US 70 Havelock Bypass from the Craven-Carteret County Line south of Havelock to existing US 70 approximately 900 feet east of SR 1904 (Magnolia Avenue) north of Havelock. The project is a proposed four-lane divided freeway with full access control. The noise predictions made in this report are highway-related noise predictions for the traffic conditions during the years 2003 and 2025. They do not include other noises related to the excessive background noises (trains, airplanes, and construction, etc.) that were measured during the ambient conditions. For simplification, all the roadways are assumed level except at the bridge and interchange areas, and all the receivers are assumed level with the roadways.

Peak hour design and level-of-service (LOS) C volumes were compared, and the volumes resulting in the noisiest conditions were used along with the speed limit of 55 mph. Hence, during all other time periods, the noise levels will be not greater than those indicated in this analysis. The TNM computer model was utilized in order to determine the number of land uses (by type), which would be impacted during this worst-case traffic noise level condition for the year 2025. A land use is

considered impacted when exposed to noise levels approaching or exceeding the FHWA noise abatement criteria and/or predicted to sustain a substantial noise increase as expressed in Table 4.2. The Leq modeled traffic noise exposures associated for the new roadway are listed in their entirety in the Highway Traffic Noise Analysis[9] . The land uses of receivers were determined by field observations.

Traffic Noise Impacts and Noise Contours - Traffic noise impacts occur when the predicted traffic noise levels either: (a) approach or exceed the FHWA noise abatement criteria ("approach" meaning within 1 dBA of the Table 4.2 value), or (b) substantially exceed the existing noise levels. The NCDOT definition of substantial increase is shown in the lower portion of Table 4.2. Consideration for noise abatement measures must be given to receivers that fall in either category.

Table 4.2. Noise Abatement Criteria

Noise Abatement Criteria Hourly A-Weighted Sound Level in Decibels(dBA)		
Activity Category	Leq(h)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve and important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 (Exterior)	Residences, churches, school, libraries, hospitals, motels, hotels, parks, picnic and recreation areas, active sports areas and playgrounds
C	72 (Exterior)	Developed lands, properties or activities not included in Categories A or B
D	Not Applicable	Undeveloped lands
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums

Source: Title 23 Code of Federal Regulations (CFR) Part 772, U.S. Department of Transportation Federal Highway Administration.

Criteria for Substantial Increase
Hourly A-Weighted Sound Level –Decibels (dBA)

Existing Noise level in Leq(h)	Increase in dBA from Existing Noise Levels to Future Noise Levels
50 or less dBA	15 or more dBA
51 dBA	14 or more dBA
52 dBA	13 or more dBA
53 dBA	12 or more dBA
54 dBA	11 or more dBA
55 or more dBA	10 or more dBA

Source: North Carolina Department of Transportation Noise Abatement Policy.

In accordance with the NCDOT Traffic Noise Abatement Policy, the Federal/State governments are not responsible for providing noise abatement measures for new development in which building permits are issued within a noise-impacted area of a proposed highway after the Date of Public Knowledge. The "Date of Public Knowledge" of the location and potential noise impacts of a proposed highway project will be the approval date of the final environmental document, e.g. Categorical Exclusion (CE), State or Federal Finding of No Significant Impact (FONSI), or State or Federal Record of Decision (ROD). For development occurring after this public knowledge date, local governing bodies are responsible to ensure that noise compatible designs are utilized along the proposed facility.

The maximum extent of the 72-dBA noise level contour is less than 59 feet from the edge of the outside travel lane of the proposed roadway in each direction. The maximum extent of the 67-dBA noise level contour is approximately 118 feet from the edge of the outside travel lane of the proposed roadway. This information should assist local authorities in exercising land use control over the remaining undeveloped lands adjacent to the roadway within local jurisdiction. For example, with the proper information on noise, the local authorities can prevent further development of incompatible activities and land uses within the predicted noise contours of an adjacent highway.

The predicted noise impacts of the proposed bypass alternatives upon nearby noise-sensitive properties are discussed below:

Alternates 1, 2 and 3

The results show that 30 residences and one business are predicted to be impacted due to highway traffic noise generated by Alternates 1, 2, and 3 (common to all three alternatives), under Title 23 CFR Part 772. The predicted noise level increases range from 0.2 dBA to 6.6 dBA. For reference purposes, an increase of three decibels is considered barely perceivable, and an increase of ten decibels is considered to double the loudness.

The residences experiencing noise impacts are located along northbound US 70. Receivers B11-B12 and B15-B21 (refer to Highway Traffic Noise Analysis, June 2006[9] for location of receivers) are houses or trailer homes along the segment of northbound US 70 at the north end of the project. The receivers are located within 130 feet from the edge of the roadway pavement. The increase in the noise level of the receivers due to the proposed bypass is around 5 dBA, and the predicted noise levels in 2025 range from 66.4 to 69.0 dBA.

Receivers B22, B27-B28, B30-B33, B35-B38, B42-B43, B50-B52, B54-B56 and B59 are located at the north end of the project where the proposed US 70 Bypass diverges westward from southbound US 70. These receivers are predicted to have noise impacts. All of these receivers are located within 130 feet from the edge of the existing US 70 pavement. The average increase in the noise levels of the receivers is about 4 to 6 dBA, and the predicted noise levels in 2025 range from 66.1 to 69.7 dBA.

At the south end of the project along southbound US 70, the noise level of Receiver C15 is predicted to increase from 71 dBA to 72.5 dBA, which exceeds the noise abatement criteria (NAC) of 72 dBA for Activity Category C.

Receiver B127, located on westbound SR 1756 (Lake Road), has a predicted noise level in 2025 that exceeds the NAC at 71.8 dBA. However, its ambient noise level without the new bypass is 69.7 dBA, which already exceeds the NAC. This is indicative that the main source of noise is the traffic from the secondary road, not the proposed bypass.

Receivers B60 to B76 are located on the right-of-way of the proposed US 70 Bypass and the properties will be acquired by the NCDOT. Therefore, the noise impacts upon those receivers are not considered.

Traffic Noise Abatement Measures - If traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures for reducing or eliminating the noise impacts must be considered. Consideration for noise abatement measures must be given to all impacted receivers. There are thirty residences and one business impacted for Alternates 1, 2 and 3. The impacted receivers are common to all three bypass alternatives. The following discussion addresses the applicability of these measures to the proposed project.

Noise Barriers - Physical measures to abate anticipated traffic noise levels are often applied with a measurable degree of success on fully-controlled facilities by the application of solid mass, attenuable measures strategically placed between the traffic sound source and the receivers to effectively diffract, absorb, and reflect highway traffic noise emissions. Solid mass, attenuable measures may include earth berms or artificial abatement walls.

The construction of noise barriers has been considered for the impacted receivers. Preliminary barrier investigations were performed to determine their feasibility and reasonableness. Factors including benefits to those impacted by noise, the cost of abatement, and social, economical and environmental effects of sound barrier construction were considered. In order for a barrier to be effective, it should be continuous along the roadway adjacent to the impacted site or sites. Openings for pedestrian or vehicular access greatly reduce the ability of a noise barrier to reduce noise levels.

In addition to physical constraints, the feasibility of a noise barrier is based primarily on its effectiveness in reducing traffic noise levels. A barrier that reduces noise levels by a minimum of 5 dBA for front row receivers is considered effective. Noise barriers should preferably reduce noise levels by 8 dBA at receivers located adjacent to the proposed wall.

The reasonableness of a noise abatement measure is a more subjective measure than the feasibility of a noise abatement measure. In addition to other factors, reasonableness is based primarily on the cost-effectiveness of a barrier. A barrier is considered cost-effective by NCDOT policy if the cost of the barrier per protected residential property does not exceed $35,000 plus an incremental increase of $500 per dBA average increase in predicted noise levels for impacted receptors. In the analysis, each residential unit is considered a single residential property. The cost analysis also considers properties that are not impacted but would also benefit from the construction of a noise barrier. A benefited receiver is one that experiences a 5 dBA or more reduction in noise levels by the construction of a noise barrier. Barrier costs are estimated at $15 per square foot of noise wall.

The only reasonable locations for noise abatement along the proposed bypass alternatives are near the project termini along existing US 70. Noise abatement walls were investigated to mitigate noise impacts by the proposed bypass alternatives on the residences located near the project termini along existing US 70. Noise abatement walls are considered not feasible because US 70 is a non-controlled access roadway in the areas of these receivers. Along such routes, driveways would or could require openings that would significantly reduce the mitigation a noise abatement wall would provide.

Highway Alignment Selection - Highway alignment selection involves the horizontal or vertical orientation of the proposed improvements in such a way as to minimize impacts and costs. The selection of alternative alignments for noise abatement purposes must consider the balance between noise impacts and other engineering and environmental parameters. For noise abatement, horizontal alignment selection is primarily a matter of constructing the proposed roadway at a sufficient distance from noise sensitive areas. The selected alignment has been located to minimize impacts to residences, businesses, historic properties, and recreational areas.

Traffic System Management Measures - Traffic system management (TSM) measures, which limit vehicle type, speed, volume and time of operations, are often effective noise abatement measures. Past project experience has shown that a reduction in the speed limit of 10 mph would result in a noise level reduction of approximately 1 to 2 dBA. The proposed project is a bypass in the City of Havelock, providing an important link in the US 70 corridor between Raleigh and Morehead City. Reducing the speed limit would not be appropriate for the functional classification for this project.

Other Mitigation Measures Considered - The acquisition of property in order to provide buffer zones to minimize noise impacts is not considered to be a feasible noise mitigation measure. The cost to acquire impacted receivers for buffer zones would exceed the abatement threshold of $35,000 per benefited receiver. The use of buffer zones to minimize impacts to future sensitive areas is not recommended because this could be accomplished through land use controls and the noise contour limits as predicted in noise analysis.

The use of vegetation for noise mitigation is not considered reasonable for projects such as this one due to the substantial amount of right-of-way necessary to make vegetative barriers effective. FHWA research has shown that a vegetative barrier should be approximately 100 feet wide to provide a 3-dBA reduction in noise levels.

Do Nothing Alternative

Traffic noise impacts for the “do nothing” or “no-build” alternative were also considered. If the traffic currently using the network of roads in the project area should double within the next twenty years, future noise levels would increase in the range of 2-3 dBA. As previously noted, it is barely possible to detect noise level changes of 2-3 dBA. A 5-dBA change in noise levels is more readily noticed. Again, constrained peak hour design and level-of-service (LOS) C volumes were compared under the "do nothing" alternative, and the volumes resulting in the noisiest conditions were used along with the speed limit of 55 mph.

Summary - Traffic noise impacts are an unavoidable consequence of transportation projects, especially in areas where there are not traffic noise sources. All traffic noise impacts were considered for noise mitigation. Based on this study, 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, and unless a major project change develops, no additional noise reports will be undertaken.

4.1.6.2. Air Quality

Recently, concerns about 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 Mobile Source Air Toxics (MSATs) impacts in their environmental documents as the science emerges. MSAT 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 the Federal Highway Administration's (FHWA) ability to evaluate how mobile source health risks should factor into project-level decision-making under the National Environmental Policy Act (NEPA). Also, the Environmental Protection Agency (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 on going, FHWA requires each NEPA document to qualitatively address MSATs and their relationship to the specific highway project through a tiered approach. The FHWA will continue to monitor the developing research in this emerging field.

The subject project has been identified as a project with low potential MSAT effects, requiring a qualitative analysis of emissions projections. The complete qualitative analysis of MSATs for this project and considerations of other air pollutants appears in the project Air Quality Analysis, dated September 15, 1995. A copy of this report may be viewed at the NCDOT Project Development and

Environmental Analysis Branch (PDEA) in the Transportation Building, 1 South Wilmington Street, Raleigh.

During construction of the proposed project, all materials resulting from clearing and grubbing, demolition or other operations will be removed from the project, burned or otherwise disposed of by the Contractor. Any burning done will be done in accordance with applicable local laws and ordinances and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520 and also in accordance with N.C. Division of Forestry rules and permit requirements. Care will be taken to ensure burning will be done at the greatest distance practical from dwellings and not when atmospheric conditions are such as to create a hazard to the public. Burning will be performed under constant surveillance. Also during construction, measures will be taken to reduce the dust generated by construction when the control of dust is necessary for the protection and comfort of motorists or area residents.

The project is located in Craven 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. This project is not anticipated to create any adverse effects on the air quality of this attainment area. This evaluation completes the assessment requirements for air quality of the 1990 Clean Air Act Amendments and the NEPA process. No additional reports are necessary.

4.1.6.3. Farmlands

As discussed in Section 3.3.3, lands identified with prime, unique, statewide or locally important farmland designations are classified by soil type regardless of whether they are being used for agricultural purposes. Most of the lands within the three bypass alternatives are public lands within the Croatan National Forest which do not qualify for these farmland designations.

As required by the Farmland Protection Act, this project was coordinated with the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS also known as the Soil Conservation Service [SCS]). According to the NRCS, all of the bypass alternatives will involve the use of some

lands with the prime farmland designation. Approximately 66 acres in Alternate 1, 112 acres in Alternate 2, and 71 acres in Alternate 3 are classified as prime farmlands. The approximate area of lands within the proposed right-of-way is shown in Table 4.3.

Table 4.3. Prime Farmland Impacts

ALTERNATIVE	ACRES
Alternate 1	66
Alternate 2	112
Alternate 3 (Preferred)	71

The Farmland Conversion Impact Rating Form (Form AD-1006) was completed by the appropriate agencies and is included in Appendix A1. The total score for the land evaluation and site assessment parts of the rating for Alternates 1, 2, and 3 was 138.0, 118.4, and 116.8 respectively. For alternatives with low scores (less than 160), the U.S. Department of Agriculture recommends a minimal level of farmland protection. No additional alternatives need to be evaluated to protect farmlands. The farmland rating for Alternate 3 (the Preferred Alternative) is the lowest of the bypass alternatives.

4.1.6.4. Utilities

Electric Power Transmission Service

Electric service lines belonging to Carteret-Craven Electric Cooperative, Progress Energy, and the City of New Bern will be impacted by each of the bypass alternatives. However, local service will not be disrupted.

In addition to the frequently-encountered electric service lines, there are several Progress Energy high-voltage electric power transmission lines located within easements that traverse the study area.

Near the northwestern terminus of the project, Alternates 1, 2, and 3 cross the line parallel to the North Carolina Railroad, known as the New Bern Switching Station - Havelock 115 KV Line, approximately 2000 feet north of SR 1760 (Hickman Hill Loop Road) on Croatan National Forest lands. Further south and east, approximately 1800 feet west of Hickman Hill Loop Road, the bypass alternatives cross another power line corridor containing the New Bern - Havelock 230 KV Line and the Jacksonville - Havelock 230 KV Line on private lands. Near the southeastern terminus of the project, Alternates 1, 2, and 3 cross the Havelock - Morehead City 115 KV South Feeder Line, and the Havelock - Morehead Wildwood 230 KV Line approximately 1150 feet east of the North Carolina Railroad on Croatan National Forest lands. Another 115 KV line is crossed approximately 1640 feet to the west of the railroad on Croatan National Forest lands.

In addition to the above-listed crossings common to all three bypass alternatives, Alternates 2 and 3 cross the Havelock - Morehead City Wildwood 115 KV North and South Feeder Lines, and the Havelock - Morehead Wildwood 230 KV Line on Croatan National Forest lands north of SR 1747, Sunset Drive. Alternate 2 crosses the Havelock - Morehead City Wildwood 115 KV North and South Feeder Lines again on private lands at the SR 1756, Lake Road interchange. Alternate 3 crosses the Havelock - Morehead Wildwood 230 KV Line on private lands just north of the SR 1756, Lake Road interchange. No disruption of service is expected with the construction of any of the bypass alternatives. If relocations or upgrading of these facilities is required as a result of this project, coordination with the U.S. Forest Service and Progress Energy will be required.

Water and Sewer Service

The water and sewer services provided by the City of Havelock do not currently extend beyond the City limits. The County's water and sewer systems extend into the project study area along SR 1756, Lake Road (Figures 3-12 and 3-13). Alternates 1 and 3 will not impact these services. Alternate 2 crosses the area along Lake Road within the City limits and may impact the City's water and sewer facilities. If Alternate 2 were selected, residents in the Lake Road area could anticipate temporary disruption to the existing public water and sewer service as a result of construction. These impacts would be remediated as part of the construction process.

Solid Waste Disposal Service

The Craven County waste transfer station located near the northern project terminus will be displaced by the construction of any of the bypass alternatives. The transfer station is located on National Forest System lands leased from the Croatan National Forest. The County must relocate this facility if they are to continue to provide a waste transfer station in the Havelock area.

Natural Gas Service

Since there are no natural gas lines within the project study area, the proposed project will not have any impact on natural gas service.

4.1.6.5. Visual

The most obvious visual and aesthetic impacts of the project will be concentrated within the Croatan National Forest, and along SR 1756, Lake Road, SR 1747, Sunset Drive (Alternates 2 and 3), and SR 1746, Gray Road (Alternate 2). Construction activities for the facility will involve clearing trees and vegetation through primarily wooded areas. The visual impacts will result from the removal of trees and vegetative cover and the introduction of bridge structures. Furthermore, potential development of commercial, residential, or industrial properties associated with the Lake Road interchange could detract from the rural viewshed. Minimal provisions are currently included for landscaping to shield the facility from local residences and businesses.

There are several proposed new structures. Grade-separated crossings will be introduced at the three new interchanges (at both termini and at SR 1756, Lake Road) and the three railroad crossings. Additional grade-separated crossings will be introduced at SR 1747 (Sunset Drive) with Alternates 2 and 3, and SR 1746 (Gray Road) with Alternate 2. Three stream crossings (bridges at the crossing of the Southwest Prong of Slocum Creek and the East Prong of Slocum Creek and a box culvert at the headwaters of Tucker Creek) will also be introduced. The new roadway with its interchanges,

grade-separated crossings and box culverts, will change the visual environment since no such structures currently exist.

The anticipated visual impacts for Alternates 1, 2, and 3 are very similar. A large portion of the visual impacts of the project will be to lands in the Croatan National Forest (CNF). According to a visual analysis conducted by the U.S. Forest Service (USFS), the scenic attractiveness of the lands within the CNF along each of the bypass alternatives varies slightly, but not enough to rank one over the other. The following is a summary of the USFS visual analysis of the three 1000-foot study corridors initially studied for Alternates 1, 2, and 3 and described in Section 3.3.5 of this DEIS.

Alternate 1 - With the approximately 757 acres, this alternative has the least number of national forest acres within the 1000-foot study corridor. Approximately 50 percent of the land is with Scenic Attractiveness Class C (indistinctive), and the other 50 percent is split evenly between Classes A and B. The southern portion contains most of the Class A and B, while the areas that tie back into US 70 contain most of the Class C. This is consistent for Alternates 2 and 3 as well. The mature long leaf pine, sand ridges with fire-managed pine, and a Cypress-Gum Swamp create the more attractive scenery in Classes A and B. An existing powerline runs along approximately 16,000 feet of the corridor and crosses it two additional times.

Alternate 2 - Alternate 2 has approximately 882 acres of national forest land within the 1000-foot study corridor. Approximately 50 percent is within Scenic Attractiveness Class C, 40 percent within Class A and the rest in Class B. Again, the southern portion contains most of the Class A and B, while the areas that tie back into US 70 as well as the urban areas contains most of the Class C. Mature long leaf pine creates the more attractive scenery in Class A and B. An existing powerline runs approximately 250 feet off the corridor for 18,000 feet and crosses the corridor four times.

Alternate 3 - Alternate 3 has approximately 951 acres of national forest land within the 1000-foot study corridor. Approximately 80 percent is divided evenly between Scenic Attractiveness Classes A and C. The other 20 percent is Class B. The southern end and central portions of this corridor contain most of the Class A and B, while the areas that tie back into US 70 contain most of the

Class C. Long leaf pine, sand ridges with pine, the Southwest Prong Creek, and a large Cypress-Gum Swamp help create the more attractive scenery in Classes A and B. A powerline runs along the corridor edge for half the length, approximately 24,000 feet, and crosses it four times.

The Scenic Attractiveness of all three proposed alternative corridors varies, but not enough to create a difference in terms of evaluating the scenic importance of one over the other. The Concern Level for each alternative will be the same, following the existing use and concern along US 70.

To maintain high scenic quality, the natural features which create the scenic value are retained and considered during any ground disturbing activity. The areas that will be the most important to retain are immediately adjacent to the new roadway and areas that will be visible from viewing locations such as developed areas and waterways. Methods to help maintain the existing scenery include design to fit the natural contours, removal of all construction debris and cleared materials, providing gentle cut slopes, retaining large trees, and spanning swamp areas. If possible, dominant views of powerlines should be avoided.

4.1.6.6. Hazardous Materials

Since no known UST sites are located in the bypass study area, the project will have no impact on these facilities. However, the proposed bypass may impact one former solid waste landfill site identified in the project study area. The corridor that crosses this site is common to all three bypass alternatives. This site is on National Forest System lands immediately behind the Craven County waste transfer site on the southwest side of existing US 70 near the northwestern project limits (Figure 3-1). The exact limits of the former landfill site have been obscured by the construction of the County waste transfer facility. Since the right-of-way for the proposed facility will require a portion of the County waste transfer site, the project may require a small area of this former landfill depending on the landfill limits. When the right-of-way limits are established, it will be determined whether this landfill is impacted. If the site is impacted, an assessment will be conducted to determine the presence and, if necessary, the levels of contamination of the involved property. If contamination is found, options to remediate the contamination will be evaluated and coordinated

with the North Carolina Department of Environment and Natural Resources and the U.S. Forest Service.

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The U.S. Forest Service has indicated a potential contamination issue at the Craven County Waste Transfer Station on National Forest System lands. They have directed the County to clean spills, repair containers for hazardous waste, and install secondary containment systems for all containers intended for liquid or hazardous waste. When the final right-of-way limits are established, it will be determined whether this area is impacted. If the necessary right of way requires portions of the facility, an assessment will be conducted to determine the presence and, if necessary, the levels of contamination of the involved property. If contamination is found, options to remediate the contamination will be evaluated and coordinated with the North Carolina Department of Environment and Natural Resources and the U.S. Forest Service.

Another potentially-contaminated property, an automobile parts salvage yard, is located along SR 1756 (Lake Road). Although this property is within the study area, it is not within any of the Bypass corridors and will not be impacted by the proposed project (see Figure 3-1).

In accordance with NCDOT Policy on hazardous materials, if any additional contaminated sites or underground storage tanks are discovered on the project, they will be assessed and recommendations for right of way and construction will be provided.

4.1.6.7. Floodplain/Floodway

Encroachment on the 100-year floodplains of Tucker Creek, the Southwest Prong Slocum Creek, and the East Prong Slocum Creek is required by each of the proposed bypass alternatives. The areas of floodplain encroachment within the proposed right-of-way for each of the bypass alternatives were determined using data from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. Table 4.4 indicates the approximate area of 100-year floodplain encroachment at each crossing.

Table 4.4. Estimated 100-Year Floodplain Encroachments (Acres)

Alt.	Tucker Cr. Crossing	SW Prong Crossing	E Prong Crossing	Less Bridges	Total
1	1.2 (0.5)*	4.8 (3.9)*	4.1 (3.3)*	8.8	1.3
2	1.2 (0.5)*	3.2 (3.2)*	4.5 (1.7)*	7.5	1.4
3	1.2 (0.5)*	5.0 (5.0)*	4.1 (3.3)*	8.6	1.6

* (Acres within Croatan National Forest)

As noted in Section 3.3.8, the three alternatives cross a tributary to Tucker Creek, the Southwest Prong of Slocum Creek and the East Prong of Slocum Creek. The NCDOT Hydraulics Unit will coordinate with the N.C. Floodplain Mapping Program (FMP), to determine the status of the project with regard to applicability of NCDOT's Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

4.1.6.8. Protected Lands

4.1.6.8.1. Wild and Scenic Rivers

No stream that flows through the project study corridors is designated as a National Wild and Scenic River or a State Natural and Scenic River.

4.1.6.8.2. State/National Forests

The Croatan National Forest contains approximately 160,000 acres in Jones, Carteret and Craven Counties (see Figure 3-2). A small portion lies partly within the project study area. All three bypass alternatives cross through portions of the Croatan National Forest (see Figure 4-2). Within the currently proposed 250-foot general right of way width, Alternate 1 impacts approximately 189 acres of Croatan National Forest land. Alternate 2 impacts approximately 225 acres and Alternate 3 impacts approximately 240 acres. There are no other State or National Forests in the project area.

Since all of the detailed study alternatives cross National Forest System lands, a special use permit from the U.S. Forest Service will be required to provide the lands for the proposed project.

Highlights of the Croatan National Forest are the Cedar Point Tideland Trail near Cape Carteret, the Island Creek Forest Walk off SR 1004, the Neusiok Trail beginning at a Neuse River estuary and ending at Oyster Point. Wilderness areas include the Pocosin Wilderness, Pond Pine Wilderness, Catfish Lake South Wilderness, and Sheep Ridge Wilderness. None of the Havelock Bypass alternatives impact these designated areas.

4.1.6.8.3. Gamelands and Preservation Areas

The Croatan National Forest is a gameland open to fishermen and hunters with the proper licenses and permits. A small portion of the CNF will be taken for the proposed project but the addition of the Croatan Wetland Mitigation Bank discussed in Section 4.4 adds 4035 acres to the forest.

The N.C. Natural Heritage Program (NCNHP) has identified priority areas within the study area that include the Havelock Station Flatwoods and Powerline Corridor Natural Area, and the Southwest Prong Flatwoods Priority Area that are crossed by the bypass alternatives (see Figure 4-3). All three bypass alternatives cross the Havelock Station Flatwoods and Powerline Corridor Natural Area. Alternate 2 impacts more of this area than Alternates 1 and 3. The Southwest Prong Flatwoods Priority Area is crossed by Alternate 2 and Alternate 3. Alternate 3 impacts more of the Southwest Prong Flatwoods Priority Area. Since these sites have not been given specific boundaries by NCNHP, the actual areas taken from the sites cannot be determined.

4.1.7. Cultural Resources and Section 106 of the National Historic Preservation Act of 1966

Cultural resources investigations were undertaken to identify potentially-important historic architectural and archaeological resources within the study area to address the requirements of Section 106 of the National Historic Preservation Act of 1966.

4.1.7.1. Historic Architecture Resources

The State Historic Preservation Office has concurred in a letter dated August 31, 1994, that the Needham B. White House is the only property in the project study area listed in or eligible for listing in the National Register of Historic Places[10]. This property located along existing US 70 in Havelock, is not within the Area of Potential Effect (APE) of any of the bypass alternatives.

On December 5, 2006, the NCDOT, the Federal Highway Administration (FHWA), and the SHPO met for a consultation concerning the project bypass alternatives. There were no properties over fifty years old within the Area of Potential Effect (APE) considered eligible for the National Register. Furthermore, there are no properties within the APE which are considered to have achieved historic significance within the past 50 years.

4.1.7.2. Archaeological Resources

The archaeological background study and field reconnaissance of the bypass alternatives, entitled Archaeological Background Report US 70 Havelock Bypass Craven County, North Carolina (Greg C. Smith, 1997)[11] indicates there were no known archaeological sites in the vicinity of the bypass alternatives listed in or eligible for listing in the National Register of Historic Places (NRHP). The study indicated seven, previously-recorded archaeological sites within Alternates 1, 2, and 3. Two of these sites (31CV164** and 31CV170**) located on National Forest System lands at the edge of Alternate 3 (the Preferred Alternative), were recommended for further testing to determine if they are eligible for listing.

In 1999, an intensive terrestrial archaeological survey of the high probability soil within the Alternate 3 (the Preferred Alternative) Area of Potential Effect (APE = 327 acres) was conducted (Smith et al. 2000). The two previously recorded archaeological sites (Sites 31CV164** and 31CV170**) recommended for further testing were found and evaluated during the course of the intensive survey. Site 31CV164** was investigated and recommended as not eligible for the NRHP. Site 31CV170** was not fully assessed because its location was considered outside the project

limits; however, it was recommended as eligible for the NRHP per Criterion A according to its archaeological site form on file at the Office of State Archaeology.

As a result of the terrestrial survey, 15 previously unrecorded archaeological sites were discovered. Subsurface testing demonstrated that 14 of the sites do not exhibit characteristics that would make them eligible for listing in the NRHP. However, Site 31CV302 (located on National Forest System lands) was found to contain intact subsurface deposits that have the potential to contribute new information regarding regional prehistory; therefore, Site 31CV302 is recommended as eligible for the NRHP per Criterion D. In a letter dated December 22, 2004, the SHPO concurred with these findings.

Based on current design plans, Site 31CV170** and Site 31CV302 will be avoided; however, if design plans change and avoidance is not possible, then mitigation efforts will be conducted prior to construction activities. If data recovery investigations are needed, at least nine months will be needed for these investigations prior to construction.

As noted in Section 3.4.2, two cemeteries (Rowe Family Cemetery [31CV300**] and Wynne Family Cemetery [31CV301**] neither located on National Forest System lands) have been recorded within the project vicinity. Based on current design plans, neither cemetery is located within the Area of Potential Effect; therefore, there will be no impacts to either cemetery. However, if design plans change prior to construction and avoidance is no longer possible, then relocation in accordance with existing State statutes is appropriate.

4.1.8. Natural Environment

Most of the discussions of the Natural Environment found in this section are taken from the Natural Resources Technical Report, US 70 Havelock Bypass DEIS, Craven and Carteret Counties, North Carolina, State Project No. 8.T170701, T.I.P. No R-1015, prepared for the NCDOT., Division of Highways, Planning and Environmental Analysis Branch, Natural Environment Unit, Raleigh, North Carolina, May 2007[12] that was prepared by Environmental Services, Inc.

4.1.8.1. Biotic Community and Wildlife

4.1.8.1.1. Terrestrial Community and Wildlife

Terrestrial community descriptions were presented in Section 3.5.2.1 where existing vegetative communities and terrestrial fauna in the project study area are fully described. Potential impacts to terrestrial communities are discussed in this section and direct impacts are shown in Table 4.5a and 4.5b. Vegetative community mapping is depicted in Figures 3-10A through 3-10E.

The actual impacts from the construction of the US 70 Havelock Bypass will depend on the chosen alternative for the project. Tables 4.5a and 4.5b summarize areas of vegetative communities located within each of the three bypass alternatives. The areas presented are for both the total study corridor width for each alternative, and the proposed project alignment within the study corridor. Potential impacts presented for the alignments are based on current minimization of overall potential impacts to vegetative communities within the corridor developed for each alternative. These potential impacts presented for the alternative alignments are based on the preliminary design clearing limits (slope stake limits plus an additional 15 feet) plus an additional 25 feet either side in accordance with current NCDOT impact analysis guidelines. Therefore, direct impacts are projected to be less than those shown for the project alignment as currently presented. Actual impacts cannot be quantified until a final corridor is chosen and final design is completed.

In comparing potential impacts for the alignment of each alternative to all vegetative communities, Alternate 2 has the least potential impact (427.7 acres), and Alternate 3 has the greatest potential impact (465.7 acres). On NFS lands Alternate 1 has the least potential impact (238.5 acres), and Alternate 3 has the greatest potential impact (295.4 acres).

However, when comparing the potential impacts to relatively less disturbed, more natural habitats within the alternative alignments, which would include the pine flatwoods, pine/hardwood forest, streamhead pocosin, swamp forest, and small pond vegetative communities, Alternate 1 has the least potential impact to these more natural habitats (201.1 acres), while Alternates 2 and 3 have greater

potential impact (225.1 and 243.5 acres, respectively). On NFS lands Alternate 1 has the least potential impact to these more natural habitats (170.5 acres), while Alternates 2 and 3 greater potential impact (199.0 and 220.9 acres, respectively). Habitat quality of the powerline corridor communities varies depending on past disturbances (i.e., presence of fire plow lines, adjacent maintenance roads and associated ditches), but some areas provide habitats similar to savannas and would be considered higher quality habitats. Alternate 1 has the least potential impact to powerline corridors (6.4 acres) when compared to Alternate 2 (9.2 acres), and Alternate 3 (10.3 acres). On NFS lands Alternate 1 has the least potential impact to powerline corridors (4.9 acres) when compared to Alternate 2 (7.9 acres), and Alternate 3 (7.9 acres).

Table 4.5a. Vegetative Communities Present in the Project Study Area

Vegetative Community Feature	Study Corridor						Alignment [a]					
	Alt 1.		Alt. 2		Alt. 3		Alt. 1		Alt. 2		Alt. 3	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Pine Flatwoods (hydric)	251.0	16.2	267.6	18.5	248.9	16.5	48.7	10.7	45.4	10.6	49.4	10.6
Pine Flatwoods (mesic)	186.0	12.0	239.7	16.6	299.8	19.9	64.9	14.3	82.4	19.3	103.7	22.3
Pine/Hardwood Forest	61.8	4.0	87.1	6.0	53.9	3.6	23.6	5.2	30.6	7.2	21.1	4.5
Streamhead Pocosin (tree dominated)	87.6	5.7	80.7	5.6	87.0	5.8	9.0	2.0	10.4	2.4	9.0	1.9
Streamhead Pocosin (shrub dominated)	16.2	1.0	20.1	1.4	17.3	1.2	1.3	0.3	3.6	0.8	1.3	0.3
Swamp Forest (along large streams)	47.9	3.1	38.3	2.6	40.8	2.7	7.5	1.7	6.6	1.5	9.8	2.1
Swamp Forest (along small streams)	105.1	6.8	97.9	6.8	99.8	6.6	22.9	5.0	21.5	5.0	25.5	5.5
Swamp Forest (in ponds)	71.7	4.6	66.6	4.6	77.9	5.2	22.8	5.0	24.3	5.7	23.5	5.0
Small Pond	1.0	0.1	1.1	0.1	0.8	0.1	0.3	0.1	0.3	0.1	0.2	<0.1
Powerline Corridor (hydric)	8.9	0.6	10.8	0.7	11.7	0.8	1.4	0.3	2.3	0.5	2.8	0.6
Powerline Corridor (mesic)	14.9	1.0	20.2	1.4	30.2	2.0	5.0	1.1	6.9	1.6	7.5	1.6
Pine Plantation (hydric)	184.2	11.9	94.0	6.5	129.4	8.6	42.5	9.4	21.5	5.0	37.0	7.9
Pine Plantation (mesic)	295.2	19.1	95.2	6.6	194.0	12.9	93.3	20.6	19.9	4.7	63.6	13.7
Successional/Ruderal Habitat	47.9	3.1	36.2	2.5	40.8	2.7	16.7	3.7	12.6	2.9	15.7	3.4
Rural/Urban Modifications	168.5	10.9	290.7	20.1	171.8	11.4	93.8	20.7	139.4	32.6	95.6	20.5
Total:	1547.9		1446.2		1504.1		453.7		427.7		465.7	

[a] Calculated based on clearing limits (slope stake limits plus 15 feet on each side) plus an additional 25 feet to each side.

Table 4.5b. Vegetative Communities Present in the Project Study Area on National Forest System (NFS) Lands

Vegetative Community Feature	Study Corridor						Alignment [a]					
	Alt 1.		Alt. 2		Alt. 3		Alt. 1		Alt. 2		Alt. 3	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Pine Flatwoods (hydric)	238.5	30.6	258.9	28.9	239.7	24.7	48.3	20.3	44.9	16.5	48.7	16.5
Pine Flatwoods (mesic)	151.1	19.4	224.9	25.1	285.2	29.3	53.8	22.6	80.1	29.5	98.3	33.3
Pine/Hardwood Forest	58.4	7.5	73.0	8.1	53.7	5.5	22.7	9.5	27.3	10.1	21.1	7.1
Streamhead Pocosin (tree dominated)	87.6	11.2	80.7	9.0	87.0	8.9	9.0	3.8	10.4	3.8	9.0	3.0
Streamhead Pocosin (shrub dominated)	15.0	1.9	14.1	1.6	15.5	1.6	1.3	0.5	1.2	0.4	1.3	0.4
Swamp Forest (along large streams)	34.8	4.5	27.1	3.0	35.8	3.7	6.6	2.8	4.1	1.5	9.4	3.2
Swamp Forest (along small streams)	45.0	5.8	42.0	4.7	51.1	5.3	12.1	5.1	10.1	3.7	12.9	4.4
Swamp Forest (in ponds)	31.9	4.1	44.2	4.9	55.2	5.7	16.4	6.9	20.7	7.6	20.0	6.8
Small Pond	1.0	0.1	0.8	0.1	0.8	0.1	0.3	0.1	0.2	0.1	0.2	0.1
Powerline Corridor (hydric)	5.3	0.7	8.9	1.0	8.0	0.8	0.8	0.3	1.8	0.7	1.9	0.6
Powerline Corridor (mesic)	9.8	1.3	17.0	1.9	22.4	2.3	4.1	1.7	6.1	2.2	6.0	2.0
Pine Plantation (hydric)	21.9	2.8	19.4	2.2	19.4	2.0	5.5	2.3	5.5	2.0	5.5	1.9
Pine Plantation (mesic)	32.7	4.2	20.5	2.3	49.3	5.1	7.4	3.1	1.1	0.4	9.5	3.2
Successional/Ruderal Habitat	2.5	0.3	15.4	1.7	2.3	0.2	1.3	0.5	5.5	2.0	1.2	0.4
Rural/Urban Modifications	44.9	5.8	50.4	5.6	46.8	4.8	48.9	20.5	52.3	19.3	50.4	17.1
Total:	780.4		897.3		972.2		238.5		271.3		295.4	

[a] Calculated based on clearing limits (slope stake limits plus 15 feet on each side) plus an additional 25 feet to each side.

Pine plantations, which are intensively altered from natural vegetative community structure for the purposes of commercial timber production, typically have additional soil and hydrological modifications and represent lower quality habitat, although not necessarily as low as the rural/urban modification and successional/ruderal communities.

Alternate 2 has the least potential impact to pine plantation (41.4 acres) when compared to Alternate 3 (100.6 acres), or Alternate 1 (135.8 acres). On NFS lands Alternate 2 has the least potential impact to pine plantation (6.6 acres) when compared to Alternate 3 (15.0 acres), or Alternate 1 (12.9 acres). Alternate 2 has the greatest impact to rural/urban modification and successional/ruderal communities (152.0 acres) when compared to Alternate 1 (110.5 acres), and Alternate 3 (111.3 acres). On NFS lands Alternate 2 has the greatest impact to rural/urban modification and successional/ruderal communities (57.8 acres) when compared to Alternate 1 (50.2 acres), and Alternate 3 (51.6 acres).

As a result of the bypass cutting through forested areas, more forest edge and open habitat will be created. This could result in the local loss or displacement of organisms that require forest interior habitat. Organisms that prefer forest edges, are habitat generalists or are shade-intolerant may increase in numbers. Sun-loving plants, such as grasses, asters and other early successional species may increase along the edges of the highway.

Borrow pits used for bypass construction could result in the localized loss of wildlife and habitat, depending on their location. The siting of borrow pits and completion of all necessary environmental reviews for them will be addressed by the contractor at a later date.

No quantitative surveys were conducted to document the small mammal populations within the project study area. The forested communities within the project study area are expected to provide habitat for small animals. Most of the mammals documented within the project study area are the conspicuous larger and medium-sized species that have wide habitat tolerances and commonly occur in anthropogenic landscapes. Effects to small mammals may include reductions in some forest

interior species, such as golden mice, and increases in species that prefer open, grassy environments. Open space created along the bypass may act as a barrier to forest-dwelling species such as southern flying squirrels (*Glaucomys volans*), Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) and some types of forest specialist salamanders (Hels and Buchwald 2001).

Large mammals impacts may include avoidance of the bypass and reduced passage through the bypass vicinity. The presence of roadside exclusion fencing may further limit the movement of some large mammals. Fencing may direct animals towards two potential areas for wildlife crossings at the central and southern portions of the bypass: bridges to be built at the East Prong and Southwest Prong of Slocum Creek will span the floodplain and should provide passage for animals beneath the bypass, as long as there is a 10-30 foot-wide passage devoid of riprap. These crossings will allow access to NFS areas to be fragmented by the bypass near the southern and central portions of the project. If multiple-barrel box culverts are used at any stream crossings, they may provide passage for small and medium-sized animals, as long as one barrel of the culvert remains dry. Although wildlife crossings could also provide safe passage for hunters and their dogs, human activity can repel black bears (Clevenger and Waltho, 2000[13]) and other human-sensitive species. Animal populations in other NFS lands to be fragmented by the bypass have an increased risk of becoming isolated if no other wildlife crossings are provided. The effects that isolation can have on populations are discussed below in Section 4.3.1.

Bird species documented in the project study area are typical of forested communities and disturbed areas of North Carolina. Some species are habitat-specific, being limited by narrow ecological requirements, while others have more-general habitat requirements. Effects to bird species may include changes in density and diversity near the bypass. Forest interior species may be adversely affected by habitat loss.

Reptile and amphibian species documented in the project study area represent a range of species mostly with wide habitat tolerances and found across the southeastern United States. Most of the amphibian species require access to ephemeral, fish-free water for breeding. The construction of the project could restrict movements to and from such breeding areas. Movement of less agile species, such as turtles, may be hampered by roadside exclusion fencing or silt fencing. If erosion

control matting containing plastic mesh is used, it has the potential to snarl turtles and snakes.

Construction in any of the three alternative corridors will primarily impact forested communities. The majority of unpaved areas modified will become road shoulders. The proposed roadway is expected to have varying effects on wildlife populations compared to existing conditions in all of the alternative corridors. Direct effects include loss of organisms directly due to construction, and potential effects to habitat and wildlife associated with thermal, hydrological, chemical and material pollutants, sediments, and noise. Open habitat created along the roadside and the highway itself will affect the movements of organisms to varying degrees. Movements including migration, home-range movements for food and shelter, and the dispersal of young from their natal area could all be affected by the bypass, which could act as a barrier or filter to some species.

The proposed bypass may make forest management, such as prescribed burning, more difficult on National Forest System (NFS) lands separated from larger, contiguous parcels of NFS lands. This could result in changes in habitat quality in the fragmented pieces.

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4.1.8.1.2. Aquatic Community and Wildlife

Aquatic Habitats

Aquatic habitats within the project study area range from ephemeral waters present in intermittent, channelized, first-order streams, to perennial stream channels and flooded palustrine habitat. Characteristics of the aquatic community are presented in Section 3.5.2.2.

Long term effects can include displacement of organisms in the vicinity of road crossings over waterways. This can be due to channel scour downstream of bridge footings or culverts (Simon and Johnson 1999), or it can be caused by aggradation, which can bury macroinvertebrates upstream of structures, particularly culverts (Wellman et al. 2000).

Structures such as culverts may create flow depths and velocities that aquatic organisms cannot

negotiate. Channel degradation and scour pools at the outlet of culverts may cause them to become "perched" over time, which prevents passage of aquatic organisms. Blocking movements of aquatic organisms may prevent access to feeding areas, refuge from predators, areas for spawning and breeding, and areas that remain inundated in dry periods.

The level terrain of the project area should minimize perching by reducing high velocity flows. In addition, the bottom of NCDOT culverts are typically buried to prevent perching from occurring. The use of sills in single barrel box culverts and high flow/low flow barrels in multiple barrel culverts can also help maintain adequate flow for the passage of organisms. If bridge footings are kept out of waterways, effects are further reduced.

Aquatic wildlife may be temporarily displaced during the construction of bridges proposed for crossing streams. Most adverse effects should only be temporary if permanent impacts to stream channels are avoided. Use of culverts may reduce habitat locally. Roadside ditches may increase aquatic habitat for some organisms, but may increase their exposure to pollutants from run-off.

Measures to maximize sediment and erosion control during construction will be implemented to protect water quality for aquatic organisms. These measures are discussed in Sections 4.1.8.2.3.1 and 4.1.10.8.

Although a portion of Southwest Prong Slocum Creek extending into the eastern portion of the Alternate 2 study corridor is identified as anadromous fish spawning area, this reach does not currently extend into the Alternate 2 alignment. No other anadromous fish habitat has been identified in the project corridors. The North Carolina Wildlife Resources Commission (NCWRC) has requested an in-water work moratorium for February 15 to June 15 for East Prong and Southwest Prong Slocum Creek throughout the project area. Goodwin Creek and Tucker Creek upstream of the US 70 structure will not require a moratorium; however, if the current structures are replaced or extended downstream, a February 15 to June 15 moratorium will apply. The unnamed tributaries within the detailed study corridors are not considered anadromous fish habitat and are not subject to anadromous fish moratoria.

4.1.8.2. Water Resources

4.1.8.2.1. Groundwater

The Castle-Hayne Aquia aquifer is the groundwater source in the study area. There are no expected or anticipated impacts to the Castle-Hayne Aquia aquifer as a result of the construction of any of the proposed bypass alternatives. Construction will have limited excavation and as a result no alteration of groundwater flow is anticipated.

4.1.8.2.2. Wells

No public wells will be impacted by the construction of any of the proposed bypass alternatives. However all of the bypass alternatives pass through areas served by private wells and septic systems. Alternate 1 is not expected to impact any of these systems. With Alternate 2, as many as 12 residential relocations using private wells and septic systems are anticipated at the Greenfield Mobile Home Park at the proposed Sunset Drive crossing. With Alternate 3, as many as three residential relocations are anticipated at the Greenfield Mobile Home Park at the proposed Sunset Drive crossing.

4.1.8.2.3. Surface Water

4.1.8.2.3.1. Streams

Twenty-five streams are present within the project study area. All of these streams were delineated in the field. Brief descriptions of water resource physical characteristics are provided in Section 3.5.3 for the streams within the project study corridors. Figures 3-9 and 3-11A to 3-11E depict general locations of streams. A discussion of physical impacts to jurisdictional streams and wetlands can be found in Section 4.1.9.1. Principal streams [defined as named rivers and creeks depicted on the USGS 7.5 minute (1:24,000) topographic quadrangles] within the project study area include Tucker Creek, the Southwest Prong of Slocum Creek and the East Prong of Slocum Creek.

All three of the bypass corridors for the proposed Havelock Bypass cross these three major watercourses in the project area. These watercourses flow into Slocum Creek which is a tributary to the Neuse River. They all drain from west to east and are crossed at relatively perpendicular angles by the bypass alternatives. No stream channels are anticipated to be relocated with any of these alternatives. Each of these stream crossings has been reviewed by the U.S. Army Corps of Engineers, the North Carolina Department of Environment and Natural Resources, Division of Water Quality, and the North Carolina Wildlife Resources Commission. In addition, the project Merger Process Team has approved Concurrence Point 4B (Hydraulic Review).

Table 4.6 indicates the approximate drainage area, the proposed structure type and a preliminary size estimate of the structure at each of the major creek crossings along the bypass study corridors.

Table 4.6. Proposed Drainage Crossings

ALT.	CROSSING	DRAINAGE AREA	STRUCTURE TYPE	PRELIMINARY ESTIMATED SIZE
1,2,3	TUCKER CREEK TRIBUTARY	1.2 Sq Mi	RC BOX CULVERT	2 @ 9 Ft x 7 Ft x 384 Ft
1	SOUTHWEST PRONG SLOCUM CREEK	8.5 Sq Mi	DUAL BRIDGES	1135 Ft LENGTH
2	SOUTHWEST PRONG SLOCUM CREEK	11.6 Sq Mi	DUAL BRIDGES	610 Ft LENGTH
3	SOUTHWEST PRONG SLOCUM CREEK	10.5 Sq Mi	DUAL BRIDGES	925 Ft LENGTH
1,3	EAST PRONG SLOCUM CREEK	8.0 Sq Mi	DUAL BRIDGES	1470 Ft LENGTH
2	EAST PRONG SLOCUM CREEK	8.2 Sq Mi	DUAL BRIDGES	950 Ft LENGTH

Note: The estimated size of the bridges is based on field determinations to minimize wetlands impacts and allow wildlife crossings.

As discussed in Section 3.5.3, the current water quality classification is Class SC for Tucker Creek and its tributaries, and Class C for Slocum Creek and its tributaries. These classifications are by use and indicate waters suitable for aquatic life propagation and survival, fishing, wildlife and secondary recreation. The Slocum Creek tributaries are also suitable for agricultural uses. All of these involved watercourses are also assigned the Nutrient Sensitive Waters (NSW) and Swamp Waters (Sw) supplemental classifications that require limitations on nutrient inputs, and indicate the streams have low velocities. Downstream of the proposed bypass alternatives, Tucker Creek and Slocum Creek are designated public trust areas. The water quality of these Areas of Environmental Concern (AEC) is protected by the North Carolina Coastal Area Management Act (CAMA).

According to the North Carolina Department of Environment and Natural Resources, Division of Water Quality (DWQ), there are no Outstanding Resource Waters (ORW), High Quality Waters (HQW), WS-I waters, or WS-II waters within 3.0 miles upstream or downstream of the project study corridors (DEM 2000[14], DWQ 2006b)[15]. No stream that flows through the project study corridors is designated as a National Wild and Scenic River or a State Natural and Scenic River.

Water Resource Impacts

Construction of the proposed project may impact water resources by one or more of the following processes: bridge construction, box culvert and/or pipe construction, and box culvert and pipe extension. Construction activities could alter and/or interrupt stream flows and water levels at each stream crossing. This type of disruption to a stream reduces stream flow downstream of the project. Temporary diversions of water flow tend to raise the water level upstream from the project and lower the water level downstream of the project.

Project construction may result in the following impacts to surface waters:

- Increased sedimentation and siltation from construction and/or erosion.
- Alteration of water levels and flows due to interruptions and additions to surface and groundwater 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, 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, Standard Specifications for Roads and Structures[16]). These measures include:

- Use of dikes, berms, silt basins, and other containment measures to control runoff during construction. Regular maintenance and inspection of these structures to ensure 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 reseeding 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.

Both long and short-term water quality impacts can result from highway construction projects.

Associated long-term impacts include increased impervious surface runoff and pollutants entering the streams with stormwater runoff. A limited decrease in water quality can occur due to highway runoff containing hydrocarbons, toxic substances, debris, and other pollutants associated with impervious surfaces. Increased runoff can also increase stream channel erosion and downstream sedimentation, though the existing low gradients decrease this danger. More important than the actual amount of runoff, however, may be the proximity of such runoff to designated public trust areas and areas of environmental concern. The closer those sources of impervious runoff occur, the less time for amelioration of effects of detrimental components in the runoff. Short-term impacts to the water quality associated with a construction project can include siltation and erosion.

Macroinvertebrates and fish can develop elevated levels of metals in their tissues, which may be locally related to the amount of traffic at upstream highway crossings (Van Hassel et al. 1980). The effect is likely to be greatest where small streams receive runoff from large stretches of highway (Maltby et al. 1995). Polycyclic aromatic hydrocarbons, derived from gasoline and oil, may not be acutely toxic to macroinvertebrates, but could cause long-term genetic damage, depending on the concentration (Levine et al. 2007).

No substantial adverse long-term impacts on water quality are anticipated as a result of any of the alternatives for the proposed bypass.

Many of these contaminants will tend to adsorb or chemically bond to sediment particles. Therefore, if sediments can be removed from runoff before entering surface waters, transport of these contaminants is minimized. Mechanisms for performing such functions include settling basins, strips of vegetation along the roadway or vegetated drainage swales (as opposed to ditches), and other erosion and sediment control measures, many of which are included in the NCDOT Best Management Practices for the Protection of Surface Waters[17]. Moreover, appropriate planning and construction using the NCDOT Best Management Practices for the Protection of Surface Waters[17] will manage local runoff, so no substantial adverse effects are incurred.

4.1.8.2.3.2. Ponds

One small, man-made, farm pond may be removed if Alternate 2 is constructed. Alternates 1 and 3 are not anticipated to impact any pond features. Other small, shallow, isolated vernal pools and ephemeral depressions identified as small pond communities in the study area are naturalized with herbaceous vegetation and characterized as wetlands.

4.1.9. Jurisdictional Issues

4.1.9.1. Streams and Wetlands

The three project study corridors contain 25 streams and unnamed tributaries considered to be jurisdictional surface waters under Section 404 of the Clean Water Act. Based on field investigations, the project study corridors also contain 91 jurisdictional wetlands. Table 4.7a and 4.7b summarize areas of jurisdictional streams and wetlands located within each of the three bypass alternatives. The areas presented are for both the total detailed study corridor width for each alternative, and the proposed project alignment within the study corridor. Areas for NFS lands are presented separately. The impacts presented for the alignments are based on current minimization of overall potential impacts to these jurisdictional areas within the corridor for each alternative. These estimated impacts for the alternative alignments are based on the preliminary design slope stake limits plus an additional 25 feet either side in accordance with NCDOT impact analysis guidelines. Therefore, actual impacts may be less than those shown once final design is completed.

Table 4.7a. Jurisdictional Areas Present in the Project Study Area

Jurisdictional Areas	Study Corridor			Alignment [a]		
	Alt. 1	Alt. 2	Alt. 3	Alt. 1	Alt. 2	Alt. 3
Wetlands (acres)	633.9 ac	473.5 ac	613.7 ac	108.7 ac.	77.7 ac.	114.6 ac.
Streams (in acres)	1.7 ac	1.8 ac	1.4 ac	0.4 ac	0.3 ac	0.4 ac
Streams (linear feet)	12,764 lf	16,822 lf	10,271 lf	2,581 lf	3,094 lf	2,505 lf

[a] Calculated based on slope stake limits plus an additional 25 feet to each side.

Table 4.7b. Jurisdictional Areas Present in the Project Study Area on National Forest System (NFS) Lands

Jurisdictional Areas	Study Corridor			Alignment [a]		
	Alt. 1	Alt. 2	Alt. 3	Alt. 1	Alt. 2	Alt. 3
Wetlands (acres)	463.3 ac.	396.1 ac.	507.1 ac.	80.8 ac.	66.9 ac.	87.6 ac.
Streams (in acres)	0.8 ac	1.3 ac	0.7 ac	0.2 ac	0.2 ac	0.2 ac
Streams (linear feet)	5,906 lf	10,897 lf	5,714 lf	1,012 lf	1,764 lf	1,387 lf

Streams

Potential impacts to jurisdictional streams located in the project study area have been evaluated based on three general characteristics: natural stream classification, flow characteristics (perennial or

intermittent), and stream importance. These characteristics can be used to determine the alternative that best avoids and minimizes impacts to jurisdictional streams. Natural stream classification, flow characteristics, and stream importance for each stream segment were presented in Table 3.18a in Chapter 3. Jurisdictional streams classified as perennial make up the majority of the potential stream impacts. All jurisdictional streams in the project study area are classified as important.

In comparing potential stream impacts for the alignment of each alternative, Alternates 1 and 3 have comparable estimated potential stream impacts (2,581 linear feet and 2,505 linear feet, respectively). Alternate 2 has a substantially greater amount of estimated potential stream impacts (3,094 linear feet) based on length. Area impacts (acreage) associated with streams are similar for all three bypass alternatives.

On NFS lands, Alternate 1 has potential stream impacts of 1,012 linear feet and Alternate 3 has potential stream impacts of 1,387 linear feet. Alternate 2 has a greater amount of estimated potential stream impacts (1,764 linear feet) based on length than either Alternate 1 or 3. On NFS Lands, area impacts (acreage) associated with streams are similar for all three bypass alternatives.

The majority of streams delineated in the field are subject to Neuse River Basin Buffer Rules. Actual impacts have been quantified and are presented in Section 4.1.9.2.

Wetlands

Potential impacts to jurisdictional wetlands located in the project study area have been evaluated based on vegetation type (Cowardin Classification[18]) and source of dominant hydrologic influence (riparian or non-riparian). Vegetation type, DWQ rating, and source of dominant hydrologic influence are presented in Table 3.18b in Chapter 3.

Table 4.7a indicates wetland areas for both the study corridor and preliminary alignment for each alternative. The potential wetland impacts presented demonstrate a significant minimization of overall potential impacts to jurisdictional wetlands within the alignment for each alternative

compared to the study corridor. In comparing potential impacts for the preliminary alignment of each alternative, Alternates 1 and 3 have similar overall estimated wetland impacts (108.7 and 114.6 acres, respectively) and Alternate 2 has the least amount of estimated impacts to jurisdictional wetlands (77.7 acres). On NFS lands Alternates 1 and 3 have similar overall estimated wetland impacts (80.8 and 87.6 acres, respectively) and Alternate 2 has the least amount of estimated impacts to jurisdictional wetlands (66.9 acres).

4.1.9.2. Buffer Areas

The project study area is located within the Neuse River Drainage Basin. Features within the project study corridors that are mapped as either a blue-line stream channel or open water feature on the most recent version of either the USGS topographic quadrangle or the county soil survey are subject to the Neuse River Basin Buffer Rules unless review by DWQ confirms these features are not present in the field. These rules restrict land use within a 50-foot zone surrounding the stream.

On October 14, 2004, an N.C. Division of Water Quality representative reviewed selected features and confirmed which of these would be exempt from the Neuse River Basin Buffer Rules, as identified in Section 3.5.4.2. Features delineated and identified as streams on the jurisdictional features maps (Figures 3-11 A through 3-11 E) are subject to the Neuse River Basin Buffer Rules with the exception of the feature labeled S9 (Figure 3-11 B). This feature was determined to be exempt in regards to applicability of Neuse River Basin Buffer Rules.

Table 4.7c and 4.7d present the Neuse River Riparian Buffers for the Havelock Bypass alternatives. The calculations are based on the stream segments within the slope stake limits plus an additional 25 feet to the outer side of the slope stake limits. The table indicates the Neuse Riparian Buffers for Zone 1 and Zone 2 for each individual stream by each alternative, except for streams 22 and 23 which are combined due to the extensive overlap of buffers which precluded separate reporting. Paved roadways have been excluded from the buffer calculations, but the condition or vegetative status of the buffer zones have been qualified or quantified.

Table 4.7c. Neuse River Riparian Buffers within the Project Study Area

Stream #	Stream Name	Alignment Alternatives [a] Riparian Buffer [b] (square feet)					
		Alt. 1		Alt. 2		Alt. 3	
		Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
S1	East Prong Slocum Creek	0	0	0	0	0	0
S2	UT to East Prong Slocum Creek	0	0	0	0	0	0
S3a	UT to SW Prong Slocum Creek	0	0	24,571	12,969	0	0
S3b	UT to SW Prong Slocum Creek	0	0	36,132	25,137	0	0
S3c	UT to SW Prong Slocum Creek	0	0	15,009	9,003	0	0
S3d	UT to SW Prong Slocum Creek	0	0	17,840	14,296	0	0
S4	UT to SW Prong Slocum Creek	0	0	14,908	11,854	0	0
S5	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S6	UT to SW Prong Slocum Creek	35,384	23,864	0	0	33,213	22,262
S7	UT to SW Prong Slocum Creek	12,228	7,914	0	0	15,059	9,715
S9	UT to SW Prong Slocum Creek	Not Subject	Not Subject	0	0	0	0
S10	Southwest Prong Slocum Creek	0	0	0	0	0	0
S11	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S12	Southwest Prong Slocum Creek	0	0	0	0	0	0
S13	Black Swamp	0	0	0	0	0	0
S14a	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S14b	UT to SW Prong Slocum Creek	14,918	10,575	0	0	0	0
S15	Black Swamp	0	0	0	0	0	0
S16a	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S16b	UT to SW Prong Slocum Creek	0	0	6,896	6,691	0	0
S17	Southwest Prong Slocum Creek	0	0	0	0	0	0
S18a	UT to SW Prong Slocum Creek	0	0	0	0	0	0

[a] Calculated based on slope stake limits plus an additional 25 feet to each side.
[b] Known impervious roadways removed from buffer calculations.

Table 4.7c Continues.

Table 4.7c. Continued

Stream #	Stream Name	Alignment Alternatives [a] Riparian Buffer [b] (square feet)					
		Alt. 1		Alt. 2		Alt. 3	
		Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
S18b	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S19a	UT to SW Prong Slocum Creek	0	0	0	0	14,370	8,844
S19b	UT to SW Prong Slocum Creek	0	0	0	0	8,984	4,915
S20a/S20b	UT to SW Prong Slocum Creek	0	0	0	0	6,955	5,363
S21	UT to Black Swamp	4,944	4,810	0	0	0	0
S22/S23	Tucker Creek, UT to Tucker Cr.	46,341	23,189	46,341	23,189	46,341	23,189
S24	UT to Tucker Creek	0	0	0	0	0	0
S25	UT to Tucker Creek	0	0	0	0	0	0
S26	UT to Tucker Creek	0	0	0	0	0	0
S27	UT to Tucker Creek	0	0	0	0	0	0
S28	UT to Tucker Creek	0	0	0	0	0	0
S29	UT to Goodwin Creek	0	0	0	0	0	0
S30a	Tucker Creek	7,045	3,094	7,045	3,094	7,045	3,094
S30b	Tucker Creek	3,963	1,786	3,963	1,786	3,963	1,786
S30c	Tucker Creek	0	0	0	0	0	0
Subtotal by Zone		124,823	75,232	172,705	108,019	135,930	79,168
Total by Alternative		200,055		280,724		215,098	

[a] Calculated based on slope stake limits plus an additional 25 feet to each side.
[b] Known impervious roadways removed from buffer calculations.

Table 4.7d. Neuse River Riparian Buffers within the Project Study Area on National Forest System (NFS) Lands

Stream #	Stream Name	Alignment Alternatives [a] Riparian Buffer [b] (square feet)					
		Alt. 1		Alt. 2		Alt. 3	
		Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
S1	East Prong Slocum Creek	0	0	0	0	0	0
S2	UT to East Prong Slocum Creek	0	0	0	0	0	0
S3a	UT to SW Prong Slocum Creek	0	0	24,571	12,969	0	0
S3b	UT to SW Prong Slocum Creek	0	0	20,426	14,525	0	0
S3c	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S3d	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S4	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S5	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S6	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S7	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S9	UT to SW Prong Slocum Creek	Not Subject	Not Subject	0	0	0	0
S10	Southwest Prong Slocum Creek	0	0	0	0	0	0
S11	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S12	Southwest Prong Slocum Creek	0	0	0	0	0	0
S13	Black Swamp	0	0	0	0	0	0
S14a	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S14b	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S15	Black Swamp	0	0	0	0	0	0
S16a	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S16b	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S17	Southwest Prong Slocum Creek	0	0	0	0	0	0
S18a	UT to SW Prong Slocum Creek	0	0	0	0	0	0

[a] Calculated based on slope stake limits plus an additional 25 feet to each side.
[b] Known impervious roadways removed from buffer calculations.

Table 4.7d Continues.

Table 4.7d. Continued

Stream #	Stream Name	Alignment Alternatives [a] Riparian Buffer [b] (square feet)					
		Alt. 1		Alt. 2		Alt. 3	
		Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
S18b	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S19a	UT to SW Prong Slocum Creek	0	0	0	0	14,370	8,844
S19b	UT to SW Prong Slocum Creek	0	0	0	0	8,984	4,915
S20a/S20b	UT to SW Prong Slocum Creek	0	0	0	0	0	0
S21	UT to Black Swamp	0	0	0	0	0	0
S22/S23	Tucker Creek, UT to Tucker Cr.	46,344	23,190	46,344	23,190	46,344	23,190
S24	UT to Tucker Creek	0	0	0	0	0	0
S25	UT to Tucker Creek	0	0	0	0	0	0
S26	UT to Tucker Creek	0	0	0	0	0	0
S27	UT to Tucker Creek	0	0	0	0	0	0
S28	UT to Tucker Creek	0	0	0	0	0	0
S29	UT to Goodwin Creek	0	0	0	0	0	0
S30a	Tucker Creek	0	0	0	0	0	0
S30b	Tucker Creek	0	0	0	0	0	0
S30c	Tucker Creek	0	0	0	0	0	0
Subtotal by Zone		46,344	23,190	91,341	50,684	69,698	36,949
Total by Alternative		69,534		142,025		106,647	

[a] Calculated based on slope stake limits plus an additional 25 feet to each side.
[b] Known impervious roadways removed from buffer calculations.

A zero (0) was used when neither the stream segment nor either Buffer Zone extends into an alternative. One stream segment (Stream S26) does not extend within any of the preliminary alignments, but a portion of Zone 2 of the riparian buffer for this stream extends into each of the three alternatives and is reported accordingly.

Alternate 1 has fewer impacts to Neuse Rriver Riparian Buffers than Alternate 2 or Alternate 3. Alternate 1 has approximately 124,823 square feet (ft^2) (2.9 acres) of Neuse River Riparian Buffers in Zone 1 and 75,232 ft^2 (1.7 acres) in Zone 2 for a total of 200,055 (4.6 acres). Alternate 2 has approximately 172,705 ft^2 (4.0 acres) in Zone 1 and 108,019 ft^2 (2.5 acres) in Zone 2 for a total of 280,724 ft^2 (6.4 acres). Alternate 3 has approximately 135,930 ft^2 (3.1 acres) in Zone 1 and 79,168 ft^2 (1.8 acres) in Zone 2 for a total of 215,098 ft^2 (4.9 acres). On NFS lands, Alternate 1 has less impact to Neuse River Riparian Buffers that Alternate 2 or Alternate 3. On NFS lands, Alternate 1 has approximately 46,344 ft^2 (1.1 acres) of Neuse River Riparian Buffers in Zone 1 and 23,190 ft^2 (0.5 acres) in Zone 2 for a total of 69,534 ft^2 (1.6 acres). On NFS lands, Alternate 2 has approximately 91,341 ft^2 (2.1 acres) in Zone 1 and 50,684 ft^2 (1.2 acres) in Zone 2 for a total of 142,025 ft^2 (3.3 acres). On NFS lands, Alternate 3 has approximately 69,698 ft^2 (1.6 acres) in Zone 1 and 36,949 ft^2 (0.8 acres) in Zone 2 for a total of 106,647 ft^2 (2.4 acres).

4.1.9.3. Protected Species

All protected species surveys and evaluations within the project corridors were conducted by Environmental Services, Inc. with the exception of the surveys and evaluations for the red-cockaded woodpecker and the bald eagle which were prepared by Dr. J. H. Carter III & Associates, Inc.

4.1.9.3.1. Federally-Protected and Federally-Listed Species

4.1.9.3.1.1. Species Protected By Section 7 of the Endangered Species Act

Species with the federal classification of Endangered (E), Threatened (T), or officially Proposed (P) for such listing, are protected under Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543). Species listed as Threatened due to Similarity of Appearance [T(S/A)] are not subject to Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS). The following federal protected species are listed for the project study area for Craven County as of September 22, 2010 and Carteret County as of March 21, 2011 (USFWS list).

Table 4.8. Federally-Protected Species in Craven and Carteret Counties
(USFWS County List Updates: Craven – 22 September 2010; Carteret – 21 March 2011)

Common Name	Scientific Name	Federal Status[a]	County Present[b]	Biological Conclusion
Shortnose sturgeon	*Acipenser brevirostrum*	E	Ca	No Effect
American alligator	*Alligator mississippiensis*	T(S/A)	Cr, Ca	Not Required
Loggerhead sea turtle	*Caretta caretta*	T	Ca	No Effect
Green sea turtle	*Chelonia mydas*	T	Ca	No Effect
Leatherback sea turtle	*Dermochelys coriacea*	E	Cr, Ca	No Effect
Hawksbill sea turtle	*Eretmochelys imbricata*	E	Ca	No Effect
Kemp's ridley sea turtle	*Lepidochelys kempii*	E	Ca	No Effect
Piping plover	*Charadrius melodus*	T	Ca	No Effect
Red-cockaded woodpecker	*Picoides borealis*	E	Cr, Ca	Unresolved
Roseate tern	*Sterna dougallii dougallii*	T	Ca	No Effect
West Indian manatee	*Trichechus manatus*	E	Cr, Ca	No Effect
Sensitive jointvetch	*Aeschynomene virginica*	T	Cr	No Effect
Seabeach amaranth	*Amaranthus pumilus*	T	Ca	No Effect
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E	Cr, Ca	Not Likely to Adversely Affect

[a] E - Endangered; T- Threatened; T(S/A) - Threatened due to Similarity of Appearance
[b] Cr - Craven County, Ca - Carteret County

Shortnose sturgeon (*Acipenser brevirostrum*) – E (Date Listed: 11 March 1967)

Biological Conclusion: No Effect.

Streams crossed by the project study area are too small and shallow to support suitable habitat for the shortnose sturgeon. In addition, these channels each contain culverts, beaver dams and/or other passage impediments downstream of the project study area which may preclude the movement of this species upstream into the project study area. North Carolina Natural Heritage Program (NCNHP) records do not document any occurrences of this species within three miles of the project study area. This project will not affect shortnose sturgeon.

American alligator (*Alligator mississippiensis*) – T S/A (Date Listed: 11 March 1967)

Biological Conclusion: Not Required.

Species listed as Threatened due to Similarity of Appearance [T(S/A)] are not subject to Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS). Southwest Prong

Slocum Creek, Black Swamp, and East Prong Slocum Creek all support suitable habitat for the American alligator. Southwest Prong Slocum Creek and East Prong Slocum Creek are crossed by all three corridors and Black Swamp is only crossed by the study corridor for Alternate 1. The use of bridges at these corridor crossings would negate any long-term effects to the habitat for this species. Individuals temporarily displaced during construction would likely return to these areas after construction is completed. North Carolina Natural Heritage Program records do not document any occurrences of this species within three miles of the project study area; however, this species has been documented by the biologists at Environmental Services, Inc. as relatively common on the Croatan Wetland Mitigation Bank and in Long Lake both within three miles of the project study area. No long-term effects to American alligator are anticipated.

Sea Turtles

Loggerhead sea turtle (*Caretta caretta)* –T (Date Listed: 28 July 1978)
Green sea turtle (*Chelonia mydas*) – T (Date Listed: 28 July 1978)
Leatherback sea turtle (*Dermochelys coriacea*) – E (Date Listed: 2 June 1970)
Hawksbill sea turtle (*Eretmochelys imbricata)* – E (Date Listed: 2 June 1970)
Kemp's ridley sea turtle (*Lepidochelys kempii)* – E (Date Listed: 2 December 1970)

Biological Conclusion: No Effect.

Habitat for these five sea turtles is not present in the project study area. The project study area lacks oceanfront sandy beaches that would provide nesting habitat or marine or estuarine aquatic habitats that would provide foraging opportunities. North Carolina Natural Heritage Program records do not document any occurrences of any of these five sea turtle species within three miles of the project study area. The proposed project will not have an effect on sea turtles due to the lack of suitable nesting and foraging habitat for these species.

Piping Plover (*Charadrius melodus*) – T (Date Listed: 11 December 1985)

Biological Conclusion: No Effect.

Suitable habitat for piping plover is not present within the project study area. No beaches, sand flats or similar habitats area present within the project study area. North Carolina Natural Heritage Program records do not document any occurrences of this species within three miles of the project study area. This project will not affect the piping plover.

Red-cockaded woodpecker (RCW) (*Picoides borealis*) – E (Date Listed: 13 October 1970)

Biological Conclusion: Unresolved.

A Biological Assessment discussing the effects of each of the detailed study alternatives on the red-cockaded woodpecker (RCW) and one affected RCW cluster (CNF 58, then active) on the Croatan National Forest (CNF), was prepared by Dr. J. H. Carter III & Associates, Inc. (JCA) and submitted to the North Carolina Department Of Transportation (NCDOT) on 10 April 1996 (JCA 1996a[19]). The U.S. Fish and Wildlife Service (USFWS) concurred with the determination that the preliminary design alignment for Alternate 3 was "not likely to adversely affect the RCW" (USFWS 1996a[20]) following guidance from the 1985 RCW Recovery Plan (USFWS 1985[21]). In August 1996 another RCW cluster (CNF 902) was activated by a solitary male RCW. An addendum to the Biological Assessment was submitted on 30 September 1996 (JCA 1996b[22]) evaluating the effects of the project on this newly active cluster. The USFWS again concurred with the determination that the project was "not likely to adversely affect" the RCW (USFWS 1996b[23]).

On 6 June 2002, Dr. Jeffrey R. Walters, of Virginia Polytechnic Institute and State University wrote a letter to Mr. Derb Carter of the Southern Environmental Law Center (SELC) describing how the proposed project could affect the RCW population on the CNF. Dr. Walters discussed potential effects to 14 RCW recruitment clusters proposed in the 1992 RCW Management Plan[24] which were planned to promote RCW population growth in the section of the CNF affected by the proposed project.

In 2003, JCA was retained by NCDOT to prepare an Alternatives Analysis on the effects of the proposed project on RCW dispersal and on future RCW recruitment stands on the CNF as required under the newly revised RCW Recovery Plan (USFWS 2003[25]). Guidance issued by the USFWS on 4 May 2005 (USFWS 2005[26]) further defined the Recovery Plan's methods on conducting analyses of project effects on the RCW by describing five levels of analysis: 1) foraging partition, 2) group, 3) neighborhood, 4) population and 5) recovery unit (the latter analysis is conducted by the USFWS). In February and March 2004, JCA biologists surveyed the three proposed alternative corridors and a one-half mile radius around them by helicopter for RCW cavity trees and a one mile radius around the corridors for bald eagle nests. In addition, RCW foraging habitat data were collected on USFS property for existing CNF Clusters 58, 144, 901 and 902 and future recruitment Clusters 11-15R and 12-44R (was 12-44R provisioned prior to the 2004 surveys?) between March 2004 and April 2005. JCA submitted the Biological Alternatives Analysis for Red-cockaded Woodpecker and Bald Eagle Impacts, US Highway 70 Bypass (R-1015), Craven County, North Carolina[27] (Alternatives Analysis) on 11 December 2007. At the time of the submittal, two RCW clusters were active (CNF 901 and 902). On 14 December 2007, artificial cavities were installed in CNF recruitment cluster 12-44R. JCA revisited the project area during the 2008 nesting season and found no active RCW clusters within any of the proposed Bypass alternatives. According to the USFS, no clusters within the project area were active during the 2009 nesting season. During the 2010 nesting season, one RCW cluster affected by Alternate 3 (CNF 58) was active and was monitored by USFS personnel. No nest was found (USFS unpublished data).

Given the length of time elapsed since the 2007 Alternatives Analysis, JCA biologists updated the midstory data and forest stand ages within the RCW foraging partitions impacted by the one or more of the Bypass alternatives in October 2010. JCA biologists also updated the cluster activity status of all known RCW clusters within the project area. Three RCW clusters within the project area (CNF 58, 901 and 902) were found to be active. Aerial

surveys were then conducted in February 2011, but no additional cavity trees or clusters were found.

JCA has updated and revised the RCW foraging habitat analyses (FHA) presented in the 2007 Alternatives Analysis and plans to submit the data to NCDOT in May 2011 in an Addendum to the Biological Alternatives Analysis for Red-cockaded Woodpecker and Bald Eagle Impacts, US Highway 70 Bypass (R-1015), Craven County, North Carolina (JCA 2011[28]). Although the results of the FHAs have not been submitted to NCDOT, it is the best available information and the results are presented below.

FHAs were updated and revised in February 2011 on six clusters (CNF 58, 144, 901, 902, 11-15R and 12-44R) affected by one or more of the three alternatives (see Figure 4-4). The analyses showed that the proposed project would remove RCW foraging habitat associated with four existing clusters (CNF 58, 144, 901 and 902), one recruitment cluster (12-44R), one future recruitment cluster (11-15R) and four habitat management areas (HMAs) (HMA 168, 169, 170 and 186). Post-project, the foraging habitat associated with all the RCW clusters are above the minimum standards (BA and acreage) of the 2003 RCW Recovery Plan's Standard for Managed Stability (SMS) guidelines and will not result in any "Incidental Take" (or "take") (USFWS 2003[25]). The Alternate 1 design would remove 23.93 acres of suitable and potentially suitable habitat from three RCW cluster partitions within the CNF and 57.23 acres within four HMAs (Table 4.9). The Alternate 2 design would remove 52.43 acres of suitable and potentially suitable habitat from four RCW cluster partitions and 36.08 acres within three HMAs. The Alternate 3 design would remove 55.66 acres of suitable and potentially suitable habitat from six RCW cluster partitions and 112.89 acres within four HMAs. Post-project, counting both suitable and potentially-suitable foraging habitat, all six affected RCW clusters would have enough foraging habitat to meet the SMS.

CNF Cluster 901 and future Recruitment Cluster 11-15R do not have enough acres of suitable, potentially-suitable and/or future potential habitat to ever meet the minimum Recovery Standard Guidelines (RSG) requirements on the CNF, even if the Bypass is not

constructed. All other affected clusters and the four HMAs meet the RSG when combining suitable and potentially-suitable habitat pre- and post-project (Table 4.9).

No RCW cavity trees will be removed by the project and none of the current preliminary design alignments are located within 200 feet of any known RCW cavity tree. Fragmentation is defined by the 2003 Recovery Plan as "habitat loss that results in isolated patches of remaining habitat." The SMS and RSG guidelines in the 2003 Recovery Plan define non-contiguous habitat as habitat that is separated by more than 200 feet of non-habitat from another foraging stand or the cluster itself (USFWS 2003[25]). The majority of the project is specifically designed to be less than the 200-foot wide, non-contiguous habitat threshold. Portions of an interchange section in the CNF 902 partition will be greater than 200 feet wide and will make some habitat non-contiguous. The cross-section of the project is also greater than 200 feet wide through portions of HMA 170, but this will not create any non-contiguous habitat. Sufficient contiguous habitat will remain post-project to prevent "take" in both cases. All alternatives will increase fragmentation of the CNF and the loss of RCW habitat; however, with proper management the remaining suitable and potentially suitable habitat will be adequate to meet the SMS (Table 4.9.).

There will be no "take" at the RCW cluster-level, group-level, population-level or neighborhood-level due to foraging habitat removals (Table 4.9.). The Recovery Unit Level Analysis will be conducted by the USFWS during their review of the project.

Indirect impacts may result from traffic noise, development of some private properties along the highway corridor (such as at interchanges) and/or restriction of necessary management activities (e.g., burning). Such impacts could individually or collectively adversely affect RCW dispersal to or from the area and inhibit unification of the CNF RCW population.

Table 4.9. Summary Alternative Comparison for Red-cockaded Woodpecker Foraging Habitat in the Croatan National Forest.

Parameters	Cluster	Status	Alternative 1		Alternative 2		Alternative 3	
Impacts to Cavity Trees (4.1.9.3.1.1)	CNF 58	Active	No impact to cavity trees		No impact to cavity trees		Highway corridor will be ~ 850 feet away from nearest existing cavity trees	
	CNF 144	Inactive	Highway corridor will be > 1,000 feet away from nearest existing cavity trees		Highway corridor will be > 1,000 feet away from nearest existing cavity trees		Highway corridor will be > 1,000 feet away from nearest existing cavity trees	
	CNF 901	Active	Highway corridor will be ~ 800 feet away from nearest existing cavity trees		No impact to cavity trees		Highway corridor will be ~ 400 feet away from nearest existing cavity trees	
	CNF 902	Active	Highway corridor will be > 1,000 feet away from nearest existing cavity trees		Highway corridor will be > 1,000 feet away from nearest existing cavity trees		Highway corridor will be > 1,000 feet away from nearest existing cavity trees	
	CNF 11-15R	Future Recruitment	No cavity trees present		No cavity trees present		No cavity trees present	
	CNF 12-44R	Inactive Recruitment	No impact to cavity trees		Highway corridor will be ~ 550 feet away from nearest insert cavity tree		Highway corridor will be ~ 550 feet away from nearest insert cavity tree	
	HMA 168	Future Recruitment	No cavity trees present		No cavity trees present		No cavity trees present	
	HMA 169	Future Recruitment	No cavity trees present		No cavity trees present		No cavity trees present	
	HMA 170	Future Recruitment	No cavity trees present		No cavity trees present		No cavity trees present	
	HMA 186	Future Recruitment	No cavity trees present		No cavity trees present		No cavity trees present	
Impacts to Foraging Habitat (4.1.9.3.1.1)	CNF 58	Active	No impacts to foraging habitat		No impacts to foraging habitat		**Standard for Managed Stability (SMS)**	**Recovery Standard (RSG)**
							Removes 2.12 acres (ac.) of suitable foraging habitat, no potentially suitable habitat, 6.63 ac. of future potential habitat	Removes no suitable foraging habitat, 2.12 ac. of potentially suitable habitat, 6.63 ac. of future potential habitat
							Meets SMS Standards? Yes	**Meets RSG Standards? Yes Acres required to meet standards=147**
	CNF 144	Inactive	**SMS**	**RSG**	**SMS**	**RSG**	**SMS**	**RSG**
			Removes 3.35 ac. of suitable foraging habitat, 4.13 ac. of potentially suitable habitat, no future potential habitat	Removes 1.99 ac. of suitable foraging habitat, 5.49 ac. of potentially suitable habitat, no future potential habitat	Removes 3.35 ac. of suitable foraging habitat, 4.13 ac. of potentially suitable habitat, no future potential habitat	Removes 1.99 ac. of suitable foraging habitat, 5.49 ac. of potentially suitable habitat, no future potential habitat	Removes 3.35 ac. of suitable foraging habitat, 4.13 ac. of potentially suitable habitat, no future potential habitat	Removes 1.99 ac. of suitable foraging habitat, 5.49 ac. of potentially suitable habitat, no future potential habitat
			Meets SMS Standards? Yes	**Meets RSG Standards? Yes Acres required to meet standards=142**	**Meets SMS Standards? Yes**	**Meets RSG Standards? Yes Acres required to meet standards=142**	**Meets SMS Standards? Yes**	**Meets RSG Standards? Yes Acres required to meet standards=142**
	CNF 901	Active	**SMS**	**RSG**	No impacts to foraging habitat		**SMS**	**RSG**
			Removes no suitable foraging habitat, no potentially suitable habitat, 7.27 ac. of future potential habitat	Removes no suitable foraging habitat, no potentially suitable habitat, 7.27 ac. of future potential habitat			Removes 6.32 ac. of suitable foraging habitat, 3.57 ac. of potentially suitable habitat, 2.91 ac. of future potential habitat	Removes 6.32 ac. of suitable foraging habitat, 3.57 ac. of potentially suitable habitat, 2.91 ac. of future potential habitat
			Meets SMS Standards? Yes	**Meets RSG Standards? No Acres required to meet standards=171**			**Meets SMS Standards? Yes**	**Meets RSG Standards? No Acres required to meet standards=171**
	CNF 902	Active	**SMS**	**RSG**	**SMS**	**RSG**	**SMS**	**RSG**
			Removes 15.46 ac. of suitable foraging habitat, no potentially suitable habitat, 0.54 ac. of future potential habitat. As a result, 6.24 ac. will be non-contiguous	Removes 15.46 ac. of suitable foraging habitat, no potentially suitable habitat, 0.54 ac. of future potential habitat. As a result, 6.24 ac. will be non-contiguous	Removes 15.85 ac. of suitable foraging habitat, 10.82 ac. of potentially suitable habitat, no future potential habitat	Removes 15.85 ac. of suitable foraging habitat, 10.82 ac. of potentially suitable habitat, no future potential habitat	Removes 15.46 ac. of suitable foraging habitat, no potentially suitable habitat, 0.54 ac. of future potential habitat. As a result, 6.24 ac. will be non-contigous	Removes 15.46 ac. of suitable foraging habitat, no potentially suitable habitat, 0.54 ac. of future potential habitat. As a result, 6.24 ac. will be non-contiguous
			Meets SMS Standards? Yes	**Meets RSG Standards? Yes Acres required to meet standards=120**	**Meets SMS Standards? Yes**	**Meets RSG Standards? Yes Acres required to meet standards=120**	**Meets SMS Standards? Yes**	**Meets RSG Standards? Yes Acres required to meet standards=120**

Table 4.9 (con't). Summary Alternative Comparison for Red-cockaded Woodpecker Foraging Habitat in the Croatan National Forest.

Impacts to Foraging Habitat (cont) (4.1.9.3.1.1)	CNF 11-15R	Future Recruitment	**SMS**	**RSG**	**SMS**	**RSG**	**SMS**	**RSG**
			Removes no suitable foraging habitat, 0.99 ac. of potentially suitable habitat, 6.12 ac. of future potential habitat	Removes no suitable foraging habitat, 0.99 ac. of potentially suitable habitat, 6.12 ac. of future potential habitat	Removes no suitable foraging habitat, 0.99 ac. of potentially suitable habitat, 6.12 ac. of future potential habitat	Removes no suitable foraging habitat, 0.99 ac. of potentially suitable habitat, 6.12 ac. of future potential habitat	Removes no suitable foraging habitat, 0.99 ac. of potentially suitable habitat, 6.12 ac. of future potential habitat	Removes no suitable foraging habitat, 0.99 ac. of potentially suitable habitat, 6.12 ac. of future potential habitat
			Meets SMS Standards? Yes	**Meets RSG Standards? No Acres required to meet standards=151**	**Meets SMS Standards? Yes**	**Meets RSG Standards? No Acres required to meet standards=151**	**Meets SMS Standards? Yes**	**Meets RSG Standards? No Acres required to meet standards=151**
	CNF 12-44R	Future Recruitment	No impacts to foraging habitat		**SMS**	**RSG**	**SMS**	**RSG**
					Removes 16.24 ac. of suitable foraging habitat, 1.05 ac. of potentially suitable habitat, 0.52 ac. of future potential habitat	Removes 8.79 ac. of suitable foraging habitat, 7.45 ac. of potentially suitable habitat, 0.52 ac. of future potential habitat	Removes 17.37 ac. of suitable foraging habitat, 2.35 ac. of potentially suitable habitat, 0.19 ac. of future potential habitat	Removes 8.72 ac. of suitable foraging habitat, 10.46 ac. of potentially suitable habitat, 0.19 ac. of future potential habitat
					Meets SMS Standards? Yes	**Meets RSG Standards? Yes Acres required to meet standards=157**	**Meets SMS Standards? Yes**	**Meets RSG Standards? Yes Acres required to meet standards=157**
	HMA 168	Future Recruitment	Removes 20.66 ac. of future potential habitat, As a result, 60.04 ac. of future potential habitat is non-contiguous		Removes 0.17 ac. of future potential habitat		Removes 20.66 ac. of future potential habitat, As a result, 60.04 ac. of habitat is non-contiguous	
			Meets RSG Standards? No Acres required to meet standards=137		**Meets RSG Standards? No Acres required to meet standards=137**		**Meets RSG Standards? No Acres required to meet standards=137**	
	HMA 169	Future Recruitment	Removes 0.37 ac. of future potential habitat. As a result, 0.7 ac. of habitat is non-contiguous		No impacts to foraging habitat		Removes 0.37 ac. of future potential habitat. As a result, 0.07 ac. of habitat is non-contiguous	
			Meets RSG Standards? No Acres required to meet standards=142				**Meets RSG Standards? No Acres required to meet standards=142**	
	HMA 170	Future Recruitment	Removes 35.29 ac. of future potential habitat. As a result, 177.37 ac. of habitat is non-contiguous		Removes 35.00 ac. of future potential habitat. As a result, 134.59 ac. of habitat is non-contiguous		Removes 35.29 ac. of future potential habitat. As a result, 177.37 ac. of habitat is non-contiguous	
			Meets RSG Standards? No Acres required to meet standards=152		**Meets RSG Standards? No Acres required to meet standards=152**		**Meets RSG Standards? No Acres required to meet standards=152**	
	HMA 186	Future Recruitment	Removes 0.91 ac. of future potential habitat.		Removes 0.91 ac. of future potential habitat.		Removes 0.91 ac. of future potential habitat.	
			Meets RSG Standards? No Acres required to meet standards=153		**Meets RSG Standards? No Acres required to meet standards=153**		**Meets RSG Standards? No Acres required to meet standards=153**	
CNF Habitat East of the Alternatives (Potentially Fragmented)			**1909.42 ac.**		**746.25 ac.**		**1083.80 ac.**	

Five Levels of RCW Analysis

Parameters	Alternative 1	Alternative 2	Alternative 3
Foraging Partition Level Analysis (4.1.9.3.1.1)	Removes 23.93 ac. of existing and potential RCW habitat from 3 partitions (CNF 144, 902 and 11-15R) and 57.23 acres from 4 HMAs (168, 169, 170 and 186). Located furthest from Havelock, generates the least amount of commercial and residential relocations, is moderately expensive and impacts a moderate amount of prime farmlands and wetlands. Removes the least amount of suitable RCW foraging habitat. Causes the most fragmentation of the CNF.	Removes 52.43 ac. of existing and potential RCW habitat from 4 partitions (CNF 144, 902, 11-15R and 12-44R) and 36.08 acres from 3 HMAs (168, 170 and 186). Located closest to Havelock and generates the most commercial and residential relocations, is the most expensive to build and would impact the most prime farmlands and wetlands. Removes the most suitable RCW habitat, not the most pine forested habitat overall. Causes the least amount of fragmentation of the CNF.	Removes 55.66 ac. of RCW habitat from 6 partitions (CNF 58, 144, 901, 902, 11-15R and 12-44R) and 112.89 acres from 4 HMAs (168, 169, 170 and 186). Alternative 3, located between Alternatives 1 and 2, generates a moderate amount of commercial and residential relocations, is the least expensive to build and would impact the least amount of prime farmlands and wetlands. Removes the most pine forested habitat from the CNF. Causes a moderate amount of fragmentation of the CNF.
	1. No clusters are "taken" by foraging habitat removals **if** both suitable and potentially suitable foraging habitat are used in calculations. 2. Clusters CNF 58, 902, and 12-44R are the only clusters that meet the **SMS** pre- and post-project using suitable habitat only. All other clusters need hardwood midstory clearing and/or thinning of pines to increase the suitable foraging habitat. 3. Cluster CNF 902 is the only cluster that meets the **RSG** pre- and post-project using suitable habitat only. All other clusters need hardwood midstory clearing and/or thinning of pines to increase the suitable foraging habitat or don't meet acreage. 4. Clusters CNF 901 and 11-15R do not have enough potential pine acres available to ever meet **either the RSG** on the CNF even if the Bypass is not constructed.		
Group Level Analysis (4.1.9.3.1.1)	1. The ability of the CNF to properly manage habitat is vital to the fitness of the RCWs at the group level. Quality of foraging habitat is directly related to increased group size that promotes fitness of the group as a whole. Increased group size can lead to greater reproductive success. 2. If habitat management is limited or restricted by the Bypass or adjacent development, existing suitable habitat could become unsuitable, suitable habitat could be fragmented by areas of habitat that are poorly managed or potential habitat may never be made suitable. The reduction in the quality of foraging habitat within and around the impacted clusters could negatively impact recruitment, dispersal and population growth. 3. Alternative 2 creates the least fragmentation of the clusters. Alternatives 1 and 3 separate 3 active clusters from the remainder of the CNF. 3. The Bypass will not impact dispersal based solely on its presence adjacent to clusters since most of its cleared width of 175 feet is less than the 200-foot wide non-contiguous habitat threshold designated by the Recovery Plan (USFWS 2003). 4. The USFWS requires a 200 foot undisturbed buffer around active cavity trees. Alternative 3 is closest to active cavity trees in clusters CNF 901 and 58 at 400 and 850 feet, respectively. All other cavity trees are > 1000 feet from the alternatives. 5. No group level "take" can be ascertained.		

Table 4.9 (con't). Summary Alternative Comparison for Red-cockaded Woodpecker Foraging Habitat in the Croatan National Forest.

Parameters				
Neighborhood Analysis (4.1.9.3.1.1)	1. The neighborhood, or 'action area', for this project is a (8.42) 2 mile radius around the project corridor. Approximately (36) 12 RCW clusters located within this neighborhood may be indirectly impacted by the Bypass. 2. Habitat impacts can affect the health and distribution of RCWs at the neighborhood scale. Fragmentation can adversely affect dispersal of individuals to adjacent or nearby groups and lessen the likelihood that breeding vacancies will be filled. The Bypass will be less than 200 feet wide in most areas and will not impact dispersal based solely on its presence in Subpopulation 3. 3. Cluster CNF 58, 901 and 902 are currently active, but have not been consistently active over the past 20 years and have not been active for longer than 3 consecutive years. 4. Continued and increased habitat management is critical to the growth of Subpopulation 3. 5. Development around the interchanges associated with the Bypass may increase the presence of RCW predators and increase competition for cavities within adjacent RCW clusters. Unrelated removal of potential habitat on private inholdings may result in further management restrictions and reduced dispersal opportunities due to habitat loss. 6. Alternatives 1 and 3 will take Clusters CNF 901 and 11-15R further below the RSG minimum guidelines which they were already unable to meet prior to the Bypass project. The inability to meet the RSG has impacts at the neighborhood level by negatively affecting group size and limiting the number of young produced per group that could then disperse to other clusters, thus affecting group stability over time. 7. Alternative 1 would have the greatest impact on potential population growth. 8. Alternative 2 would have the least impact on potential population growth. 9. Alternative 3 could impact population growth because it would remove the most forested habitat, separates an active RCW cluster from the CNF and comes within 400 feet of active cavity trees. 10. Approximately 90 percent of the habitat set aside for the 3 affected CNF HMAs lies west of the Bypass regardless of the alternative selected and should be able to provide the necessary recruitment sites to promote RCW growth and linkage between the CNF subpopulations.			
Population Level Analysis (4.1.9.3.1.1)	1. Properties that make up the NC Coastal Plain Primary Core Population should be managed for maximum population size. This includes providing and managing the CNF Habitat Management Areas (HMAs) in order to promote population growth. 2. Growth of individual populations can lead to increased dispersal between properties, and ideally, habitat “bridges” should link these properties. 3. There is evidence of dispersal between 2 of the 3 properties that make up the Coastal Plain Primary Core Population, Camp Lejeune and the CNF. Based on its location, it is unlikely that the Bypass will disrupt dispersal between these populations.			
USFS Longleaf Assessment for Sub-population 3 (4.1.9.3.1.1)	**Pine Stand Quality** *** based on overstory, midstory and understory species**	**Alternative 1 Removals**	**Alternative 2 Removals**	**Alternative 3 Removals**
	Poor	30.75 ac.	36.1 ac.	48.93 ac.
	Fair	5.78 ac.	16.91 ac.	13.14 ac.
	Good	9.11 ac.	7.62 ac.	9.23 ac.
USFS Prescribed Burn Assessment (4.1.9.3.1.1)	Burn Compartment 10	Contains **CNF 144**: 20+ years since last burn		
	Burn Compartment 11	Contains **CNF 11-15R**: 13 years since last burn, unknown if partition was burned, lack of suitable data		
	Burn Compartment 12	Contains **CNF 58, 901, 902 and 12-44R** : 7+ years since last burn; 524 acres burned in and around**CNF 902**		
	Burn Compartment 58	Contains **HMA 168** (200.34 acres burned in 2004, 121.00 acres burned in 2006-07) and**HMA 169** (4.02 acres burned in 2004)		
	Burn Compartment 59	Contains **HMA 170 and 186**: 32 years since last burn		

Cumulative impacts as defined by the Council on Environmental Quality's regulations implementing the National Environmental Policy Act (NEPA) are "the impact on the environment which results from the incremental impact of the 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 but collectively significant actions taking place over a period of time" (40 CFR 1508.7). The Endangered Species Act defines cumulative impacts as "the effects of future State or private activities not involving federal activities that are reasonably certain to occur within the action area of an action subject to consultation" [50 CFR 402.02]. This definition is narrower than the definition in the CEQ regulations for NEPA analysis, since it only addresses future State or private activities that are reasonably certain to occur in the future, whereas the NEPA regulations include past, present and reasonably foreseeable future actions, regardless of what agency undertakes such actions. These may include development of private property along the highway corridor, development of other highway systems and timber harvesting on private lands in the area. Such impacts could individually or collectively adversely affect RCW dispersal to or from the area and inhibit unification of the CNF RCW population.

The RCW Recovery Plan (USFWS 2003[25]) defines 13 Primary Core Populations, 11 of which are required to have at least 350 potential breeding groups (pbgs) for delisting of the species. The NC Coastal Plain Primary Core Population is made up of the CNF, Holly Shelter Game Land (Holly Shelter) and Marine Corps Base Camp Lejeune (Camp Lejeune). These properties must have a combined 350 pbgs (or 400-500 active clusters) of RCWs in order to reach recovery. According to the RCW Recovery Plan (USFWS 2003), the goals per property are: CNF = 169 pbgs, Holly Shelter = 38 pbgs and Camp Lejeune = 173 pbgs. As of 2010, there were approximately 176 pbgs in this Primary Core population with 58 pbgs on the CNF, 33 pbgs on Holly Shelter and 85 pbgs on Camp Lejeune (Rachelle Powell, Kenneth Shughart and William Rogers, pers. comm..).

To this end, the USFS quantified the amount of potentially suitable RCW habitat on the CNF, with a range of 137 to 169 pbgs as its population goal (USFS 2002[7]). To date, 172 RCW territories have been designated on the CNF, ranging in size from 19 to 760 acres. These sites consist of potentially

suitable foraging habitat, known RCW clusters, recruitment clusters, future recruitment clusters and HMAs.

The 172 RCW territories make up five RCW subpopulations across the CNF, based on demographics and relative cluster locations (Walters and Starnes 1992[24]). Existing CNF Clusters 58, 144, 901 and 902, one recruitment cluster (12-44R) and one future recruitment cluster (11-15R) and five HMAs (132, 168, 169, 170 and 186) make up Subpopulation 3 (9 out of 172 RCW territories, 3,413 acres of 52,679 total acres or 6.5% of the total RCW habitat). The six RCW clusters and four of the five HMAs will be directly impacted by one or more of the US 70 Bypass alternatives (refer to the Final Biological Alternatives Analysis (JCA 2007[27])).

Conservation biologists define fragmentation as "the process whereby a large, continuous area of habitat is both reduced in area and divided into two or more fragments" (Wilcove et al. 1986; Schonewald-Cox and Buechner 1992; Reed et al. 1996). The term "fragmentation" is used rather broadly to include any breaks in habitat, regardless of size, in an otherwise contiguous stretch of forested habitat. Subpopulation 3 is isolated or fragmented from the other CNF subpopulations due to private property inholdings, fragmentation, unsuitable habitat and development. Prior to the 2003 RCW Recovery Plan, the USFWS (USFWS 1992) considered forest stands non-contiguous if they were separated by 300 feet or more of non-habitat. The SMS and RSG guidelines in the 2003 Recovery Plan define non-contiguous habitat as that which is separated by more than 200 feet of non-habitat from another foraging stand or the cluster itself (USFWS 2003). Thus habitat can remain contiguous by definition, but still contain gaps resulting in fragmented stands of forest. The definition of contiguity relates to foraging habitat only, not to RCW dispersal.

Unpublished USFS dispersal data shows that RCWs from the affected CNF clusters dispersed an average of 8.42 miles to other active RCW clusters on the CNF in order to find breeding vacancies. The Bypass may not impact RCW dispersal based solely on its presence adjacent to the RCW clusters in Subpopulation 3. Portions of the Bypass, especially around interchanges, will be greater than 200 feet wide and may cause some habitat to become non-contiguous within the CNF 902 partition. Sufficient habitat will remain there post-project to prevent 'take'. Based on research in the

N.C. Sandhills, dispersing juvenile female RCWs will readily cross habitat gaps over 100 meters (John Kappes, pers. comm.). RCW dispersal hinges directly on the quality, amount and distribution of habitat on the landscape. The large tracts of contiguous suitable habitat contribute to increases in the number of groups, group size and in the number of juveniles available to disperse. Based on the available data, RCW dispersal is not likely to be adversely impacted as a result of the project; however, if habitat management is restricted due to the project, fragmentation or degradation of suitable and/or potentially suitable habitat could impact the dispersal corridor created by Subpopulation 3.

Another project that could potentially have a cumulative affect on Subpopulation 3 is the widening of US 17 located on the northwest side of the CNF. Since this project is located outside the 8.42-mile radius RCW dispersal area, it will not have a cumulative effect on RCWs in the study area. "No RCW habitat is being taken by the US 17 Highway project; there will be no effect to RCWs. No existing/ potential habitat occurs within the US Highway 17 corridor on CNF" (Gary Kauffman, pers. comm.).

An Addendum to the Biological Alternatives Analysis for Red-cockaded Woodpecker and Bald Eagle Impacts, US Highway 70 Bypass (R-1015), Craven County, North Carolina (JCA 2011[28]) is currently in progress to incorporate RCW foraging partition, cluster and cavity tree updates. The results are presented in Table 4.9.

The final selection of the Least Environmentally Damaging Practicable Alternative (LEDPA) will be made following a second Corridor Public Hearing and the distribution of this Draft Environmental Impact Statement (DEIS). Comments received at the hearing and on this DEIS will be considered in the selection. After the selection of the LEDPA, NCDOT will refine the preliminary design and complete a Biological Assessment (BA). The BA will be submitted to the USFWS to initiate formal consultation. The USFWS may request additional information and/or subsequent surveys to amend the BA before issuing their Biological Opinion (BO). If an Incidental Take occurs, the USFWS will also issue an Incidental Take Statement, indicating terms and conditions, and/or reasonable and prudent measures it believes necessary to minimize adverse effects to RCWs. Any such terms and

conditions, and/or reasonable and prudent measures will be included in the Final Environmental Impact Statement (FEIS). As stated earlier, RCW population stability and growth are tied directly to the quality and extent of nesting and foraging habitat.

The CNF is not currently meeting its burning goals in the project area. Coordination between NCDOT and the USFS is underway to minimize the likelihood that the Bypass will further complicate prescribed burning in the project area.

THE EFFECTS OF THE HAVELOCK BYPASS ON THE CNF LAND MANAGEMENT PLAN'S RCW RECOVERY GOALS

The CNF Land and Resource Management Plan (LRMP) (USFS 2002) lists recovering the RCW population as the first task under the forest-wide goal of maintaining biological diversity on the CNF. The CNF LRMP objectives for RCW recovery are listed below:

- Meet a long-term population objective of 137-169 RCW clusters.
- Maintain the existing 63 active RCW clusters.
- Establish 20 to 26 new RCW clusters over the next 10 years (2002-2012).
- Establish 50-63 new clusters during the next 30 years (2002-2032).
- Maintain the existing 12,000 acres of longleaf pine-forest type as pine savanna.
- Monitor populations of RCW and the condition of the understory shrub, herb and grass layer (specifically wiregrass) to evaluate the effects of management actions on pine savanna habitat. Use the information collected to guide future management actions.

Current RCW status

In 2010, 61 out of 73 known RCW clusters were active, an increase in the overall number of clusters (10 new clusters since 2002), but a decrease in the number of active clusters (63 clusters active in 2002, to 61 clusters active in 2010).

In 2010, the USFS assessed 27,007 acres of longleaf pine habitat on the CNF as part of the Range-Wide Conservation Plan for Longleaf Pine initiative (Regional Working Group for America's Longleaf 2009). Results were presented in the unpublished report, Modeling and Evaluation of Longleaf Pine Savannas on the Croatan National Forest (Simon 2010[29]).

The assessment was conducted to in order to evaluate the status of ground layer, midstory and overstory conditions within existing and restorable longleaf pine forests (Gary Kauffman, pers. comm.). If all three structural components received a good rating, the site was given a score of "good". If two of the three components received a poor rating, the overall condition was given a score of "poor". A longleaf pine site was given an overall rating of "fair" if any of the three components were given a combination of good, fair and poor other than those used to define the overall good or poor condition.

Of the 27,007 acres assessed on the CNF, 19,301 acres were given a score of "poor", 6,407 acres were given a score of "fair" and 1,659 acres were given a score of "good". According to the LRMP, 1,659 acres of the projected 12,000 acres of longleaf habitat in (USFS 2002) currently meet management goals. Longleaf pine sites assessed by the USFS occur within each of the three alternatives for the Bypass (Figure 4-6).

- According to the longleaf assessment (Simon 2010), Alternate 1 will remove 9.11 acres of good longleaf pine, 5.78 acres of fair longleaf pine and 30.75 acres of poor longleaf pine, totaling 45.64 acres (0.17% of the total longleaf pine habitat on CNF.
- Alternate 2 will remove 7.62 acres of good longleaf pine, 16.91 acres of fair longleaf pine and 36.10 acres of poor longleaf pine, totaling 60.63 acres (0.22% of the total longleaf pine habitat on CNF).
- Alternate 3 will remove 9.23 acres of good longleaf pine, 13.14 acres of fair longleaf pine and 48.93 acres of poor longleaf pine, totaling 71.30 acres (0.26% of the total longleaf pine habitat on the CNF).

Based on data received from USFS and current habitat trends, the LRMP goals are not being met. The reasons for failure to attain these goals are independent of the Bypass. The construction and operation of the Bypass should not prevent the USFS from meeting its goals if current management limitations are overcome.

PRESCRIBED BURNING ANALYSIS

The overall fitness of a group of RCWs (reproductive success, group size, adult survival) is related, in large part, to the quantity and quality of available foraging habitat. Research on the Apalachicola National Forest in Florida revealed that fitness of RCWs was positively related to abundant herbaceous ground cover, little or no pine or hardwood midstory and moderate densities of large, old pines (James et al. 1997). In addition, long term research in the NC Sandhills indicated that "group size increased with an open habitat structure and increasing density of old growth pines" (Walters et al. 2002). Thus the ability of the CNF to properly manage habitat is vital to the fitness of RCWs. Quality foraging habitat is directly related to increased group size which promotes fitness of the group as a whole and the availability of helpers can lead to greater reproductive success. A study in the West Gulf Coastal Plain showed that RCW "group size appeared to be the primary determinant of fledging success" (Conner et al. 2004). This in turn can lead to increased availability of juveniles that can disperse and fill breeding vacancies in the project area and elsewhere on the CNF (refer to Final Biological Alternatives Analysis for red-cockaded woodpecker and bald eagle impacts, US Highway 70 Bypass (R-1015), Craven County, NC) (JCA 2007).

Habitat quality is directly related to habitat management. Management within and around the project area is already hampered by its proximity to Havelock and by fragmented ownership. Smoke generated by prescribed burning is an ongoing concern on the CNF. Southeasterly and southwesterly winds are common along the NC coast and can "smoke in" Havelock and the MCAS Cherry Point during a prescribed burn on the CNF. Prescribed burning for fuel and midstory control is the preferred tool in the CNF due to the potential effects of herbicides on PETS species that inhabit the area (Gary Kauffman, pers. comm.).

Alternates 1 and 3 would cause the most difficulties for managers conducting prescribed burns because they would separate RCW habitat from the CNF to the west (Figure 4-7). Because of its proximity to Havelock, Alternate 2 creates the least division of foraging habitat associated with impacted RCW clusters. A plan is being developed in a joint effort between the CNF and NCDOT to close the proposed Bypass to allow for prescribed burning along the highway, however, decisions to burn are determined at the last minute based on wind speed and direction, humidity, etc., and it would be logistically difficult to close the highway on short notice.

If the USFS is unable to use a prescribed burn east of the Bypass, RCW existing habitat, whether suitable, potentially suitable or future potential, has the potential to degrade overtime (Figure 4-6, Table 4.9.).

- Alternate 1 will separate 1,842.56 acres of CNF property east of the Bypass (includes forested and non-forested areas).
- Alternate 2 will separate 676.74 acres of CNF property east of the Bypass (includes forested and non-forested areas).
- Alternate 3 will separate 1,208.20 acres of CNF property east of the Bypass (includes forested and non-forested areas).

CNF Prescribed Burning History

Data for prescribed burning conducted on the CNF was provided by the USFS. Data provided prior to 2004 only lists the Compartment and date in which a prescribed burn occurred (Figure 4-7, Table 4.9.). The foraging partition for CNF 144 is within the boundary of Compartment 10, which has not been burned in over 20 years (James Cherry, pers. comm.). Compartment 11 was last burned in 1998. The foraging partitions for CNF 12-44R, CNF 58 and CNF 901 occur in Compartment 12. In 2004 and again in 2006 and 2007, 524 acres were burned within the CNF 902 partition. Portions of HMAs 168, 169, 170, 186, 187 and Cluster 25 occur within Compartment 58. In HMA 168, 200.34 acres were burned in 2004 and 121 acres were burned in 2006 and 2007 (Figure 4-7, Table 4.9.). In 2009, 264.69 acres were burned along the southwestern corner of Compartment 58, including small

portions of HMA 187 and RCW Cluster 25. In HMA 169, 4.02 acres were burned in 2004. Compartment 59, which includes portions of HMAs 170 and 186, was last burned in 1979 (Figure 4-7, Table 4.9.).

Indirect and cumulative impacts may result from traffic noise, development of some private properties along the highway corridor and/or restriction of necessary management activities (e.g., burning). Such impacts could individually or collectively adversely affect RCW dispersal to/from the area and inhibit unification of the CNF RCW population. Once the Least Environmentally Damaging Practicable Alternative (LEDPA) is selected, preliminary designs can be further defined and specific impacts can be better quantified.

Although the surveys and alternatives analysis has provided substantial additional information regarding the project effects to the RCW, completion of a Biological Assessment (BA) by NCDOT, and a Biological Opinion (BO) by the USFWS regarding the BA are needed to initiate and conclude formal consultation under Section 7 of the Endangered Species Act.

The final selection of the LEDPA will be made following a second Corridor Public Hearing and the distribution of this Draft Environmental Impact Statement (DEIS). Comments received at the Hearing and on this DEIS will be considered in this selection. After the selection of the LEDPA, NCDOT will refine the preliminary design and complete the BA. The BA will be submitted to the USFWS to initiate formal consultation. The USFWS may request additional information and/or subsequent surveys to amend the BA before issuing their BO. If an Incidental Take occurs, the USFWS will also issue an initial take statement, indicating terms and conditions, and/or reasonable and prudent measures it believes necessary to minimize the effects to RCWs. Any such terms and conditions, and/or reasonable and prudent measures to minimize effects to RCWs will be included in the Final Environmental Impact Statement (FEIS).

Roseate tern (*Sterna dougallI dougallii*) – T (Date Listed: 2 November 1987)

Biological Conclusion: No Effect.

The coastal fringe habitats typically occupied by the roseate tern for either foraging or nesting do not occur in the project study area. North Carolina Natural Heritage Program records do not document any occurrences of this species within three miles of the project study area. This project will have no effect on the roseate tern.

West Indian Manatee (*Trichechus manatus*) – E (Date Listed: 11 March 1967)

Biological Conclusion: No Effect.

Streams crossed by the project study area are too small and shallow to support suitable habitat for the manatee. In addition, these channels each contain beaver dams and/or culverts or other passage impediments downstream of the project study area which would preclude the movement of this large species upstream into the project study area. North Carolina Natural Heritage Program records do not document any occurrences of this species within three miles of the project study area. This project will have no effect on manatees.

Sensitive jointvetch (*Aeschynomene virginica*) – T (Date Listed: 20 May 1992)

Biological Conclusion: No Effect.

The streams and ditches present in the project study area are located upstream of the influence of both wind and lunar tidal influence. In addition, open water areas in the project study area are generally heavily shaded or have intense competition from other herbaceous species. Streams and other open water areas in the project study area do not support suitable habitat for this species. North Carolina Natural Heritage Program records do not document any occurrences of this species within three miles of the project study area. This project will have no effect on sensitive jointvetch.

Seabeach amaranth (*Amaranthus pumilus*) – T (Date Listed: 7 April 1993)

Biological Conclusion: No Effect.

Ocean beaches and other similar coastal fringe habitats are not present in the project study area. North Carolina Natural Heritage Program records do not document any occurrences of this species within three miles of the project study area. This project will not affect this species.

Rough-leaved loosestrife (*Lysimachia asperulaefolia*) – E (Date Listed: 12 June 1987)

Biological Conclusion: May Affect.

Suitable habitat for rough-leaved loosestrife is present in the study area within areas identified as streamhead pocosin and powerline corridor, as well as portions of areas identified as rural/urban modification adjacent to the streamhead pocosin vegetative community. These plant communities occur throughout the study area, but suitable habitat is generally more prevalent in the southern portion of the study area where the soil mapping units are sandier and soils remain saturated for longer periods of the year providing habitat more consistent with sites known to support rough-leaved loosestrife. Surveys were conducted by ESI biologists during the period of June 24-30, 2010. Prior to the initiation of the field investigation, ESI biologists reviewed a reference population of rough-leaved loosestrife located within the Croatan National Forest to confirm the flowering status of this species (date of reference site review: June 24, 2010). The reference population was in the late stages of flowering and individuals in the reference population not in flower were readily identifiable from vegetative characteristics. Surveys were conducted by walking transects throughout areas of suitable habitat. No individuals of rough-leaved loosestrife were observed. A review of N.C. Natural Heritage Program (NCNHP) records, updated April 23, 2010, indicates no known occurrences within one mile of the study area. This biological conclusion will be provided to the U.S. Fish and Wildlife Service for concurrence.

4.1.9.3.1.2. Bald and Golden Eagle Protection Act

Bald Eagle (*Haliaeetus leucocephalus*) – The Bald Eagle is protected under the Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668d, 54 Stat. 250) as amended - Approved June 8, 1940, and amended by P.L 86-70 (73 Stat. 143) June 25, 1959; P.L. 87-884 (76 Stat. 1346) October 24, 1962; P.L. 92-535 (86 Stat. 1064) October 23, 1972; and P.L. 95-616 (92 Stat. 3114) November 8, 1978.

Biological Conclusion: May Affect, Not Likely to Adversely Affect.

The closest foraging opportunities for bald eagles are Ellis, Little, and Long Lakes, located west of the project, and the Neuse River which is located east of the project. Potential nesting sites are present throughout the project study area, particularly in proximity to the stream systems, except in rural and urban communities. The NCNHP has one record of this species approximately 1.5 miles east of the project study area (NCNHP 2008). However, 2008 eagle monitoring data provided by the North Carolina Wildlife Resources Commission indicates that one active bald eagle nest is located 1.5 miles east of the project study corridor and one active nest is located 3.5 miles northwest of the project study corridor. Aerial surveys were conducted for bald eagles in February and March 2004 by biologists from Dr. J.H. Carter III & Associates, Inc. over the three study corridors. No bald eagle nests were found within the one-mile radius survey corridor and no bald eagles are likely to be directly affected by the project. This biological conclusion will be provided to the U.S. Fish and Wildlife Service for concurrence.

4.1.9.3.1.3. Species of Concern

The U.S. Fish and Wildlife Service (USFWS) “Federal Species of Concern” (FSC) designation provides no federal protection under the Endangered Species Act. However, these species were listed in Table 3.20 since they may attain federally-protected status in the future. Table 3.20 includes the eighteen FSC species listed for Craven County, the twenty-four species for Carteret County, their state designations, and whether potential habitat for those species is present within the project study

corridors. One additional FSC species identified as occurring in Carteret County, many-flowered grass pink, and two additional FSC species identified as occurring in Craven County, coastal goldenrod and southeastern myotis are also presented in Table 3.20. The USFWS county lists have not yet been updated to include these species. Twenty-one of the FSC species have potential habitat within the study corridors.

4.1.9.3.2. State-Protected Species

Species of mammals, birds, reptiles, amphibians, and plants with the North Carolina status of Endangered (E), Threatened (T), and Special Concern (SC) receive limited protection under the North Carolina Endangered Species Act (G.S. 113-331 *et seq.*) and the North Carolina Plant Protection Act of 1979 (G.S. 106-202.12 *et seq.*). Other than those evaluated under Federal Protected Species or Federal Species of Concern accounts (addressed above) or U.S. Forest Service Proposed, Endangered, Threatened, and Sensitive (PETS) Species accounts (addressed below), no state-protected species have been documented in NHP records or were observed during field investigations within the project study corridors.

4.1.9.3.3. U.S. Forest Service Proposed, Endangered, Threatened, and Sensitive (PETS) Species

Since all of the detailed study alternatives cross National Forest System lands, a special use permit from the U.S. Forest Service (USFS) will be required to provide the lands for the proposed project. The USFS must consider impacts to their Proposed, Endangered, Threatened, and Sensitive (PETS) Species before granting a special use permit for Croatan National Forest (CNF) lands to be converted to highway use.

4.1.9.4. Essential Fish Habitat

Since the project area is under the jurisdiction of the N.C. Coastal Area Management Act (CAMA), any significant stream or river in the project area may be considered Essential Fish Habitat (EFH) unless otherwise documented by the National Oceanic and Atmospheric Administration Fisheries

(NOAA-Fisheries). No streams or wetlands within the project study area are tidal in nature or identified as a waterbody containing EFH (NOAA-Fisheries 2009). During agency review of the proposed project, the U.S. Army Corps of Engineers (USACE) makes the initial determination of whether or not a proposed project "may adversely affect" EFH. This determination by the USACE is submitted to the NOAA-Fisheries for their review and comment. NOAA-Fisheries will then determine if additional consultation is necessary regarding the proposed project. If additional consultation with NOAA-Fisheries is necessary, an EFH assessment will be prepared and submitted for their review and concurrence.

4.1.9.5. N.C. Coastal Area Management Act Areas of Environmental Concern

Downstream of the study area, Tucker Creek and Slocum Creek are designated public trust areas, which are Areas of Environmental Concern (AEC). However, there are no Areas of Environmental Concern within the project study area. Since this project is expected to result in fill in wetlands, NCDOT will be required to submit a Consistency Certification document to the Division of Coastal Management demonstrating how the proposed project would be considered consistent with the State’s coastal program.

4.1.9.6. Anadromous Fish Habitat

The East Prong and Southwest Prong Slocum Creek are identified as anadromous fish spawning areas. Portions of Goodwin Creek and Tucker Creek downstream from the project study corridors and east of existing US 70 have also been identified as anadromous fish spawning areas. Culverts under US 70, the railroad, and other roads are expected to limit the potential for anadromous fish for utilizing stream segments within the project study corridors. A construction moratorium from February 15 through June 15 associated with anadromous fish in East Prong and Southwest Prong Slocum Creek has been requested by the North Carolina Wildlife Resources Commission for the project.

4.1.9.7. Submerged Aquatic Vegetation

No areas of submerged aquatic vegetation have been identified that will be affected by any of the proposed bypass alternatives.

4.1.10. Construction

The construction impacts of this project are expected to be similar to those normally associated with the construction of a new location roadway. The construction can be expected to result in a temporary increase in noise and air pollution, traffic and utility service disruptions, as well as erosion and siltation. These and other impacts will be minimized through the implementation of the NCDOT Standard Specifications for Roads and Structures[16].

All possible measures will be taken to ensure that the public's health and safety are not compromised during the movement of any materials to and from the construction site, and that inconveniences to the public are kept to a minimum.

4.1.10.1. Energy

The construction of any of the bypass alternatives is anticipated to result in less total energy consumption than the No-Build Alternative. Construction of the bypass will initially require energy that would not be necessary if the project were not constructed. However, the conservation of energy resulting from the opening of the bypass will soon replace the energy afforded during construction.

The operation of a new controlled-access bypass of Havelock will result in a decrease in vehicle operation time, a decrease in travel time, and an increase in fuel efficiency through consistent travel speeds. Due to the differences in lengths of the three bypass alternatives, Alternate 2 is anticipated to require slightly less energy than Alternates 1 or 3. Similarly, Alternate 3 should require slightly less energy than Alternate 1.

No specific energy conservation measures are proposed to be implemented as part of the proposed project. The project is considered consistent with the Federal Energy Policy Conservation Act.

4.1.10.2. Lighting

No lighting, either at the three proposed interchanges or along the roadway itself, is proposed for any of the three bypass alternatives.

4.1.10.3. Visual

To maintain high scenic quality, natural features that create the scenic value are retained and considered during any ground-disturbing activity, which in this case is road building. The areas that will be most important to maintain are the immediate foreground adjacent to the new road and the areas within the roadway corridor that might be visible from key viewing locations such as existing urban areas and any waterways used by recreationists.

Techniques to help maintain the existing scenery include removal of all construction debris and clearing slash, laying back cut-banks to a natural repose, retention of large trees within the foreground view, spanning swamp areas if possible to retain their natural features, design of the road template to fit the natural contours of the land, and avoiding dominant views of the powerlines.

Additional visual impacts will be experienced by the existing residential communities along SR 1747 (Sunset Drive), SR 1746 (Gray Road), and SR 1756 (Lake Road) where secondary roadways will be elevated over the new bypass. Visual impacts are also anticipated at the three locations where the bypass will be elevated above the adjacent lands to cross over the existing railways. The bypass will also be elevated at the new interchanges along existing US 70.

Visual impacts in the developed areas can be reduced with proper landscaping and planting within the right-of-way to provide aesthetically-pleasing views.

4.1.10.4. Noise

The major construction elements of this project are expected to be earth removal, hauling, grading, and paving. General construction noise impacts, such as temporary speech interference for passers-by and those individuals living or working near the project, can be expected particularly from paving operations and from the earth moving equipment during grading operations. However, considering the relatively short-term nature of construction noise and the limitation of construction to daytime hours, these impacts are not expected to be substantial.

4.1.10.5. Air

The air quality impacts resulting from the construction of this project include air pollutant emissions from construction equipment and particulate matter (dust) emissions from clearing, demolition, excavation, embankment preparation and other such construction-related activities. Air-borne particulate matter can be minimized by covering hauled and stockpiled material, and applying water to stabilized exposed earth.

Open burning of vegetation and construction debris is also a major air quality concern. Vegetation and other debris from land clearing, and other demolition and construction activities will be disposed of in accordance with applicable air pollution and solid waste regulations. During construction of the proposed project, all materials resulting from clearing and grubbing, demolition or other operations will be removed from the project, burned or otherwise disposed of by the contractor. No burning will be done on National Forest System lands without the written permission from the U.S. Forest Service. Any burning will be done in accordance with applicable local laws and ordinances and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. Care will be taken to ensure that burning will be done at the greatest practical distance from dwellings and not when atmospheric conditions are such as to create a hazard to the public. Burning will only be done under constant surveillance. Also during construction, measures will be taken to reduce the dust generated by construction when the control of dust is necessary for the protection and comfort of motorists or area residents. This evaluation completes the assessment requirements for air quality

of the 1990 Clean Air Act Amendments and the NEPA process. No additional reports are necessary.

4.1.10.6. Utilities

Coordination during the project design and construction will be necessary to prevent major disruptions to utility service. In most locations, electric and telephone service are the major utility concerns.

Before construction, a preconstruction conference will be held involving the contractor, pertinent local officials, the U.S. Forest Service, and the NCDOT Division of Highways to discuss various construction procedures, including precautionary steps to be taken during construction that will minimize the interruption of public utility and traffic services. Public utility officials may also be involved in the preconstruction conference.

4.1.10.7. Water Quality

To the extent practicable, construction activities will be avoided in the area creeks. When intrusion into these creeks is required, the disturbance shall be held in short duration. Any disturbance to stream banks resulting from construction operations will be promptly re-stabilized.

The water quality in the project area could be impacted by accidental spillage of chemicals and fuels as well as improper storage and disposal of construction materials and wastes. Any spilled soluble material could seep into and contaminate the groundwater used for domestic water supplies. Such materials will be protected to ensure that runoff with the stormwater will not occur. Therefore, construction materials, chemicals, fuels, sewage, or other harmful waste will not be stockpiled, disposed of, or transferred in the vicinity of area creeks.

4.1.10.8. Erosion Control

Soil erosion and siltation are the most common water quality impacts associated with highway

construction activities. The primary source of erosion and sedimentation associated with highway construction is the required heavy earthwork to establish appropriate vertical alignments. Based on preliminary estimates, the amount of earthwork required for the construction of the project is similar for each of the three alternatives.

The NCDOT has developed an Erosion and Sedimentation Control Program which has been approved by the N.C. Sedimentation Control Commission. This program consists of the rigorous requirements to minimize erosion and sedimentation. The general requirements concerning erosion and siltation are covered in Article 107-13 of the Standard Specifications for Roads and Structures[16] which is entitled "Control of Erosion, Siltation and Pollution."

Erosion and sedimentation will occur during the construction of this project. For this reason an erosion control schedule will be devised by the contractor before work is started. The schedule will show the time relationship between phases of work which must be coordinated to reduce erosion and shall describe construction practices and temporary erosion control measures which will be used to minimize erosion. In conjunction with the erosion control schedule, the contractor will be required to follow those provisions of the plans and specifications which pertain to erosion and siltation.

Erosion will be minimized by providing temporary and permanent seeding and landscaping of exposed areas. Erosion and sedimentation will be mitigated through temporary erosion and sediment control measures such as dikes, dams, sediment catch basins and diversion berms. Inspection of the erosion control devices will be made after each rain to determine if maintenance is needed. Construction activities will be conducted in stages to minimize exposure of cleared earth. Such Best Management Practices will be employed throughout the construction area.

The contractor shall maintain the earth surface of any waste areas in a manner which will effectively control erosion and siltation, both during the work and until the completion of all seeding and mulching, or other specified erosion control measures.

4.1.10.9. Geodetic Markers

NCDOT will coordinate with the N.C. Geodetic Survey prior to construction to ensure that no geodetic survey markers will be impacted by the proposed project. Any affected markers will be relocated before construction.

NCDOT will coordinate with the U.S. Forest Service (USFS) concerning any property corners, and/or witness trees that might be disturbed or destroyed as a result of this project. Land monuments and property corners or witness markers shall not be damaged, destroyed, or obliterated without the prior permission of the Forest Supervisor and shall be relocated or reestablished once construction is completed in accordance with standards established by the USFS.

4.1.10.10. Borrow and Disposal Sites

Solid wastes will be disposed of in strict adherence to the Division of Highways Standard Specifications for Roads and Structures[16]. The contractor shall be required to observe and comply with all laws, ordinances, regulations, orders and decrees regarding the disposal of solid waste. Solid waste will not be placed into any existing land disposal site which is in violation of State rules and regulations. Waste and 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 or unless disposal within the right-of-way is permitted by the Engineer. Steps will be taken to prevent construction damage to standing trees and other vegetation outside of construction limits and/or the right-of-way boundary in an effort to reduce solid wastes. No borrow or disposal sites related to this project are to be located on NFS lands without express written permission from the U.S. Forest Service and completion of all required environmental reviews.

Prior to the approval of any borrow source developed for use on this project, the contractor shall obtain a certification from the State Historic Preservation Office of the State Department of Cultural Resources certifying that the removal of material from the borrow source will have no effect on any known district, site, building, structure, or object that is included or eligible for inclusion in the

National Register of Historic Places. A copy of this certification shall be furnished to the Engineer prior to performing any work on the proposed borrow source.

Borrow pits and all ditches will be drained insofar as possible to alleviate breeding areas for mosquitoes except as may be directed by the plans, specifications, special provisions or resident engineer for wetlands mitigation sites. In addition, care should be taken not to block existing drainage ditches.

4.1.10.11 Traffic Maintenance

Construction will be conducted in such a manner as to ensure sufficient traffic access, especially emergency service vehicle access. Any necessary detours will be adequately signed.

The contractor shall provide proper traffic control devices and sufficient flagmen if necessary to direct traffic during construction. Precautions to protect the safety of the public and the construction workers will be exercised. All signing barricades, lighting, traffic control devices and traffic control operations shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways[30].

If alternating one-way traffic is required along any of the affected routes during construction, traffic will be directed by flagmen and/or traffic control devices in order to eliminate or minimize excessive delays.

4.1.10.12 Bridge Demolition

No existing bridges are anticipated for demolition as part of this proposed project.

4.1.11. Irretrievable & Irreversible Commitment of Resources

The construction of the Havelock Bypass involves the irretrievable commitment of natural, physical,

human and economic resources. The land required for the proposed action is considered an irreversible commitment of natural resources during the life of the facility. Although it is possible to reconvert this land to the original uses, it is not anticipated that any such conversion would be desirable or necessary. The value of the prime farmland, wetlands, and the biotic communities associated with the land within the construction limits will, for all practical purposes, be permanently lost. This land will no longer provide the associated benefits to the natural environment.

Other irretrievable commitments of resources are the physical resources such as construction materials and fuels expended to construct the project. Human resources to design, construct, and maintain the facility will also be expended. A commitment of public highway construction funds is necessary for the project. The construction requires a substantial one-time expenditure of these public funds which are not retrievable.

The commitment of these resources to the proposed action reflects a decision by the State to provide an improved transportation system to the citizens of the State. These benefits consist of improved motorist safety and accessibility as well as savings of time and energy.

4.1.12. Relationship between Long-Term & Short-Term Uses/Benefits

Limited, short-term, adverse impacts on the human and natural environments will occur during the construction phase of the proposed US 70 Havelock Bypass. Persons adjacent to the proposed action will experience the inconvenience of construction noise, dust and other disruptive activities normally associated with this type of construction work. Existing traffic patterns will be disrupted. Temporary inconveniences may also result from traffic delays and utility adjustments.

Also during the short-term, the water quality in area streams and creeks may be adversely affected. Increased turbidity in creeks during construction can be expected. However, this will be minimized through the use of NCDOT standard erosion and sedimentation control measures.

The displacement of wildlife and the removal of biotic communities, wetlands, and prime farmlands

within the proposed right-of-way are the primary impacts to the natural environment. The project may affect the long-term survival of some area wildlife due to the effects of habitat loss, fragmentation, and the isolation of some populations. Mitigation for wetland losses has been proposed and will be implemented for unavoidable losses.

The relocation of one to three businesses and the displacement of the Craven County Waste Transfer Facility will be necessary. The one business common to all of the bypass alternatives is a motel. Motel services will still be available in the area.

The relocation of existing residences will be necessary. However, adequate replacement properties are available for both homeowners and tenants within the project area. Therefore, a short-term benefit will be the stimulation of the local real estate market and associated relocation service businesses.

Another short-term benefit during the construction phase of the project will be the increased economic opportunities in the local area resulting from the additional services that will be required by the construction personnel. A secondary short-term benefit could be the reduction in local unemployment.

The bypass will enhance long-term economic productivity. A primary State and regional transportation goal of greatly improving regional access will be achieved. Improved access to the coastal port and beaches of the region should expedite the movement of people and goods and may result in increased economic activity within the region. The reduction in traffic congestion as a result of the bypass could render the area more desirable for tourism and other industries.

Other long-term benefits include reduced travel time, accident rates and vehicle operating costs. Reduced traffic congestion may also result in an improvement in response time for fire and emergency vehicle services increasing area safety. In conclusion, the long-term impacts of the proposed action are consistent with the goal of greatly improving transportation not only for the local area, but for the region and State as well.

4.2. Community Impact Assessment/Indirect and Cumulative Effects

The North Carolina Department of Transportation (NCDOT) proposes to improve US 70 in the vicinity of the City of Havelock in Craven County, North Carolina. The project studies include three, new location bypass alternatives (Alternates 1, 2, and 3), all on new location southwest of Havelock. The project studies also considered a fourth alternative (the Upgrade Existing US 70 Alternate) providing a freeway on existing alignment through Havelock. Included in the NCDOT Draft 10-Year Program and Resource Plan (2015-2020) as Project No. R-1015, the purpose of this project is to improve the traffic operations for regional and statewide traffic along the US 70 corridor, and to enhance the ability of US 70 to serve the regional transportation function in accordance with the Strategic Highway Corridors Plan. The following is a summary of the Community Impact Assessment[1] (CIA) and Quantitative Indirect and Cumulative Effects (ICE) Assessment[31] for the project. This summary is based on the final CIA and ICE Assessments dated July 15, 2008. The complete studies are available for review at the NCDOT Project Development and Environmental Analysis Branch and are herein incorporated by reference.

Community Impact Assessment

The CIA[1] evaluated the potential effects of three bypass alternatives and the Upgrade Existing US 70 Alternatives (with freeway and expressway options). The Upgrade Existing US 70 Alternatives have been eliminated as detailed study alternatives, but the assessment of direct effects related to these alternatives was used for project documentation. Field visits and local planner interviews were conducted in December 2004 and again in July 2005 (to incorporate the Upgrade Existing US 70 Alternatives).

Key Findings & Impacts:

- According to local officials and field visit observations, the area near Hickman Hill Loop Road is predominately African-American.
- Two Census Block Groups located along NC 101 in or near the Cherry Point MCAS

contained concentrations of Hispanics and low-income persons that notably exceeded that of Craven County.

- Except for Hickman Hill Loop Road, these Hispanic areas and lower-income communities are located along or east of US 70, and are somewhat removed from the new location bypass alternatives which are west of existing US 70.
- The January 2009 relocation reports indicated that no minority residences or businesses would be relocated as a result of Alternates 1 or 3.
- According to NCDOT Relocation Reports dated January 2009, Bypass Alternate 2 has the highest number of residential (133) and business (3) relocations of the three bypass alternatives. Alternates 1 and 3 had one business relocation, but had 13 and 16 residential relocations, respectively.
- Impacts to minority and low-income populations do not appear to be disproportionately high and adverse for any of the considered alternatives.
- The Down East RPO Draft Bicycle Plan[32] and the Draft Havelock Comprehensive Transportation/Land Use Plan[6] include bicycle facilities along several area roadways and portions of the North Carolina Railroad corridor. The Draft Havelock Comprehensive Transportation/Land Use Plan[6] also includes sidewalk facilities along several area roadways and portions of the North Carolina Railroad corridor.

Indirect and Cumulative Effects Assessment

The ICE[31] assessment evaluated the potential effects of the three bypass alternatives, based on preliminary corridors 325 feet wide. Field visits and local planner interviews were conducted in December 2004 and July 2005. A Focus Group, comprised of local planning and development professionals, as well as major property owners (including Weyerhaeuser and the U.S. Forest Service) within the Growth Impact Study Area (GISA) shown on Figure 4-5, was assembled for the purpose of providing specific knowledge of current growth trends, as well as to “ground truth” the findings of the development suitability analysis and growth forecasts. Local Focus Group sessions were conducted in May 2005 and August 2005.

Existing Conditions:

- The fluctuation of the Cherry Point Marine Corps Air Station employment and military presence is the major factor influencing growth and development not only within the GISA, but throughout much of Craven and parts of Carteret County.
- Floodplains, wetlands, the Croatan National Forest, Cherry Point MCAS (12,000 acres), the NCDOT Croatan Wetland Mitigation Bank (4,035 acres), the Camp Bryan Hunt Club, and sewer and water service are some of the major natural/human constraints on development that exist within the GISA.
- The Croatan National Forest is located west of the existing US 70 corridor, and the bypass alternatives would cross portions of this forest. According to the U.S. Forest Service website, the Croatan National Forest was approximately 160,000 acres in 2007. Although created to acquire lands needed for timber production as well as protecting flow of navigable streams, the Croatan National Forest is a gameland open to fishermen and hunters with the proper licenses and permits.
- Based on the collaborative effort between the study team and the Focus Group, it was determined that the majority of land within the GISA is not suitable for future development.

Indirect Effects:

- The indirect and cumulative effects analysis was completed in accordance with the eight-step method outlined in NCDOT's and NCDENR's Guidance for Assessing Indirect and Cumulative Impacts of Transportation Projects in North Carolina[33].
- A scenario-building exercise was undertaken with the Focus Group. As a result of this process, three future scenarios - one "No-Build" and two "Build" scenarios - were evaluated for each proposed alternative. The only difference in terms of the amount of forecasted growth is that an additional 10% or 15% "in-flow" factor was estimated for growth that would have taken place outside of the GISA had it not been for the completion of the project. The following tables summarize the projected GISA household and job growth between 2000 and 2020.

Table 4.10. GISA Households and Jobs By Scenario, 2000-2020

No-Build Scenario 2000-2020		Case 1 Build Scenario (10%) 2000-2020 Bypass Alts 1-3		Case 2 Build Scenario (15%) 2000-2020 Bypass Alts. 1-3	
HH	Jobs	HH	Jobs	HH	Jobs
4,027	3,903	4,430	4,293	4,631	4,488

Source: HNTB

Table 4.11. No-Build Scenario vs. Growth Scenario 1

GISA Growth Scenario	Total Households 2000-2020	Total Jobs 2000-2020
No-Build Scenario	4,027	3,903
Growth Scenario 1 (10%) Bypass Alts 1-3	4,430	4,293
Growth Scenario 1 Increase	**403**	**390**

Source: HNTB

Table 4.12. No-Build Scenario vs. Growth Scenario 2

GISA Growth Scenario	Total Households 2000-2020	Total Jobs 2000-2020
No-Build Scenario	4,027	4,027
Growth Scenario 2 (15%) Bypass Alts 1-3	4,631	4,488
Growth Scenario 2 Increase	**604**	**461**

Source: HNTB

- Most of the residential growth resulting from any of the three proposed bypass alternatives would be located along the Lake Road, Greenfield Heights Boulevard, Miller Road, and Hollywood Boulevard corridors. This project may accelerate growth in already developing subdivisions along Carolina Pines Boulevard and Lewis Farm Road.
- Most of the commercial growth resulting from any of the proposed bypass alternatives would be surrounding the proposed interchange at Lake Road, along Lake Road itself, and near the northern terminus of the project along US 70. Infill commercial development along US 70 between the termini is expected with or without a bypass, while new commercial development along US 70 and Chatham Street in Newport (Carteret County) should become more likely as a result of each bypass alternative.

Cumulative Effects:

- Most of the future growth and development within the GISA is dependent upon Cherry Point Marine Corps Air Station (MCAS) activity, and the amount of growth occurring at Cherry Point MCAS is unrelated to the project.
- According to the discussions with the Focus Group, proximity to New Bern and the North Carolina beaches is also a factor in attracting growth to this portion of eastern North Carolina. These trends, in addition to this project, may cumulatively increase the attractiveness for growth and development within the GISA.
- At the time of the Focus Group scenario-building exercise, Havelock had plans to annex the land between its current city limits and the Havelock Bypass, which may result in an expansion of sewer coverage within the GISA, making the area to the west of Havelock's current city limits more attractive for growth. However, Focus Group participants and local planners indicated that additional capacity must be achieved and expansion of utilities across the railroad corridors is difficult.
- The completion of this project combined with the potential extension of Havelock's extraterritorial jurisdiction (ETJ) to the north could increase development opportunities

within that portion of the GISA. The annexation or extension of the ETJ will occur with or without the Havelock Bypass.

ICE Conclusion:

- The potential for extensive land use change as a result of any new location alternative of this project is low to moderate.

Hydrological Analysis:

- A hydrological analysis was performed to compare the peak discharge rates and runoff volumes for three future growth scenarios to existing conditions (Year 2005).
- A Watershed Analysis Area (WAA) was delineated for the purpose of assessing the hydrological effects of potential growth resulting from STIP Project R-1015.
- The Watershed Analysis Area includes sixteen sub-watersheds as defined by current drainage patterns.
- The forecasted jobs and households were distributed into the 16 watershed sub-basins comprising the Watershed Analysis Area.
- The forecasted households and jobs were converted to acreages using local land use and zoning for density assumptions. This data was fed into the hydrologic analysis.
- In comparing the two future "Build" scenarios to the future "No-Build" scenario, the percentage increases for the peak discharge and runoff volumes are negligible (less than one percent) for the 1.5-year storm event.

Hydrological Analysis Conclusion:

- Based on the findings of the hydrological analysis, minimal future hydrological impacts are expected from the change in land use associated with construction of any of the three proposed bypass alternatives and both scenarios of this project as compared to existing conditions.

4.3 Indirect and Cumulative Effects – Natural Environment

4.3.1 Indirect Effects - Terrestrial Community and Wildlife

Soil disturbance from construction may encourage the growth of non-native, invasive species, especially if they are already present in the project area. Non-native invasive seeds or plant material may be deposited by construction equipment or regular traffic (von der Lippe and Kowarik 2007[34]), increasing the risk of invasives growing along the bypass. Roadsides can provide linkage allowing the spread of invasives into formerly isolated areas of high-quality habitat (von der Lippe and Kowarik 2007[34]). Erosion control plantings will be incorporated that minimize the growth of invasive plants.

Traffic flow, in addition to the physical presence of the bypass itself, can cause fragmentation of populations. Increased road mortality has been linked to increased highway speed (Case 1978[35]). High traffic volumes can increase the barrier effect which decreases road mortality while increasing fragmentation (Alexander et al. 2005[36]).

Exclusion fencing along the bypass will minimize the amount of large wildlife struck by vehicles, but may not prevent all animals from attempting to cross the bypass. Road mortality could adversely affect some wildlife populations, especially small, isolated, declining populations, or those with low reproductive rates. Highly mobile and wide-ranging species, such as black bears, are also susceptible to road mortality (Nicholson 2009[37]).

Isolation of populations caused by habitat conversion, habitat fragmentation, wildlife exclusion fencing and traffic reduces gene flow, leading to inbreeding and other deleterious effects, including a reduced ability to adapt/evolve to changing environmental conditions. Isolated populations are more subject to local extirpation due to fluctuating demographics or catastrophic environmental events (such as drought), since they cannot be bolstered or repopulated from other populations. These effects may be minimized at the large bridge crossings, which will allow for wildlife passage

beneath the bypass.

Effects to birds may include decreased bird density and diversity near the bypass and areas of secondary growth. Traffic noise can affect forest breeding birds, reducing their density near roads (Reijnen et al, 1995[38]). There is likely to be a localized increase in nest parasitism of songbirds by cowbirds, which prefer edge habitat, causing further reductions to forest interior species.

Some small mammal species may be excluded by species that are better adapted to the road verge habitat (Goosem 1997[39]). Open habitat and wildlife exclusion fencing along the bypass will allow the growth of cover and forage and may increase overall small mammal richness and density (Adams and Geis 1983[40]). Some small mammal populations may be able to extend their range using dense herbaceous growth along the edge of the highway (Getz et al, 1978[41]).

If small mammal populations increase along the bypass, they may attract predators such as foxes and red-tailed hawks (*Buteo jamaicensis*). Predators along the roadside are vulnerable to being struck by vehicles. Amphibians and turtles attempting to move from terrestrial to aquatic habitat may also be struck. Road kill will attract scavengers such as crows, vultures and coyotes (*Canis latrans*).

Secondary growth along existing roads in the project vicinity may further exacerbate fragmentation and isolation of populations. Fragmentation, population isolation and forest edge effects may be less pronounced for Alternative 2 than for Alternative 1 or 3, due to Alternative 2's proximity to the Town of Havelock and the edge of NFS land.

4.3.2 Indirect Effects - Aquatic Community and Wildlife

Changes to water temperature from tree removal, nutrient loading, and toxins from stormwater runoff could affect species distribution. The construction of roadside ditches may increase drainage in some areas, reducing aquatic habitat. Permanently inundated ditches may increase aquatic habitat for some organisms, but may increase their exposure to pollutants from highway runoff. Measures to maximize sediment and erosion control during construction will be implemented to protect water

quality for aquatic organisms. These measures are discussed in Sections 4.1.8.2.3.1 and 4.1.10.8.

Indirect effects of road crossing structures in waterways may displace aquatic organisms. This can be caused by channel scour downstream of bridge footings or culverts, or by aggradation, which can bury macroinvertebrates upstream of structures, particularly culverts (Wellman et al., 2000[42]). Culverts may create flow depths and velocities that aquatic organisms cannot negotiate. The use of sills in box culverts and high flow/low flow barrels in multiple barrel culverts can help maintain adequate flow for the passage of organisms.

Channel degradation and scour pools at culverts outlets may cause them to become "perched" over time, which prevents passage of aquatic organisms. The bottom of NCDOT culverts are typically buried to prevent perching from occurring. In addition, the level terrain of the coastal plain should minimize perching, since high velocity flows typically do not occur. Blocking movements of aquatic organisms may prevent access to feeding areas, refuge from predators, areas for spawning and breeding, and areas that remain inundated in dry periods; it also increases population isolation.

Indirect effects caused by the construction of stream crossings should be similar for all three alternatives, except the location of the effects is further upstream for Alternate 3 (compared to Alternate 2) and furthest upstream for Alternate 1.

4.3.3 Cumulative Effects

Activities such as development in the Havelock area (unrelated to the bypass), the annexation of land between existing city limits and the Havelock Bypass, and improvements to US 17 (STIP project R-2514) on the western side of CNF could exacerbate effects to wildlife in the study area such as habitat fragmentation, the isolation of populations, and the addition of pollutants to waterways and wetlands. Species such as black bears with low densities, large area requirements, and low reproductive rates could be adversely affected by the increasing loss of habitat. If tracts of Weyerhaeuser land in the area are harvested for timber, forest interior species will be further constricted to NFS lands. Tree removal is scheduled for various compartments on CNF, but these

projects mostly consist of thinning, which should improve habitat for RCWs and many PETS species and may improve biological diversity.

4.4. Potential Compensation to Adverse Effects

4.4.1. Croatan Wetland Mitigation Bank

The North Carolina Department of Transportation (NCDOT) has purchased an approximate 4035-acre tract of land approximately 3.6 miles northwest of Havelock in Craven County for the purpose of developing a mitigation bank for wetlands impacts and mitigating the Croatan National Forest lands affected by the project. The parcel was purchased to provide mitigation for unavoidable impacts to wetlands and other environmental impacts as a result of the proposed US 70 Havelock Bypass. The parcel is known as the Croatan Wetland Mitigation Bank (CWMB) and is contiguous to land currently owned by the National Forest System (see Figure 4-2).

The NCDOT and the U.S. Forest Service are planning the development, use, and management of the CWMB. This planning is directed toward conveyance of the CWMB property to the U.S. Forest Service from NCDOT for inclusion in the CNF. According to the Memorandum of Understanding between the U.S. Army Corps of Engineers, the State of North Carolina Department of Transportation, and the United States Forest Service, the long-term management of the CWMB will include land uses and practices that are consistent with the mitigation objectives of wetland restoration, enhancement, and preservation incorporating the restoration of natural vegetation community structure. This includes restoring hydrologic function and sustaining aquatic systems; restoration, enhancement, and providing red-cockaded woodpecker habitat linkage; enhancing black bear habitat; providing un-fragmented hardwood wetlands for interior Neo-tropical migratory bird habitat; and restoring hardwoods on suitable sites. Therefore, the CWMB will provide project mitigation for jurisdictional wetland impacts and mitigation for the use of and fragmentation of CNF lands. With the cooperation of the USFS, NCDOT has developed mitigation plans for wetlands and PETS species through Environmental Services, Inc. and red-cockaded woodpeckers through Dr. J.H. Carter III & Associates, Inc.

The CWMB consists predominantly of interstream flats with a gradual down-gradient slope from Long Lake at approximately 38 feet elevation to East Prong Brice Creek at approximately 20 feet elevation. Soils mapping and on-site investigations indicate that up to 98 percent of the CWMB historically may have been wetland.

Sufficient mitigation is available in the CWMB to provide compensation for the wetland impacts associated with the proposed Havelock Bypass. According to the CWMB mitigation plan[43] published in April 2002, more than 100 credits will be available for riverine wetland mitigation at this site. At one credit per acre, this is more than is estimated to be needed to mitigate for riverine wetland impacts due to the construction of Alternate 1 (67.4 acres), Alternate 2 (43.2 acres) or Alternate 3 (68.7 acres). In addition, the anticipated 2499.2 credits at the CWMB for non-riverine wetlands will be adequate to mitigate for non-riverine wetland impacts due to the construction of Alternate 1 (132.51 acres), Alternate 2 (127.36 acres) or Alternate 3 (134.69 acres).

The U.S. Forest Service is working to increase the number of active red-cockaded woodpecker (RCW) groups in the CNF including the general area impacted by the project in accordance with the 2002 CNF Land and Resource Management Plan[7]. On 23 June 2008, Dr. J.H. Carter III & Associates, Inc. submitted the Final Red-cockaded Woodpecker Mitigation Plan for the Croatan Wetland Mitigation Bank, Craven County, North Carolina[44] to NCDOT. The Plan states that the success of RCW recruitment at the CWMB is contingent on the successful long term management of target restoration communities.

The nearest RCW group is on the northwest side of the CWMB, approximately one mile from its western boundary. Management of pine habitat on the CWMB to achieve the prescribed RCW characteristics could strengthen the existing RCW dispersal corridor between subpopulations two and three. The best potential for future RCW habitat is within the pockets of Mesic Pine Flatwoods (37.16 acres) in the northwest, west-central and southeastern portions of the CWMB. Mesic Pine Flatwoods occur on Goldsboro loamy fine sand and Leon sand, both of which support longleaf pine with high and moderately-high site indices, respectively. Longleaf pine was planted on higher areas

of the Wet Pine Flatwoods target community (a total of 187 acres were planted with longleaf, loblolly and pond pines). The effort to create potentially suitable RCW habitat will be centered within these communities. Suitable habitat can be attained by maintaining a moderately dense pine basal area, conducting regular prescribed burns to keep hardwood midstory density sparse and below seven feet in height and allowing pines to reach the minimum age for foraging and nesting habitat (30 and 90 years old, respectively). If these goals are attained at age 30, planted pine habitat would be minimally suitable for foraging by 2032. These areas could provide RCW nesting habitat by 2092.

4.4.2. NCDOT Parcel Adjacent to the Croatan Wetland Mitigation Bank

Dr. J.H. Carter III & Associates, Inc. (JCA) was asked by the NCDOT to assess the NCDOT-owned parcel (Parcel ID # 6-216-001) adjacent to the CNF for potential RCW habitat. Personnel from JCA made a site visit to the 226.19 acre parcel on 5 October 2010.

The parcel is located in the extreme east-central NC Coastal Plain in the Neuse River Basin and is approximately three miles from Havelock, Craven County (Figure 4-8). Major hydrological features within the parcel include Tucker Creek, which runs southwest along the southern edge of the parcel and an unnamed tributary associated with East Prong Brice Creek. A powerline right-of-way bisects the western side of the property.

Historical vegetative communities were determined using soil survey maps (Schafale and Weakley 2003, USDA 1989). The dominant historical vegetative communities within the parcel included Mesic Pine Savanna (Coastal Plain subtype), Very Wet Sandy Pine Savanna (Typic subtype), Wet Sandy Pine Savanna (Typic subtype), Pond Pine Woodland (Shrub subtype) and Cypress-Gum Swamp (Blackwater subtype) (Schafale and Weakley 2003). Mesic Pine Savanna typically had a canopy of longleaf pine (*Pinus palustris*), with an understory of oaks (*Quercus* spp.), sweetgum (*Liquidambar styraciflua*) and other hardwoods. Undisturbed sites were dominated by Carolina wiregrass (*Aristida stricta*) or occasionally bracken fern (*Pteridium aquilinum*), and a very diverse assemblage of herbaceous plants. The Very Wet Sandy and Wet Sandy Pine Savanna community

types were known to occur on wet flats subject to frequent fire. Pine Savannas had an open to sparse canopy of longleaf pine, sometimes with pond pine (*Pinus serotina*) as a co-dominant. Shrubs such as inkberry (*Ilex glabra*), sweet pepper bush (*Clethra alnifolia*), creeping blueberry (*Vaccinium crassifolium*) and dangleberry (*Gaylussacia frondosa*) were scattered throughout and the herb layer was often very dense and diverse where frequently burned. The Very Wet Sandy Pine Savanna occurred on the wettest sandy soil and was typically moderate in species richness, while the Wet Sandy Pine Savanna covered wet to possibly mesic soils with low species richness.

Pond Pine Woodland (Shrub subtype) had a canopy dominated by pond pine, along with loblolly bay (*Gordonia lasianthus*), sweetbay (*Magnolia virginiana*), red maple (*Acer rubrum*) and Atlantic white cedar (*Chamaecyparis thyoides*). The dense shrub layer included titi (*Cyrilla racemiflora*), fetterbush (*Lyonia lucida*), sweet gallberry (*Ilex coriacea*), inkberry, swamp red bay (*Persea palustris*) and switch cane (*Arundinaria tecta*).

Cypress-Gum Swamp (Blackwater subtype) communities occurred along creeks and rivers and were predominantly forested with bald cypress (*Taxodium distichum*), pond cypress (*T. ascendens*), water tupelo (*Nyssa aquatica*) and swamp tupelo (*N. biflora*). The understory and shrub layers were usually poorly developed, but could be locally dense and consisted of saplings of the overstory species, red maple, titi, Virginia willow (*Itea virginica*) and sweet pepperbush.

Intensive forest management has severely degraded the natural communities that were historically found on the parcel. Years of management by previous owners for wood production resulted in soil disturbance and suppression of many native species. The parcel is forested with dense 15-20 year old loblolly pine plantations. Longleaf pine is sparse and less than eight feet tall. The midstory is very dense due to a lack of recent timber management and exclusion of fire. The midstory currently consists of red maple, sweetgum and wax myrtle (*Myrica cerifera*). The groundcover is sparse with switch cane and cinnamon fern (*Osmundastrum cinnamomeum*).

All of the major soils within the parcel are hydric and include Pantego fine sandy loam (Pa) (71.05 acres) and Craven (CrB) (46.75 acres), Leaf (La) (71.20 acres) and Lenoir (Le) (36.14 acres) silt

loams (USDA 1989) (Figure 4-8). Loblolly pine growing in Pantego soils has a Site Index (SI) of 98 and productivity of 131. Loblolly pine growing in Craven soils has a SI of 85 and productivity of 120, while longleaf pine has a SI of 67 and productivity of 72. Loblolly pine growing in Leaf and Lenoir soils has a SI of 90 and productivity of 131. The USDA recommends planting loblolly pine on all of these soil types (USDA 1989).

The proposed project will not result in any "Incidental Take" of the RCW; however, because the Bypass alternatives directly impact RCW habitat on the CNF, RCW compensation options are being explored in case they are required. The proposed alternatives are merged within the NCDOT parcel and will remove approximately 15.5 acres out of a total of 226.19 acres of habitat (Figure 4-8).

The parcel is within the 0.5 mile radius foraging habitat partition of inactive cluster CNF 144 (Figure 4-8). CNF 144 was created in 2002 and has never been active. The nearest cavity tree is 887 feet north of the NCDOT parcel boundary on CNF property in CNF Cluster 144. No RCW cavity trees were found, and no currently suitable RCW habitat occurs on the parcel.

The parcel is within RCW Subpopulation 3 as referenced in the CNF LRMP (USFS 2002). The parcel is also located directly east of, and connects to, the CWMB (Figure 4-7). If pine habitat on the parcel is managed to produce appropriate RCW habitat, it will improve an existing RCW dispersal corridor and add to the habitat and foraging partition for CNF 144.

Restoration of the historic communities on the parcel will take decades. While it is difficult to predict the amount and quality of future pine habitat on the parcel, managing it for RCWs in conjunction with the CWMB could contribute to the genetic and demographic connectivity of the CNF RCW population. The LRMP speaks to the need to preserve connectivity on the CNF. If the parcel is preserved in perpetuity and managed for RCW habitat, it could aid in the long-term establishment of Subpopulation 3.

Suitable habitat can be attained by maintaining a moderately dense pine basal area (BA) (40 to70 square feet per acre), conducting regular prescribed burns to keep the hardwood midstory density

sparse and below seven feet in height and allowing pines to reach the minimum age for foraging and nesting habitat (30 and 90, respectively). The loblolly plantations that currently occupy the parcel were planted in raised beds to improve drainage. Loblolly is not native to the site; it is subject to disease and insect infestation as well as fire mortality, and it is not a long-lived tree. Other pine species would be better suited for providing RCW habitat. Growing longleaf will be challenging because of the hydrology within the parcel. However, pond pine is suitable for RCW habitat and will grow relatively easily on the site. If the aforementioned goals were attained by age 30, managed pine habitat would be minimally suitable for foraging by 2041. The parcel could provide RCW nesting habitat by 2101.

Overall recommendation: Clear-cut the loblolly pine plantations within the parcel and replant with a mixture of pond pine and longleaf pine. Manage and maintain habitat overtime by burning and thinning to meet RCW habitat guidelines.

4.5. Section 4(f) and Section 6 (f)

According to United States Code (USC) Title 23 in Section 138 (Section 4(f)), the United States Department of Transportation (USDOT):

..... shall not approve any program or project ..... which requires the use of any publicly-owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historic site resulting from such use.

Although the Croatan National Forest is impacted by the bypass alternatives, no impacted areas within the forest are designated as recreational areas or as national wildlife refuge lands. Based on the above criteria, Section 4(f) evaluation is not necessary. In a letter from the U. S. Department of Agriculture, Forest Service, dated May 1, 1998 (see Appendix A1), the Forest Service determined

that "The proposed State Project to construct US 70 Bypass (TIP #R-1015) located in Craven County, North Carolina, has been reviewed against the criteria of Section 4(f) of the Department of Transportation Act of 1966 (28 USC 138), as amended. With this, I have determined that this project does not encroach on or use land from (sic) any of the types of specifically designated areas described above and consideration under Section 4(f) is not required." The Federal Highway Administration further agrees with this assessment under current law and that a Section 4(f) evaluation is not necessary for this project as proposed.

The Land and Water Conservation Fund Act (Section 6(f)) at 16 USC 460 is a primary funding source of the U.S. Department of the Interior for outdoor recreation development and land acquisition by local governments and state agencies. The U.S. Department of the Interior, National Park Service, administers the program on behalf of the federal government. Authority for the program at the state level is vested in the North Carolina Department of Environment and Natural Resources and the State Liaison Officer appointed by the Governor. This Act is meant to preserve outdoor recreation resources and is applicable to projects impacting recreational lands purchased or improved with land and water conservation funds. A Section 6(f) evaluation is not necessary since there are no such lands impacted by the project.

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[43] Environmental Services, Inc. 2002. Final Mitigation Plan, Croatan Wetland Mitigation Bank, Craven County , North Carolina, April 2002.

[44] Dr. J.H. Carter III & Associates, Inc. 2008. Final Red-cockaded Woodpecker Mitigation Plan for the Croatan Wetland Mitigation Bank, Craven County, North Carolina for N.C. Department of Transportation, Division of Highways, Project Development and Environmental Analysis Branch, Natural Environment Unit, Raleigh, N.C., June 2008.

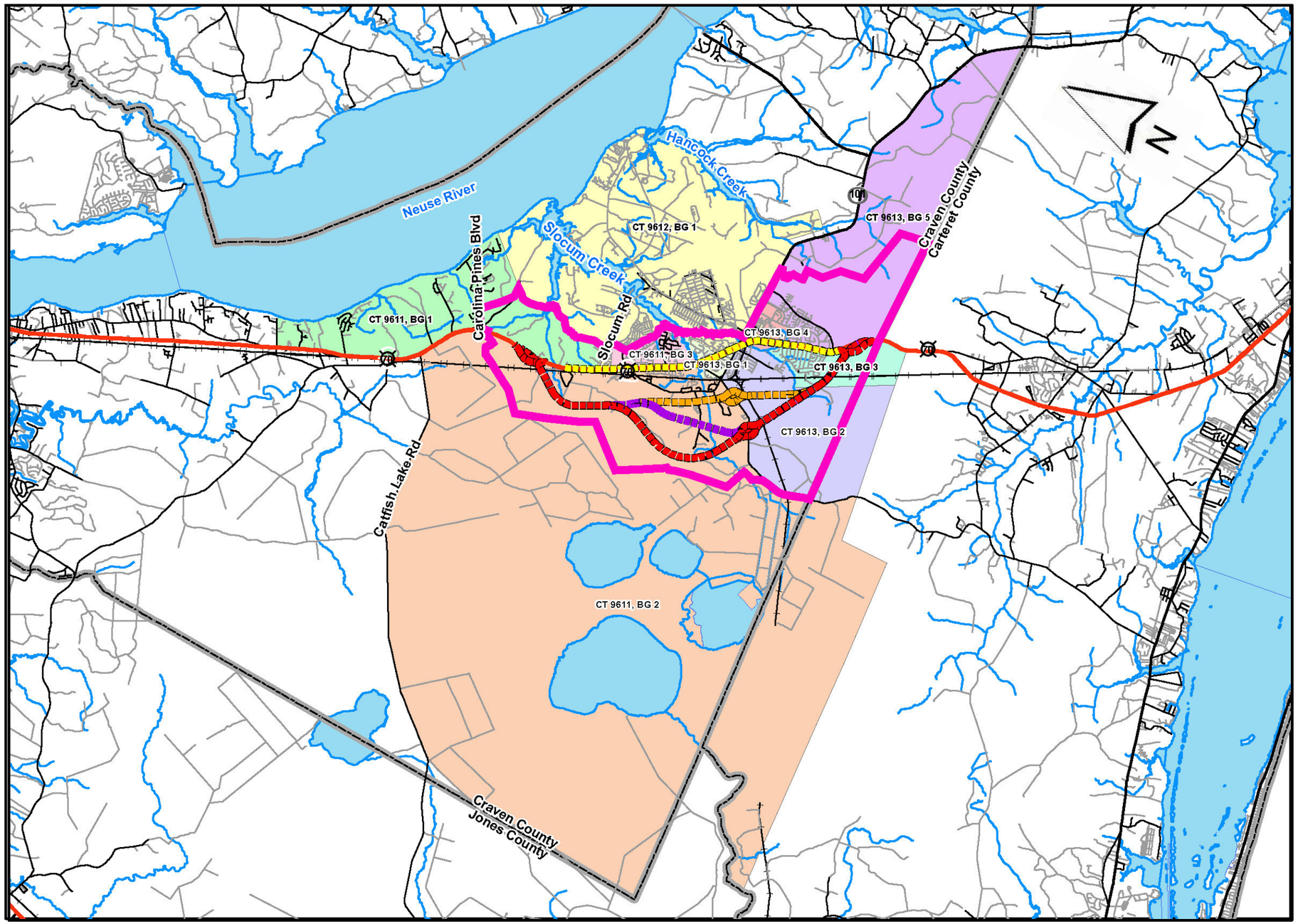


FIGURE 4-1 DEMOGRAPHIC AREA & DIRECT COMMUNITY IMPACT AREA

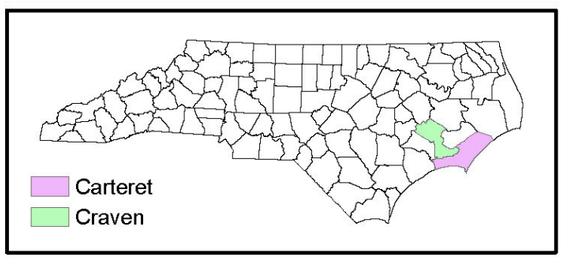
- Direct Community Impact Area
- Bypass Alternative 1
- Bypass Alternative 2
- Bypass Alternative 3
- Upgrade Existing US 70 Alternative
- US Route
- State Route
- Secondary Roads
- Local Roads
- Railroads
- Streams and Creeks
- Water Bodies
- County Boundary

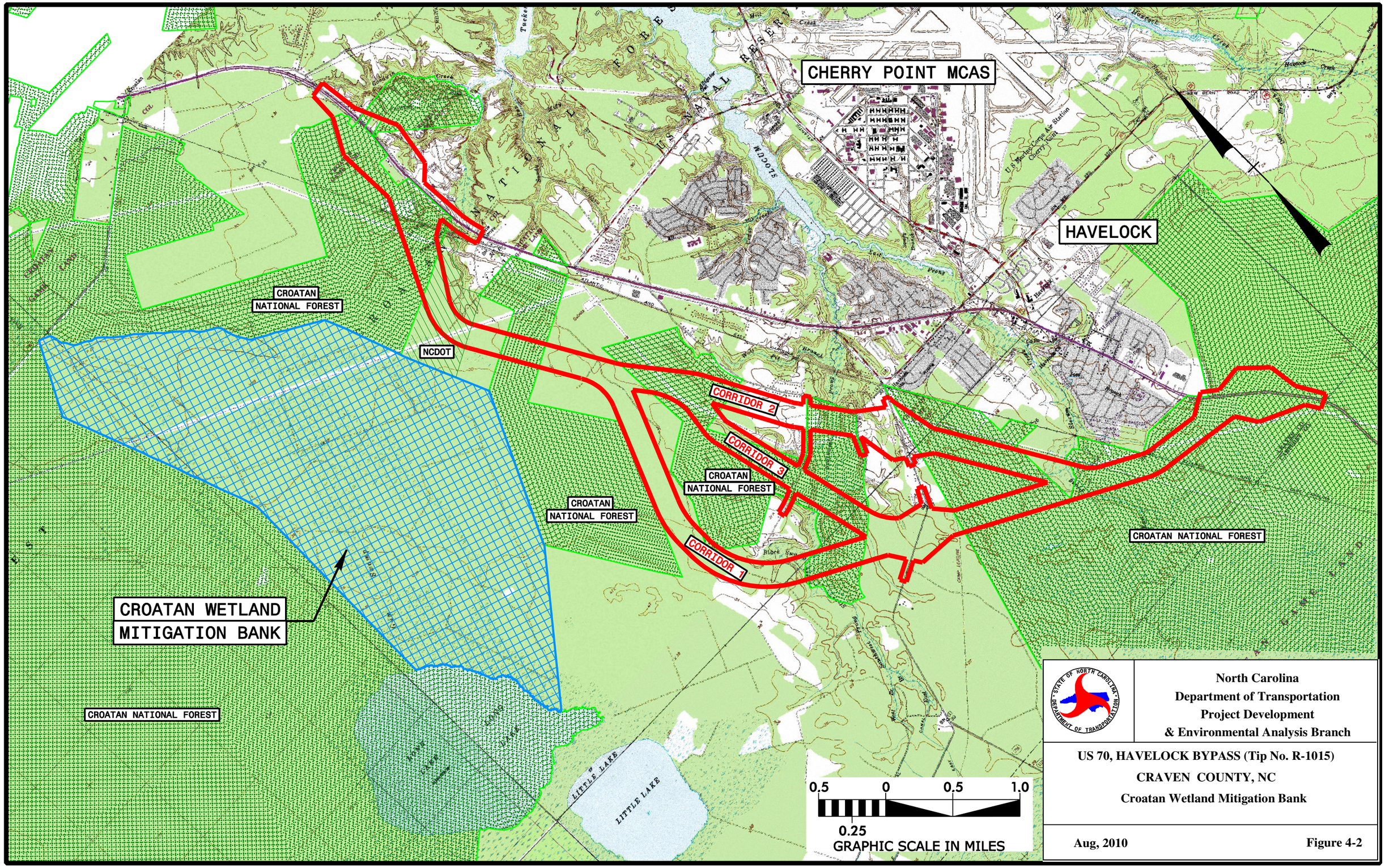
Census Block Groups

- CT 9611, BG 1
- CT 9611, BG 2
- CT 9611, BG 3
- CT 9612, BG 1
- CT 9613, BG 1
- CT 9613, BG 2
- CT 9613, BG 3
- CT 9613, BG 4
- CT 9613, BG 5

0 1 2 3 4 5 Miles

MAP SOURCES:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE (ESRI)
CITY OF HAVELOCK
CRAVEN COUNTY
CARTERET COUNTY
HNTB NORTH CAROLINA, P.C.




CHERRY POINT MCAS
HAVELOCK
CROATAN NATIONAL FOREST
NCDOT
CORRIDOR 2
CORRIDOR 3
CORRIDOR 1
CROATAN NATIONAL FOREST
CROATAN NATIONAL FOREST
CROATAN NATIONAL FOREST
CROATAN NATIONAL FOREST
CROATAN WETLAND MITIGATION BANK
LITTLE LAKE
0.5 0 0.5 1.0
0.25
GRAPHIC SCALE IN MILES
North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch
US 70, HAVELOCK BYPASS (Tip No. R-1015)
CRAVEN COUNTY, NC
Croatan Wetland Mitigation Bank
Aug, 2010
Figure 4-2

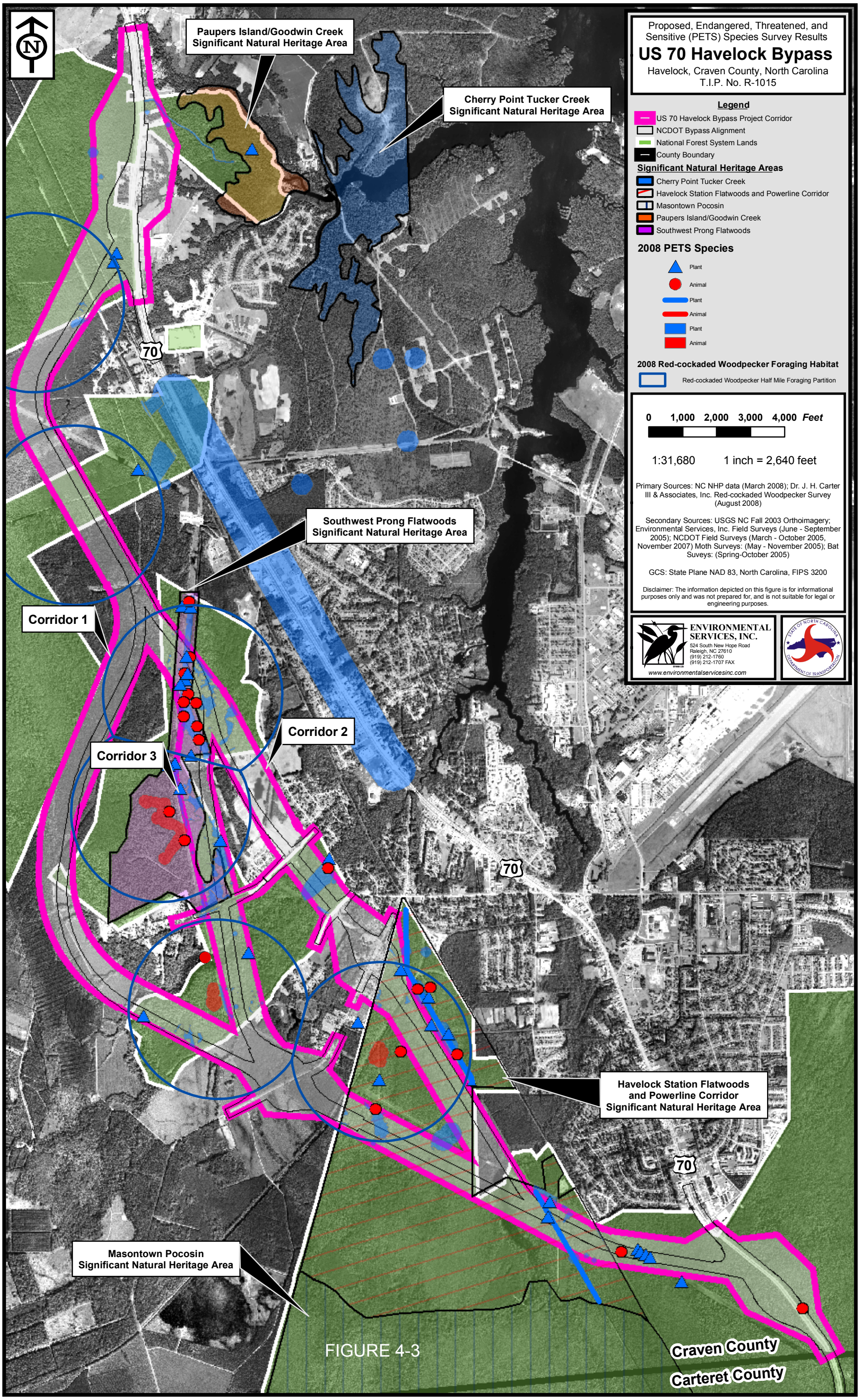
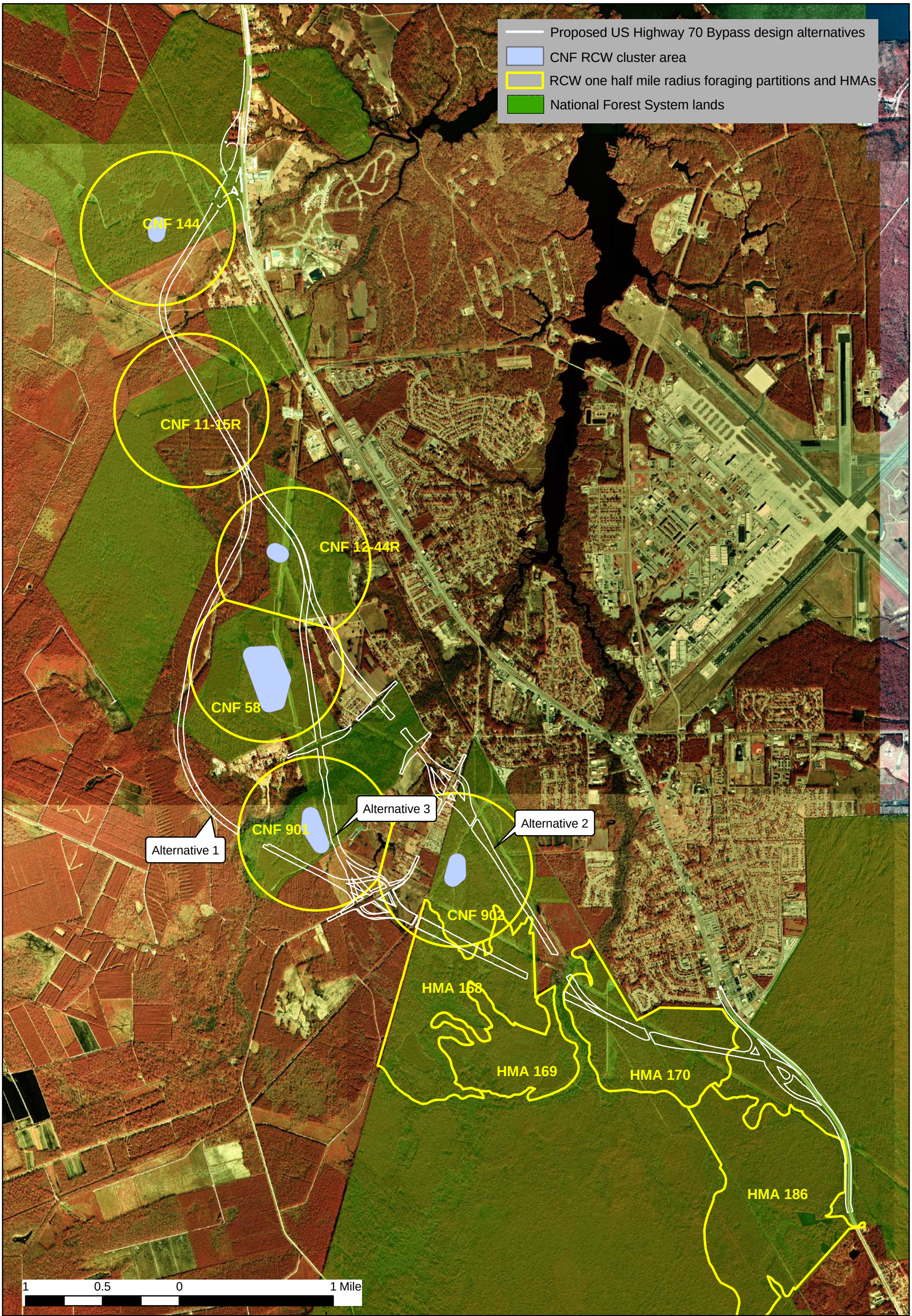

Proposed, Endangered, Threatened, and Sensitive (PETS) Species Survey Results
US 70 Havelock Bypass
Havelock, Craven County, North Carolina
T.I.P. No. R-1015
Legend
US 70 Havelock Bypass Project Corridor
NCDOT Bypass Alignment
National Forest System Lands
County Boundary
Significant Natural Heritage Areas
Cherry Point Tucker Creek
Havelock Station Flatwoods and Powerline Corridor
Masontown Pocosin
Paupers Island/Goodwin Creek
Southwest Prong Flatwoods
2008 PETS Species
Plant
Animal
Plant
Animal
Plant
Animal
2008 Red-cockaded Woodpecker Foraging Habitat
Red-cockaded Woodpecker Half Mile Foraging Partition
0 1,000 2,000 3,000 4,000 Feet
1:31,680 1 inch = 2,640 feet
Primary Sources: NC NHP data (March 2008); Dr. J. H. Carter III & Associates, Inc. Red-cockaded Woodpecker Survey (August 2008)
Secondary Sources: USGS NC Fall 2003 Orthoimagery; Environmental Services, Inc. Field Surveys (June - September 2005); NCDOT Field Surveys (March - October 2005, November 2007) Moth Surveys: (May - November 2005); Bat Suveys: (Spring-October 2005)
GCS: State Plane NAD 83, North Carolina, FIPS 3200
Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering purposes.
ENVIRONMENTAL SERVICES, INC.
524 South New Hope Road
Raleigh, NC 27610
(919) 212-1760
(919) 212-1707 FAX
www.environmentalservicesinc.com
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
N
Paupers Island/Goodwin Creek Significant Natural Heritage Area
Cherry Point Tucker Creek Significant Natural Heritage Area
Southwest Prong Flatwoods Significant Natural Heritage Area
Corridor 1
Corridor 2
Corridor 3
Havelock Station Flatwoods and Powerline Corridor Significant Natural Heritage Area
Masontown Pocosin Significant Natural Heritage Area
70
70
70
Craven County
Carteret County

FIGURE 4-3



DR. J.H. CARTER III & ASSOCIATES, INC.
Environmental Consultants
P.O. Box 891 • Southern Pines, N.C. 28388
(910) 695-1043 • Fax (910) 695-3317

Red-cockaded woodpecker (RCW) one-half mile radius foraging habitat partitions and habitat management areas (HMAs) for existing and future recruitment RCW clusters on the Croatan National Forest (CNF) impacted by the proposed US Highway 70 Bypass (R-1015) project, Craven County, North Carolina.

Figure 4-4

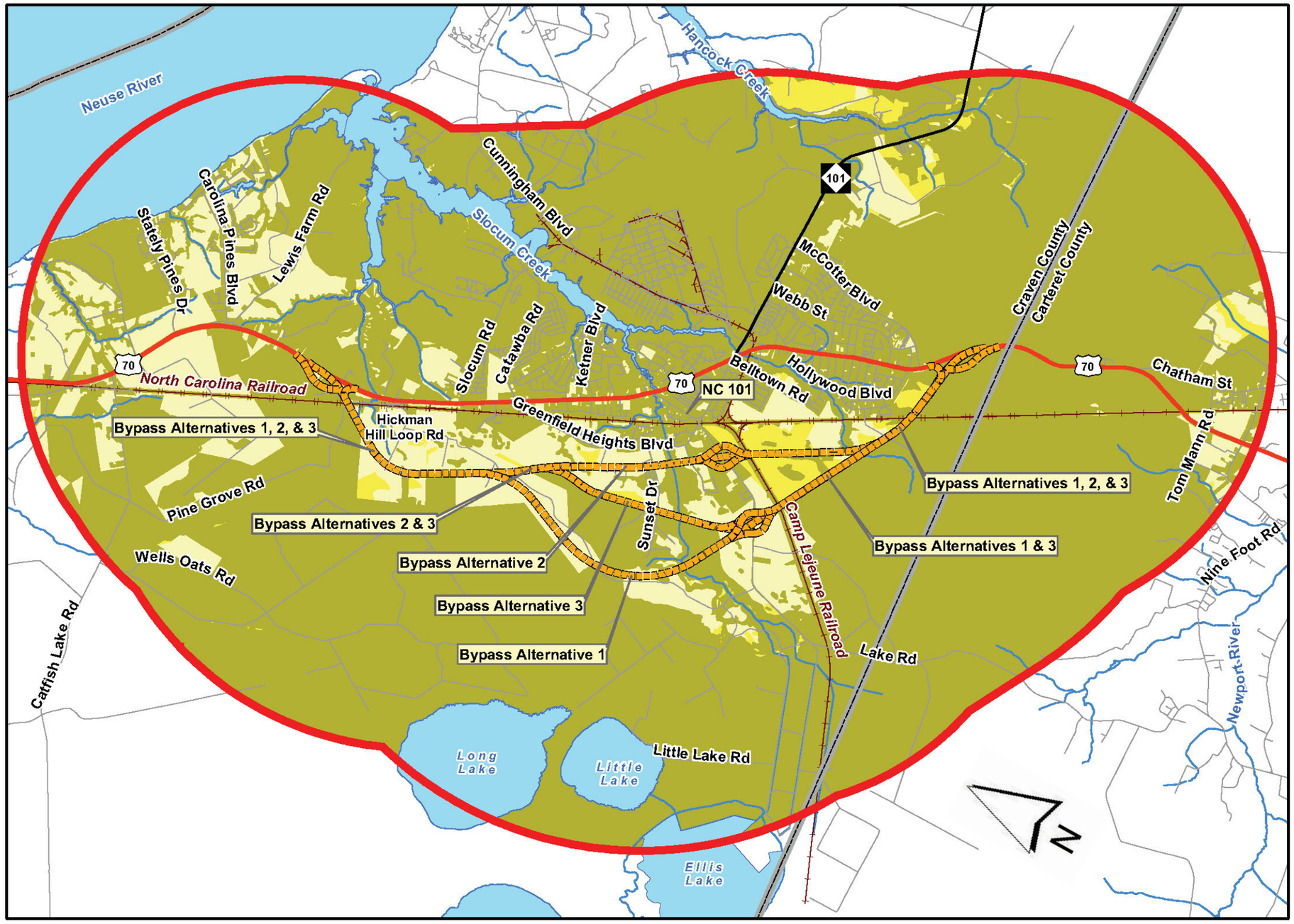


FIGURE 4-5 FUTURE DEVELOPMENT SUITABILITY IN GROWTH IMPACT STUDY AREA

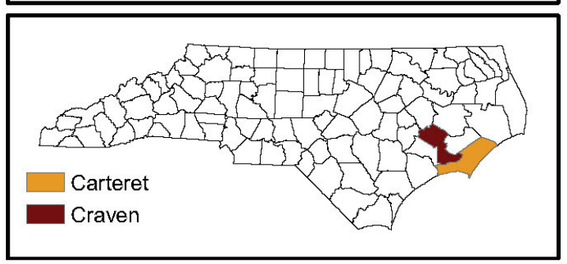
- Bypass Alternative 1
- Bypass Alternative 2
- Bypass Alternative 3
- GISA
- US Route
- State Route
- Secondary Road
- Railroad
- Stream or Creek
- Water Body

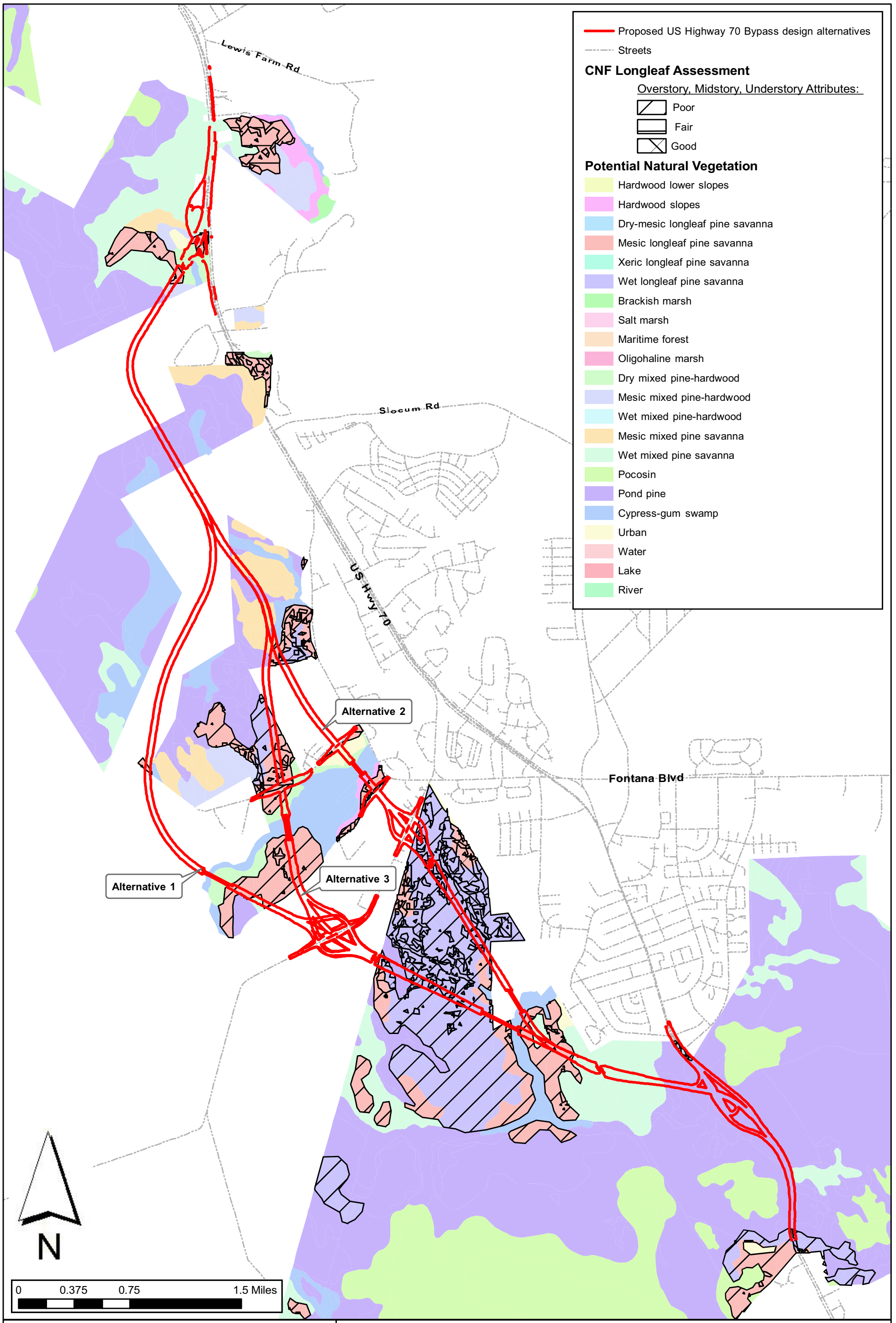
Future Development Suitability

- Highly Suitable for Future Development
- Moderately Suitable for Future Development
- Not Suitable for Future Development

0 1 2 3 Miles

MAP SOURCES (2005):
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE (ESRI)
UNITED STATES FOREST SERVICE
CHERRY POINT MCAS
CITY OF HAVELOCK & TOWN OF NEWPORT
CRAVEN COUNTY & CARTERET COUNTY
HNTB NORTH CAROLINA, P.C.





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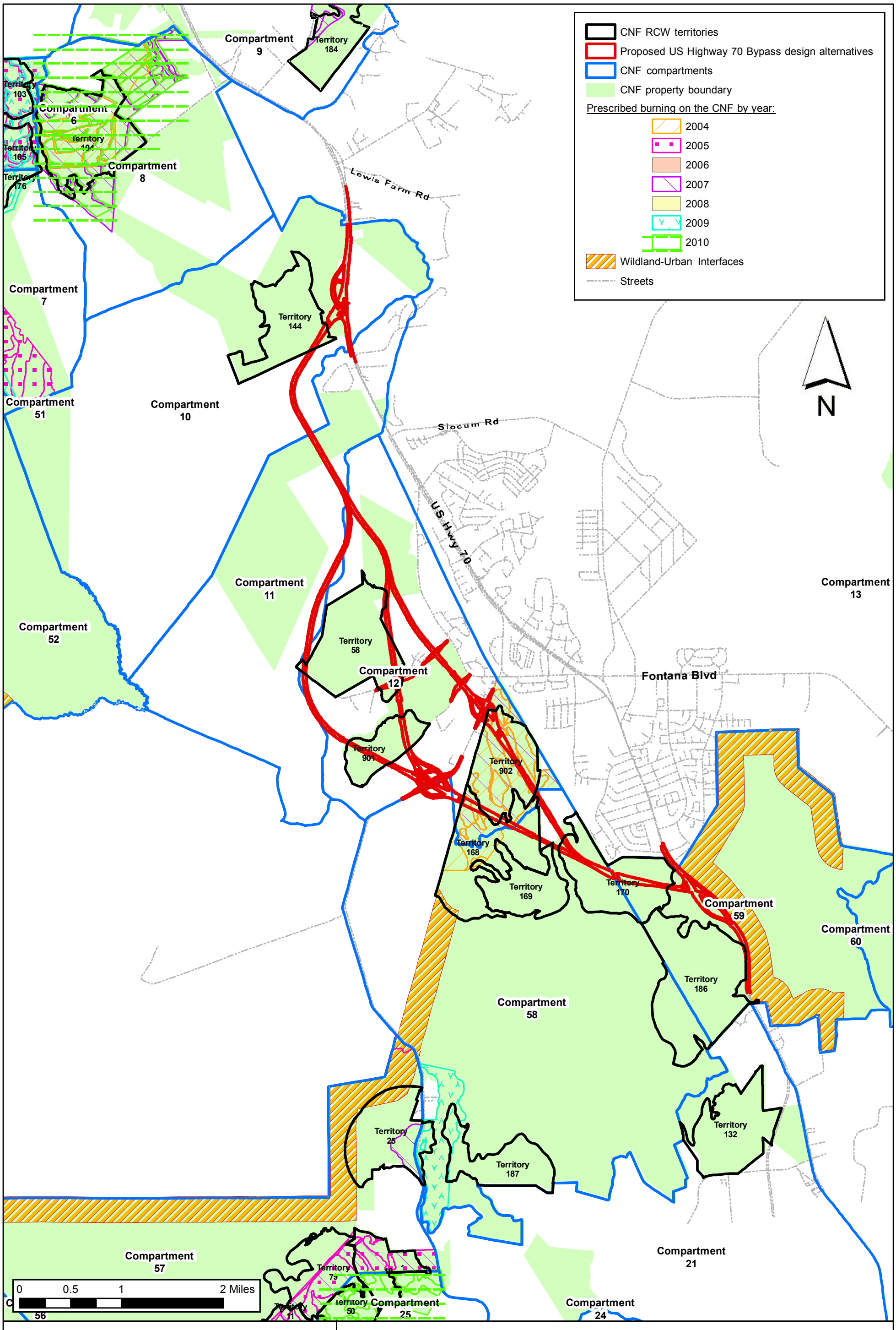
Environmental Consultants
P.O. Box 891 • Southern Pines, N.C. 28388
(910) 695-1043 • Fax (910) 695-3317

Longleaf pine assessment locations and potential natural vegetative communites impacted by the proposed US Highway 70 Bypass (R-1015) project on the Croatan National Forest, Craven County, North Carolina.

Figure 4-6



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Environmental Consultants
P.O. Box 891 • Southern Pines, N.C. 28388
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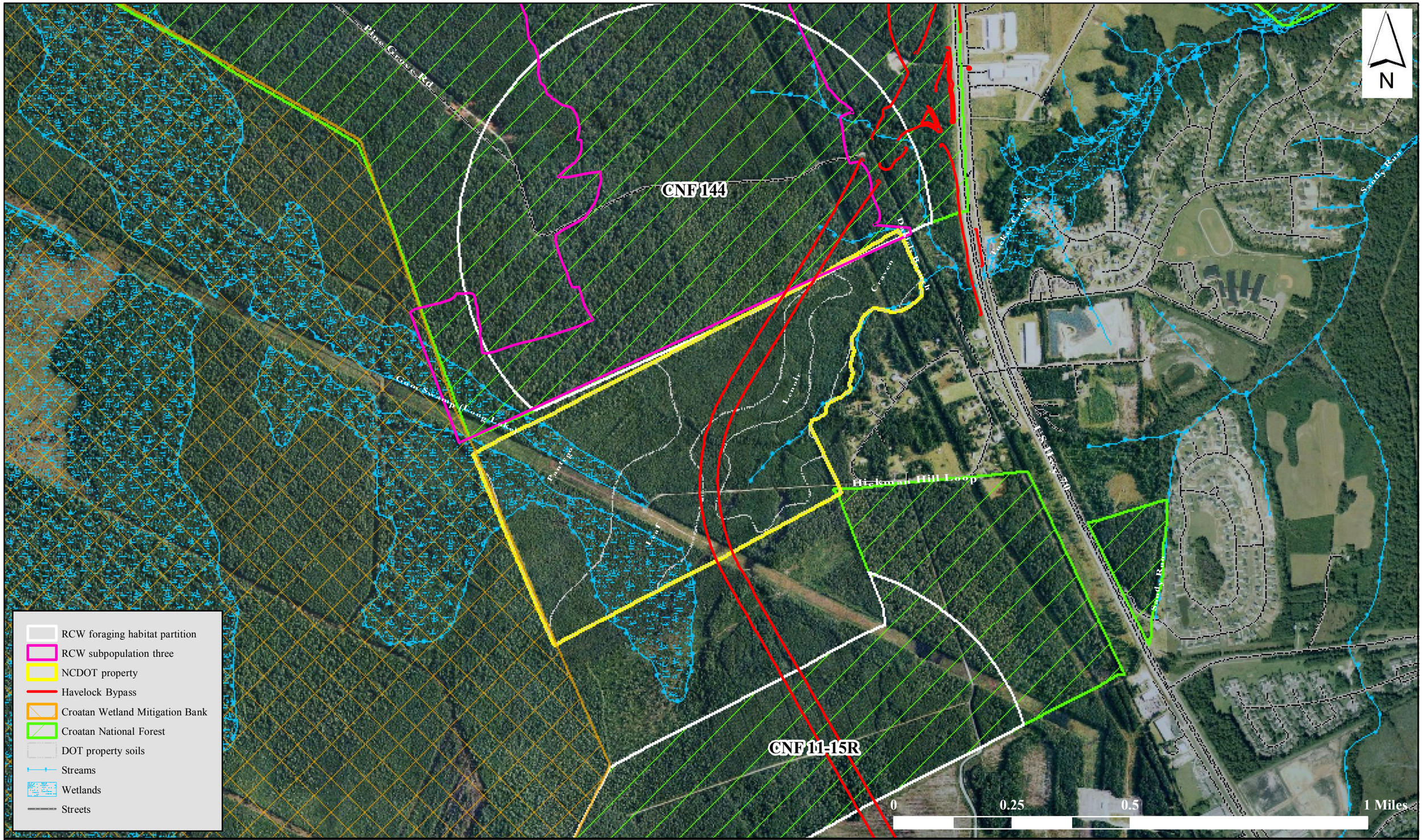
Prescribed burning conducted between 2004 and 2010 and locations of Wildland-Urban Interfaces (WUI) impacted by the proposed US Highway 70 Bypass (R-1015) project on the Croatan National Forest (CNF), Craven County, North Carolina.

Figure 4-7



DR. J.H. CARTER III & ASSOCIATES, INC.
Environmental Consultants
P.O. Box 891 • Southern Pines, N.C. 28388
(910) 695-1043 • Fax (910) 695-3317

Location of red-cockaded woodpecker (*Picoides borealis*)(RCW) cavity trees and clusters, the NCDOT parcel property (Parcel ID #6-216-001) and the proposed US Highway 70 Bypass project (R-1015), Craven County, North Carolina.

Figure 4-8

CHAPTER 5
LIST OF PREPARERS

CHAPTER 5. LIST OF PREPARERS

TGS Engineers prepared this document in cooperation with the U.S. Department of Transportation, Federal Highway Administration and the North Carolina Department of Transportation, Division of Highways. The personnel listed in this chapter were actively involved in the project studies and preparation of the Environmental Assessment and/or this Draft Environmental Impact Statement.

5.1. Federal Highway Administration

Clarence Coleman, PE	Preconstruction & Environment Team Leader. Responsible for Federal Aid Highway Program in North Carolina. Eighteen years experience in engineering and transportation planning.
Ron Lucas, PE	Preconstruction & Environment Engineer. Responsible for NCDOT Highway Divisions 1, 2, 3, 4, and 10. Eighteen years experience in engineering and transportation planning.

5.2. North Carolina Department of Transportation

Robert Hanson, PE	Eastern Project Development Engineer, Project Development and Environmental Analysis Branch. Manager responsible for development of planning/environmental studies in eastern North Carolina. Twenty-two years experience in transportation.
Brian Yamamoto, PE	Project Engineer in the Eastern Project Development Unit, Project Development and Environmental Analysis Branch. Twenty years experience in transportation.

Mark Pierce, PE	Project Planning Engineer in the Eastern Project Development Unit, Project Development and Environmental Analysis Branch. Twenty-eight years experience in transportation in Civil and Environmental Engineering Planning, Design, and Construction Management.
Robert Deaton, AICP	Community Studies Team Leader in the Human Environment Unit, Project Development and Environmental Analysis Branch. Responsible for oversight, coordination and review of Community Impact Assessments (CIA's) and Indirect and Cumulative Effects studies (ICE's) for NEPA and project permitting activities. Nineteen years planning experience, including nine years experience with CIA and ICE studies.
Steve Gurganus, AICP	Community Studies Team Leader in the Human Environment Unit, Project Development and Environmental Analysis Branch. Responsible for Community Impact Assessments, including Environmental Justice and farmland impact analyses, and Indirect and Cumulative Effects studies. Twelve years experience in urban and community planning.
Herman F. Huang, Ph.D.	Community Planner in the Human Environment Unit, Project Development and Environmental Analysis Branch. Responsible for reviewing community impacts and indirect and cumulative effects discussion in the DEIS. Responsible for writing and reviewing community impact assessments and indirect and cumulative effects reports. Two years experience in community planning.
Mary Frazer	Environmental Supervisor in the Biological Surveys Unit, Project Development and Environmental Analysis Branch. Responsible for protected species surveys, reporting, coordination and mitigation. Seventeen years experience in biological surveys and environmental analysis.

Chris Underwood	Environmental Biologist in the Biological Surveys Unit, Project Development and Environmental Analysis Branch. Responsible for reviewing natural resource investigations; Section 7 field investigations; protected species (terrestrial/aquatic) surveys; Section 404/401 permitting and wetland delineations. Eighteen years experience in biological surveys with seven years reporting.
Darryl D. Austin	Transportation Engineer II, in the Eastern Traffic Forecast Unit, Transportation Planning Branch. Responsible for traffic forecast development and documentation of forecast methodology utilized to create the traffic forecast report. Twelve years experience forecasting traffic volumes in the Traffic Forecast Unit for NCDOT.
Ted Walls, PE	Project Engineer, Roadway Design Unit. Assigned to oversee the roadway design elements of the proposed action. Thirty years experience in highway design.
Allison K. White, EI	Project Design Engineer, Roadway Design Unit. Assigned to roadway design elements of the proposed action. Eleven years experience in highway design.
Andrew T. Nottingham, PE	Hydraulics Project Engineer, Hydraulics Unit. Assigned to design and review the hydraulics elements of the project design. Twenty-four years experience in highway design.

5.3. Private Engineering Firms

TGS Engineers

J. Kenneth Burleson. PE	Principal in Charge. Civil engineer responsible for project Environmental Assessment preparation and Principal in Charge for the preparation of the Draft Environmental Impact Statement. Over thirty years experience in engineering and transportation project planning as Principal in Charge, Project Manager and Project Engineer for various civil/transportation engineering projects.
Charles Flowe, PE	Project Design Manager. Civil engineer with more than 30 years experience associated with the management and development of roadway plans in accordance with NCDOT and AASHTO guidelines.
David G. Modlin, Jr., PE	Senior Planning Engineer. Civil engineer responsible for the initial preparation of the Draft Environmental Impact Statement for the US 70 Havelock Bypass. Thirty-nine years of experience in transportation engineering, transportation planning, NEPA documentation, and university level academics.
Craig Parker, PE	Project Engineer. Civil engineer with more than 12 years experience in the transportation engineering field. His experience includes over 5 years with the NCDOT Roadway Design Branch.
Jimmy Terry, PE	Project Engineer. Civil engineer with over 5 years of experience providing design support and detail design for a variety of highway design and hydraulic design assignments.
William Stephens, PE	Hydraulics engineer with over 18 years experience in a broad range of areas including planning, bridge inspection, hydraulics, and roadway design.

Environmental Services, Inc.

Kevin W. Markham	Manager responsible for quality control and oversight on natural resource investigations. Twenty-one years experience in environmental investigations and consulting.
Matt K. Smith	Biologist assigned to oversee Natural Resource Technical Report preparation and assessment of U.S. Forest Service Proposed, Threatened, Endangered, and Sensitive Species. Thirteen years experience in environmental investigations and consulting.
Jan U Gay	Biologist assigned to oversee wetlands and jurisdictional delineations and agency coordination. Seventeen years experience in environmental investigations and consulting.

HNTB Corporation

Anne Lenart-Redmond, EI	Project Manger responsible for coordination and review of Draft Community Impact Assessment and Draft Quantitative Indirect and Cumulative Impact Assessment. Thirteen years experience in engineering and planning.
Craig Deal, PE	Quality Control Manager responsible for overseeing review of Final Community Impact Assessment and Final Quantitative Indirect and Cumulative Impact Assessment. Twenty-three years experience in engineering and planning.
Susan Fisher, AICP	Co-Senior Project Planner responsible for the Final Community Impact Assessment and Final Quantitative Indirect and Cumulative Impact Assessment. Seven years experience in land use and transportation planning.

Tracy Roberts, AICP	Senior Project Planner. responsible for the Draft Community Impact Assessment and Draft Indirect and Cumulative Impact Assessment. Thirteen years experience in transportation planning and NEPA planning.
Donal Simpson, FAIA	Principal. responsible for technical aspects of the Indirect Impacts and facilitation of the Focus Group meetings. Thirty-six years experience in environmental planning, urban design and architecture.
Kevin Hall	Project Planner. responsible for preparation of the Indirect and Cumulative Impact Assessment report and future growth scenarios. Eleven years experience land use planning and economic impact analysis.
Carl Rogers	Project Planner. responsible for preparation of the Community Impact Assessment and development suitability analysis related to the Indirect and Cumulative Impact Assessment. Seven years experience in land use planning and GIS services.

J. H. Carter, III & Associates

J.H. Carter III	Principal. Directed red-cockaded woodpecker foraging habitat analyses and preparation of the Biological Alternatives Analysis report. Thirty-three years experience in red-cockaded woodpecker conservation.
Jan Goodson	Supervising Biologist. Directed and participated in field surveys, participated in data analyses and contributed to preparation of the Biological Alternatives Analysis report. Seventeen years experience in red-cockaded woodpecker conservation.

Lisa Fields	Project Manager Biologist. Participated in field surveys and led data analysis of potential impacts to the red-cockaded woodpecker. Responsible for preparation of Biological Alternatives Analysis. Five years experience in red-cockaded woodpecker surveys and assessments.

Ko and Associates

J. T. Newnam, Jr., PE	Planning Project Engineer assigned to prepare traffic noise analysis. Thirty-six years experience in transportation engineering.
Grace K. Stocker, EI	Planning Project Designer assigned to prepare traffic noise analysis. Eight years experience in transportation planning, including air quality and noise analysis.
Mark L. Reep, PE	Planning Project Engineer assigned to review the traffic noise analysis. Seventeen years experience in transportation engineering.

5.4 Preparers of Approved Environmental Assessment

The preparers listed below were actively involved in the preparation of the approved Environmental Assessment for the US 70 Havelock Bypass dated January 1, 1998.

Federal Highway Administration

Roy Shelton	Operations Engineer - Responsible for the administration of the Federal Aid Highway Program. Thirty-one years experience in transportation engineering.
John C. Wadsworth, PE	Area Engineer - Responsible for the administration of the Federal Aid Highway Program in NC Divisions 1, 2, and 3. Thirty-two years experience in transportation engineering.

North Carolina Department of Transportation

H. Franklin Vick, PE	Branch Manager, Planning and Environmental - Highway Planning Engineer responsible for planning and environmental studies on North Carolina highways. Twenty-five years experience in engineering and transportation planning.
Richard B. Davis, PE	Assistant Branch Manager, Planning and Environment Engineer responsible for the coordination of consulting engineering firms engaged in the development of planning/environmental studies. Twenty-six years experience in engineering and planning.
L. Gail Grimes, PE	Unit Head, Planning and Environmental - Highway Planning Engineer responsible for coordination and review of studies in connection with this project. Twenty-two years experience in engineering and planning.
James A. Buck, PE	Planning and Environmental - Highway Planning Engineer responsible for overseeing the planning element of the project. Ten years experience in engineering and transportation planning.
Harry M. Thompson, PE	Roadway Design - Assistant State Roadway Design Engineer assigned to oversee coordination of roadway design elements of the proposed action. Thirty-one years experience in highway design.
James G. Norris, Jr.	Unit Head, Roadway Design - Roadway Design Engineer assigned to coordinate the review of design elements of the proposed action. Twenty-five years experience in highway design.
R. M. Clifford, Jr., PE	Roadway Design - Roadway Design Engineer assigned to review roadway design elements of the proposed action.

TGS Engineers

J. Kenneth Burleson, PE	Principal, Head of Planning and Environmental Services responsible for the planning and environmental documentation of the project. Twenty years experience in engineering and planning.
Ralph F. Gordon, Jr., PE	Principal, Foundations Engineer responsible for the project administration. Twenty-six years experience in engineering and transportation.
W. Earl Willis, PE	Principal, Head of Roadway Design responsible for functional design, plan development and construction cost estimates for the project. Over thirty-five years of experience in transportation engineering and highway design.
David F. Arthurs, PE	Roadway Design, Senior Transportation Design Engineer responsible for roadway design, estimating and functional plan preparation for the project. Over thirty years of experience in highway design.
Gus N. Saparilas	Senior Design Specialist, Head of Hydrology and Hydraulics responsible for the preliminary drainage design for the major waterway crossings of the project. Over thirty years of experience in drainage design.
William T. Stephens, PE	Design Engineer assigned to a broad range of areas including planning, hydraulics and roadway design. Six years experience in engineering and transportation.
Louis M. Raymond, EIT	Planning and Design Engineer-In-Training assigned to a broad range of areas including planning, traffic engineering and roadway design. Four years experience in engineering and transportation.

Thad F. Duncan, EIT	Design Engineer-In-Training assigned to a broad range of areas including traffic engineering, hydraulics and roadway design. Two years experience in engineering and transportation.

Mattson, Alexander & Associates

Richard T. Mattson, Ph.D.	Architectural Historian with a Ph.D. in historical geography and over fifteen years experience in various projects in State Historic Preservation Offices, including transportation-related environmental review projects.

Environmental Services Inc.

Gerald R. McCrain, Ph.D., CEP	B.S. and M.S. in botany and Ph.D. in resource management. Twenty years professional experience as an ecologist and natural resource planner including transportation related projects.
J. Wesley Dickson, PWS	B.S. in chemistry and M.S. in forestry resources. Professional wetland scientist and certified soil scientist with eight years of experience in endangered species and wetland functional assessments.
Richard G. Harmon, PWS	B.S. and M.S. in coastal ecosystems. Professional wetland scientist with eight years of experience in endangered species and wetland system assessments.
Greg C. Smith, Ph.D.	Ph.D. and M.A. in Anthropology and B.A. in Interdisciplinary Social Sciences / Anthropology. Nineteen years professional experience as an archaeological investigator.

CHAPTER 6

LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE STATEMENT ARE SENT

CHAPTER 6. LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE STATEMENT ARE SENT

6.1. Federal Agencies

U.S. Environmental Protection Agency – Raleigh & Atlanta
U.S. Department of Transportation - FHWA
U.S. Department of Agriculture, Forest Service - Asheville
U.S. Department of Agriculture, Soil Conservation Service
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Fisheries - St. Petersburg and Beaufort
U.S. Department of the Interior, Fish and Wildlife Service - Raleigh and Atlanta
U.S. Department of Health and Human Services, Office of Environmental Affairs
U.S. Department of Housing and Urban Development
U.S. Department of Defense
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Marine Corps - Cherry Point MCAS
Federal Emergency Management Agency
Federal Energy Regulatory Commission
Advisory Council on Historic Preservation

6.2. State Agencies

North Carolina Department of Cultural Resources
North Carolina Department of Environment and Natural Resources
- Division of Coastal Management
- Division of Water Quality
- Division of Parks and Recreation
- Division of Land Resources
- Division of Soil and Water Conservation
- Division of Marine Fisheries
- Wildlife Resources Commission

North Carolina Department of Human Resources
North Carolina Department of Public Instruction
North Carolina Department of Commerce – Travel and Tourism Division
North Carolina Department of Economic Development
State Clearinghouse

6.3. Local Governments and Agencies

Mayor of Havelock
City of Havelock Commissioners
City of Havelock, City Manager
City of Havelock, Director of Planning and Inspections
Havelock Chamber of Commerce
Chairman, Board of County Commissioners of Craven County
Craven County
Craven County Schools
Craven County Economic Development Commission
Craven - Pamlico Transportation Committee
Down East Rural Planning Organization

6.4. Public Review Locations

Havelock - Craven County Public Library
NCDOT Division 2 Office - Greenville, NC

CHAPTER 7

AGENCY COORDINATION AND PUBLIC INVOLVEMENT

CHAPTER 7. AGENCY COORDINATION AND PUBLIC INVOLVEMENT

7.1 AGENCY COORDINATION

7.1.1 Scoping Letter

A Scoping Letter requesting participation in the study and soliciting comments was sent in September, 1992 to the following agencies:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- City of Havelock
- Chairman, Craven County Commissioners
- N.C. Department of Administration, State Clearinghouse
- N.C. Department of Cultural Resources, Division of Archives and History
- N.C. Department of Environment and Natural Resources (DENR)
    - Division of Environmental Management
    - Division of Coastal Management
    - Parks and Recreation - Natural Heritage Program
    - Wildlife Resources Commission
- N.C. Department of Human Resources
- N.C. Department of Public Instruction
- N.C. Department of Transportation
    - Hydraulics Unit
    - Geotechnical Unit
    - Location and Surveys Unit

(cont.)

- Right-of-Way Branch
- Statewide Planning Branch
- Roadway Design Unit
- Office of Pedestrian and Bicycle Transportation
- Chief Engineer - Operations
- Division Engineer, Division 2

Written comments received from each agency are included in Appendix A.

7.1.2 Steering Committee/Merger Process Team

To provide coordination and develop cooperation during the study process, a Steering Committee headed by the North Carolina Department of Transportation was formed at the initiation of the study. The Steering Committee was the predecessor of the current Merger Process Team. This committee/team provided assistance, comments and review to ensure compatibility with local, state, and federal planning guidelines and objectives, and compliance with the Section 404/NEPA Merger Process Interagency Agreement. Committee members met periodically and were represented by the following agencies:

- N.C. Department of Transportation
  - Project Development and Environmental Analysis Branch
  - Roadway Design Unit
  - Transportation Planning Branch
  - Division 2 - Greenville
- Federal Highway Administration
- U.S. Army Corps of Engineers
- U.S. Forest Service
- U.S. Department of the Interior, Fish and Wildlife Service - Raleigh
- U.S. Marine Corps, Cherry Point Marine Corps Air Station - Havelock

(cont.)

- N.C. Department of Environment and Natural Resources (DENR)
    - Division of Environmental Management (Water Quality Section/Division)
    - Division of Coastal Management
    - Parks and Recreation - Natural Heritage Program
    - Wildlife Resources Commission
- Craven County
- City of Havelock

The initial steering committee meeting was conducted on May 15, 1993 to introduce the steering committee to the project and provide them with background study information developed prior to the meeting. Among the items discussed were the tentative project schedule, needed project information, suggestions for obtaining good public involvement, and alternatives to be considered. The need for updated traffic projections and methods for obtaining these projections were discussed. The need for more detailed natural resource information was also discussed and a decision was made to supplement the studies to provide this information at this meeting.

The second steering committee meeting was conducted on October 19, 1994 to present the natural resource and capacity studies completed to date and to discuss project alternatives. As a result of this meeting, the number of preliminary bypass corridors was reduced to two study corridors avoiding the known red-cockaded woodpecker cluster. All bypass corridors east of existing US 70 were eliminated from further consideration. The remaining two bypass corridors were recommended to be revised to the extent possible in order to follow alongside the existing cleared power line easements in the Croatan National Forest (CNF) to avoid additional obstructions to wildlife migration. Further coordination with the U.S. Forest Service was emphasized due to the amount of CNF lands required within the bypass corridors. It was also determined to show the proposed existing alignment improvement impacts and the two revised feasible bypass corridors at the January 1995 citizens workshop.

A third steering committee meeting was conducted on December 19, 1995 to present the updated project studies and public input regarding the two initial bypass corridors. The U.S. Army Corps of Engineers and U.S. Fish and Wildlife could not attend this meeting due to a U.S. government furlough. Since the local officials and public preferred Corridor 1, furthest from the City, and the State natural resource agencies preferred Corridor 2, closer to the City, it was decided to conduct a foraging analysis on the RCW cluster to determine if a third corridor between 1 and 2 could be considered. It was also determined to eliminate further consideration of the Improve Existing Alternatives if the Corps and Fish and Wildlife would agree. They subsequently agreed at an interagency meeting on February 15, 1996.

A fourth steering committee meeting was conducted on December 18, 1996 to present the RCW foraging analysis and determine a preferred corridor for the project. After discussing the impacts associated with each of the bypass corridors, Corridor 3 was agreed to be presented as the preferred corridor for the project during the March 1997 citizens workshop. It was agreed that Corridor 3 would satisfy the purpose of and need for the project while resulting in the least overall impacts to the environment. Also, additional information concerning CNF impacts to be provided by the USFS was recommended for inclusion in the original Environmental Assessment for the project (See Appendix B).

Due to the initiation of the Section 404/NEPA Merger Process in May 1997, the steering committee of review agencies evolved into what is now referred to as the Merger Process Team. On December 17, 1999, a Merger Process Team meeting was held to review and approve the preliminary alignment for the Preferred Alternate 3 corridor. At this meeting it was decided to conduct a field review of the three major stream crossings to determine appropriate structure sizes to minimize riverine wetlands impacts and to provide wildlife crossings. The proposed typical section was also discussed and it was noted to investigate the adequacy of the proposed 2:1 side slopes since a slope failure could result in damages to wetlands. After this meeting, a field review was conducted on

April 20, 2000 by representatives of the N.C. Department of Transportation, the U.S. Forest Service, the U.S. Fish and Wildlife Service, the N.C. Department of Environment and Natural Resources (DENR) Division of Environmental Management (Water Quality Section), and the N.C. Wildlife Resources Commission to determine the recommended structure sizes. On January 18, 2001, another Merger Process Team meeting was held to review alignment and bridging recommendations. The N.C. Department of Transportation (NCDOT) and the Federal Highway Administration (FHWA) requested and obtained Merger Process Team concurrence for avoidance and minimization in fulfillment of Merger Process Concurrence Point Number 4 for the proposed Alternate 3 alignment. On June 20, 2002, another Merger Process Team meeting was held to review and approve hydraulic recommendations.

In December 2003, FHWA and NCDOT was determined the proposed project would require additional studies to be documented in a Draft Environmental Impact Statement (DEIS). On December 22, 2003, a Merger Process Team meeting was held to discuss the project's status, the need for additional wetland delineations, and the need to restudy the improve-existing alignment alternatives. At this meeting it was agreed that the Merger Process concurrences would be reevaluated when the costs, estimated relocations, species studies and wetlands delineations were completed for all of the bypass corridors.

On August 21, 2008, a Merger Process Team informational meeting was held to reinitiate the Merger Process, present the additional project studies, and obtain any comments of the review agencies.

7.1.3 U.S. Forest Service Coordination

During the project studies, numerous meetings were conducted with U.S. Forest Service officials from the Croatan National Forest (CNF) and the regional office in Asheville, NC to obtain existing

information concerning the CNF. Once the detailed study alternatives were established, these meetings also determined additional studies needed to assess project impacts and the responsibilities for these studies. As the impacts to the CNF became known, these coordination meetings also determined impact avoidance and mitigation options. As a result of six meetings between June 1996 and May 1997, a detailed analysis by the USFS of the natural resources within the CNF affected by the proposed project was documented in the Analysis of the Alternatives for the U.S. Highway 70 Bypass, which was included in the original Environmental Assessment for the project (See Appendix B).

7.2 PUBLIC INVOLVEMENT

A Public Involvement Plan was developed to ensure public participation in the US 70 Havelock Bypass studies. The major components identified in the plan were as follows:

- Mailing List
- Key Contacts
- Toll-Free Phone Hotline
- Small Group Informational Meetings
- Local Public Officials Informational Meetings
- Citizens Informational Workshops
- Newsletters
- Coordination
- Corridor Public Hearing Map
- Corridor Public Hearing
- Post-Hearing Meeting

7.2.1 Mailing List

A mailing list consisting of local public officials, civic and business groups, governmental agencies, property owners, and interested citizens was initiated at the beginning of the study and continually

updated throughout the study process. The mailing list was used to provide public information concerning progress on the project and for notification of the public meetings.

7.2.2 Key Contacts

Officials from the U.S. Marine Corps Air Station at Cherry Point, the City of Havelock, Craven County, and the Croatan National Forest were established as key contacts for this project. The City of Havelock offered assistance for local arrangements. The principal local newspapers used to advertise meetings and workshops were the Sun Journal (daily) in New Bern in Craven County, and the News-Times (daily) in Morehead City in Carteret County.

7.2.3 Toll-Free Telephone Hotline

A toll-free telephone number was established in August 1992. The number was published in each newsletter, displayed at each workshop and made available to local organizations and agencies. Telephone responses to questions and comments were provided either immediately or within two business days.

7.2.4 Small Group Informational Meetings

The project team was available throughout the study process for presentations to neighborhood organizations, civic groups and local organizations. The public was informed of the team's availability for meeting through the newsletters. During the study process, three small group meetings were held; two with the local Chamber of Commerce, and one with County officials and business owners effected by the proposed bypass right-of-way and interchange along existing US 70.

The Havelock Chamber of Commerce requested NCDOT to present the project at their meeting on

January 17, 1996. The NCDOT Board Member and representatives of the project team attended. Two bypass corridors were described on a displayed corridor map. A third bypass corridor under development was described but was not displayed. The attendees generally seemed to support Corridor 1 since it was estimated to cost less and cause less relocation impacts. Reporters from two local newspapers attended this meeting and reported the presentation with articles and graphics provided to the attendees.

The Craven County Planning Director set up a meeting on March 17, 1997, in the Craven County Managers office to discuss County concerns. The County representatives expressed concern about their waste transfer facility located near the northwestern terminus of the subject project. It was concluded the operations would need to cease at this site when right-of-way is acquired. Impacts at the northwestern terminus of the project at the interchange of the proposed bypass and existing US 70 were also discussed. It was noted that several of the median openings along existing US 70 would be closed. However, plans to connect existing service roads along the eastern side of US 70 in the area were also noted. The extended service road will provide adequate access to a nearby school and residential development.

7.2.5 Local Public Officials Informational Meetings

Prior to each of the two Citizens Informational Workshops, a local officials informational meeting was conducted to update the local officials on the project studies and receive their input. The presentations focused on the information being presented at the Citizens Workshops, the study process, and the current project schedule.

7.2.6 Citizens Informational Workshops

Two Citizens Informational Workshops were held during the study process. A brief summary of the workshops is provided as follows:

The First Citizens Informational Workshop was held on January 17, 1995 from 4:00 to 7:00 pm at the Henry S. Whitten Community Center in Havelock. A local officials meeting was conducted prior to the workshop with approximately 20 officials attending.

The mapping and summary findings for Corridors 1 and 2 were presented at this workshop along with the Improve Existing US 70 Alternative. The following are the principal citizen concerns noted by the project officials at this meeting and the responses to the concerns.

- Many attendees desired the Morehead City end of the project to be extended further eastward along US 70 to allow future development in this area. This extension was not implemented due to potential impacts to a wetland area in the Croatan National Forest.

- Several attendees noting the proposed bypass corridors provided no direct access to the Cherry Point U.S. Marine Corps Air Station and the base is the major employer generating much of the existing traffic in the area, suggested improved access to the base be included with the project. It was explained that reduced congestion along existing US 70 would improve the access to the base.

- Numerous citizens requested consideration to be given to shifting the northern end of the project closer to the City. This shift was not implemented due to the location of the railroad separation in this area.

- Several residents with property and homes located at the western end of SR 1747 (Sunset Drive) and SR 1791 (Pulley Road), pointed out less wetlands and relocatees would be involved if Corridor 1 was shifted further west along an existing road alignment in this vicinity. This shift was implemented after further studies.

- Several attendees noted Corridor 2 would parallel a proposed Greenfield Heights Boulevard road extension from south of Miller Boulevard to US 70 at McCotter Boulevard. Most felt this extension to US 70 is needed to serve local traffic demands. This facility is included in the area thoroughfare plan.

- Several attendees expressed their belief that moving Corridor 1 further from the business area would promote and better serve future development west of the City.

- Many attendees expressed their support for a bypass noting that existing route improvements would be too damaging to existing development.

- A few business owners opposed any bypass since removing the through traffic would adversely affect their business.

A total of 76 attendees signed in at this meeting. However, the actual attendance was estimated to be approximately 100.

The Second Citizens Informational Workshop was held on March 17, 1997 from 5:00 to 8:00 pm at the Havelock High School Cafeteria. A local officials meeting was also conducted prior to this workshop with approximately 26 officials attending.

The three bypass corridors were presented, and Corridor 3 was noted as the preferred alternative. Mapping and summary findings for the three bypass corridors were displayed. The following principal citizen concerns were noted at this meeting.

- Most of the interested citizens desired to determine where their homes would be in relation

to the various corridors. It was emphasized that the corridors shown were substantially wider than the anticipated right-of-way.

- Most attendees favored Corridor 1 and Corridor 3 over Corridor 2 since they would impact less residences.

- Most attendees slightly favored Corridor 1 over Corridor 3 since it would be further from their homes and allow more area for future development.

A total of 73 attendees signed the register at this second citizens workshop meeting. However, the actual attendance was estimated to be approximately 100.

7.2.7 Corridor Public Hearing

In accordance with 23 U.S.C. 128, the North Carolina Department of Transportation certifies that a public hearing for the subject project has been held and the social, economic, and environmental impacts, consistency with local community planning goals and objectives, and comments from individuals have been considered in the selection of the recommended alternative for the project. A transcript of the public hearing was prepared and forwarded to the Federal Highway Administration along with the certification (Appendix C).

The corridor public hearing was conducted for the subject project on Tuesday May 26, 1998 at the Havelock High School. A public officials meeting was conducted prior to the hearing. At the public officials meeting all endorsed Corridor 3 for the Bypass.

There were approximately 100 attendees at the corridor hearing. One speaker opposed the project but wanted Corridor 1 or 3, if the project is built. Most endorsed the preferred Corridor 3 and many requested the project be accelerated. A few questioned the northern terminus and requested

extending the project northwestward beyond the Carolina Pines entrance. Corridor 2 received no support at either the local officials meeting or the hearing.

7.2.8 Newsletters

Three newsletters were prepared during the study and mailed to all persons on the project mailing list. These newsletters contained information about the study process, and included the toll-free hotline number and the arrangements for the next Citizens Informational Workshop. Copies of the newsletters are contained in Appendix C.

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APPENDIX

APPENDIX

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- **Appendix A2 - State Agencies**
- **Appendix A3 - Local Agencies & Private Organizations**

Appendix B - Merger Process Team / Steering Committee Meetings and Concurrence Points

Appendix C - Public Involvement

Appendix D - Relocation and Right of Way Reports

Appendix E - Federal Register Publication of Notice of Intent

Correspondence

Appendix A1 - Federal Agencies

November 12, 1992	US Department of Interior, Bureau of Mines
November 13, 1996	US Department of Interior, Fish and Wildlife Service
February 7, 1997	Department of the Army, Corps of Engineers, Wilmington
March 19, 1997	To: US Department of Agriculture, Forest Service, Asheville
May 15, 1997	US Department of Agriculture, Forest Service, Asheville
June 11, 1997	US Department of Agriculture, Forest Service, Asheville
January 22, 1998	Department of the Army, Corps of Engineers, Wilmington
March 30, 1998	US Department of Transportation, Coast Guard Portsmouth
April 20, 1998	US Department of Interior, Fish and Wildlife Service
April 27, 1998	US Department of Commerce, National Marine Fisheries
May 1, 1998	US Department of Agriculture, Forest Service
July 2, 1998	Department of the Army, Corps of Engineers, Wilmington
November 4, 1998	US Environmental Protection Agency, Region 4, Atlanta
November 4, 1998	US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service
September, 29, 2002	US Department of Agriculture, Forest Service, Asheville
August 18, 2005	Farmland Conversion Form
May 10, 2006	Department of the Army, Corps of Engineers, Wilmington (Notification of Jurisdictional Determination)

Appendix A2 - State Agencies

July 23, 1992	NC Department of Environment, Health and Natural ResourcesDivision of Forest Resources
July 31, 1992	NC Department of Environment, Health and Natural Resources Division of Environmental Management
August 1992	NC Department of Environment, Health and Natural Resources Intergovernmental Review
August 3, 1992	NC Department of Environment, Health and Natural Resources Division of Soil and Water Conservation
August 6, 1992	NC Department of Environment, Health and Natural Resources Division of Land Resources, Land Quality Section
August 6, 1992	NC Department of Environment, Health and Natural Resources Division of Environmental Management
August 21, 1992	NC Wildlife Resources Commission
August 27, 1992	NC Department of Cultural Resources Division of Archives and History
June 10, 1994	NC Department of Cultural Resources Division of Archives and History

August 31, 1994	NC Department of Cultural Resources Division of Archives and History
February 26, 1997	NC Department of Environment and Natural Resources Division of Water Quality
March 4, 1997	NC Wildlife Resources Commission
May 15, 1997	NC Department of Cultural Resources Division of Archives and History
March 25, 1998	NC Department of Environment and Natural Resources Division of Water Quality
April 13, 1998	NC Wildlife Resources Commission
April 14, 1998	NC Department of Environment and Natural Resources Division of Coastal Management
April 15, 1998	NC Department of Cultural Resources Division of Archives and History
June 25, 2002	NC Department of Cultural Resources Division of Archives and History
December 22, 2004	NC Department of Cultural Resources State Historic Preservation Office
February 22, 2005	NC Department of Environment and Natural Resources Natural Heritage Program

Appendix A3 - Local Agencies & Private Organizations

April 12, 1994	Craven-Pamlico Transportation Committee, Resolution
April 13, 1994	Carteret County Government, Resolution
April 17, 1998	Sierra Club, NC Chapter
January 14, 2002	Sierra Club, NC Chapter
February 14, 2002	NCDOT Response to Sierra Club

Appendix B - Merger Process Team / Steering Committee Meetings and Concurrence Points

May 21, 1993	First Steering Committee Minutes
November 2, 1994	Second Steering Committee Minutes
December 20, 1995	Third Steering Committee Minutes
December 18, 1996	Fourth Steering Committee Minutes
December 17, 1999	Merger Process Team Meeting Minutes
August 11, 1998	Corridor Selection Committee, LEDPA
January 11, 2001	Merger Process Team memo
January 18, 2001	Concurrence Point 4A
June 20, 2002	Concurrence Point 4B
December 22, 2003	Merger Process Team Meeting Minutes
August 21, 2008	Merger Process Team Informational Meeting Minutes

APPENDIX A1

Federal Agencies

United States Department of the Interior

BUREAU OF MINES
Intermountain Field Operations Center
P.O. Box 25086
Building 20, Denver Federal Center
Denver, Colorado 80225

TAKE PRIDE IN AMERICA

November 12, 1992

NOV 18 1992

Roy C. Shelton, Operations Engineer
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

Dear Roy Shelton:

Subject: Review of Notice of Intent to Prepare an Environmental Impact Statement for US-70 Improvements, Craven County, North Carolina (ER 92/932)

As requested by the Director, Office of Environmental Affairs, U.S. Department of the Interior, personnel of the U.S. Bureau of Mines reviewed the subject notice to determine whether mineral resources or mineral-production facilities would be adversely impacted by the proposed project. The notice pertains to proposed improvement of U.S. Route 70, including the possible construction of about 10 miles of four-lane, limited access highway on new location, to bypass the town of Havelock. Several alternatives are under consideration.

Available maps and literature indicate that deposits of limestone, sandstone, and clay occur in the project area. Sand and gravel and limestone have been mined within several miles of the area. A discussion should be included in the environmental impact statement concerning whether or not these or any other mineral resources are present in the selected project area and how such resources would be affected by project implementation. The effects of project implementation on the available supply of construction materials, both to operators and to other consumers in the region, also should be addressed. A gas pipeline passes several miles south of U.S. Route 70. Plans for protecting or relocating the pipeline, if it passes through the selected project area, should be discussed. If no adverse impacts are identified, a statement to that effect should be included in future environmental documents.

Our comments are drawn from available information, are provided on a technical assistance basis only, and may not reflect the position of the Department of the Interior. If you have questions concerning this review, please contact Jeanne Zelten at (303) 236-3400.

Sincerely,

Galen C. Knutsen

Galen C. Knutsen, Chief
Intermountain Field Operations Center

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

November 13, 1996

RECEIVED
NOV 18 1996
PLANNING & ENVIRONMENTAL

H. Franklin Vick, P. E., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
PO Box 25201
Raleigh, NC 27611-5201

SUBJ: Havelock Bypass, Craven County, Federal Aid # R-56-4(34)
Addendum to Red-cockaded Woodpecker Assessment

Dear Mr. Vick:

The U.S. Fish and Wildlife Service (Service) has reviewed your October 24, 1996 addendum to the red-cockaded woodpecker assessment prepared by Dr. J. H. Carter III and Associates for the US 70 Havelock Bypass, Craven County, North Carolina. Our comments are provided in accordance with Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

It is the Service's understanding that the addendum was prepared as a result of the April 1996 discovery that another red-cockaded woodpecker (RCW) cluster CNF-E02 became activated, within the project area. The conclusions of this report were based on the proposed construction of Corridor 1 for the US 70 Havelock Bypass, on the new RCW cluster CNF E02. The report indicated that Corridor 1 would complicate the management of RCW habitat in CNF E02 by restricting burning opportunities and therefore concluded that indirect effects "may adversely affect" this RCW cluster based on management limitations.

However, the report also indicated that sufficient foraging habitat would exist post-project to meet the Service standards, thereby eliminating direct effects from construction of Corridor 1 on RCW cluster CNF E02, thus leading to a determination of "not likely to adversely affect" the RCW from direct impacts.

The Service reviewed the original April 10, 1996 RCW assessment for

this project and concurred with the determination of "not likely to adversely affect" the RCW for the proposed construction of either Corridor 3 or 4, based on sufficient post-project foraging totals. That assessment indicated that Corridors 1 and 2 as currently designed would not impact RCW foraging habitat for RCW cluster CNF 58 (original cluster).

A November 13, 1996 phone conversation with North Carolina Department of Transportation's (NCDOT) Project Engineer, Jim Buck, revealed to Service Biologist, Candace Martino, that NCDOT currently proposes the selection of Corridor 3 for this project. Under this circumstance, the Service questions why the addendum only addresses impacts from Corridor 1, when the preferred alternative is Corridor 3?

Based on the proposed selection of Corridor 3, and the information in both the addendum and the original assessment, the Service still concurs that this project is not likely to adversely affect the red-cockaded woodpecker or any other Federally-listed endangered or threatened species, their formally designated critical habitat, or species currently proposed for Federal listing under the Endangered Species Act, as amended.

We believe that the requirements of Section 7 of the Act have been satisfied. We remind you that obligations under Section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; (3) a new species is listed or critical habitat determined that may be affected by the identified action.

Thank you for your continued cooperation with our agency.

Sincerely,

John M. Hefner
Supervisor

FWS/R4:CMartino:cm:11-13-96:919/856-4520:WP51\NCDOT\Havlk-b2.NE2

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

REPLY TO
ATTENTION OF

February 7, 1997

Regulatory Branch

Action ID No. 199302466

Mr. H. Franklin Vick, P. E., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
Post Office Box 25201
Raleigh, North Carolina 27611-5201

Dear Mr. Vick:

Please reference your January 3, 1997, transmittal requesting our comments and concurrence on the reasonable and feasible alternatives selected for study in the Environmental Impact Statement (EIS) regarding the proposed upgrading of US-70, near the Town of Havelock, in Craven County, North Carolina (State Project No. 8.T170701, TIP Project No. R-1015). Your transmittal also referenced the December 18, 1996, steering committee meeting concerning the subject project.

Based upon our review of the file, as well as information gathered during onsite investigations and our attendance at two previous steering committee meetings, we concur with your selection of Corridor Nos. (1), (2) and (3) discussed in the steering committee meeting. In addition, we concur with your selection of Corridor No. (3) as the preferred corridor for this project. This concurrence is dependent upon the bridging of Tucker Creek, the Southwest Prong of Slocum Creek and the East Prong of Slocum Creek and all adjacent wetlands to the maximum extent possible. Our decision to concur with your selection of alternatives is based on the magnitude of impacts to wetlands and other public interest factors and the relative quality of those wetlands with respect to water quality and wildlife habitat functions. As your planning process continues, please be reminded that avoidance and minimization of impacts to waters and wetlands must be undertaken to the maximum extent practicable.

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Our concurrence is also contingent upon the purpose and need for the project. The minutes of the previously mentioned steering committee meetings state the primary purpose for the project is a Havelock Bypass. We are concerned that this stated purpose and need for the project is too narrowly defined and may serve to preclude the consideration of less damaging alternatives in the NEPA documentation. We believe the basic purpose and need for the project is the upgrade US-70, near the Town of Havelock, with an associated improved level of service (LOS), and the potential for traffic accident reduction. This purpose and need can be achieved with the alternatives you have selected.

As a cooperating agency, we appreciate the opportunity to coordinate with your staff prior to the finalization of the EIS. If you have any questions regarding our comments, please do not hesitate to contact Mr. Michael F. Bell (NCDOT Coordinator/Regulatory Project Manager), of my staff at the Washington Regulatory Field Office, at telephone (919) 975-1616 (X-26).

Sincerely,

Michael D. Smith, P.W.S.
Chief, North Section
Regulatory Branch

cc: Buck

Vick

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.
GOVERNOR

DIVISION OF HIGHWAYS
P.O. BOX 25201, RALEIGH, N.C. 27611-5201

GARLAND B. GARRETT JR.
SECRETARY

March 19, 1997

Mr. Lou Woltering
Acting Forest Supervisor
US Forest Service
P. O. Box 2750
Asheville, North Carolina 28802

Dear Mr. Woltering:

SUBJECT: Mitigation for US 70, Havelock Bypass, Craven County, Federal Aid Project No. R-56-4(34), State Project No. 8.T170701, TIP No. R-1015

The preferred corridor (Corridor 3 - see attached figure) for the proposed Havelock Bypass will require approximately 250 acres of forest lands within the Croatan National Forest for right of way. The project will also fragment approximately 1100 acres of forest lands. The NCDOT anticipates a federal land transfer for the land within the right of way. However, the NCDOT proposes to exchange the fragmented lands from the Croatan National Forest with land from the Croatan Mitigation Site, formerly known as the Oates Property.

The Croatan Mitigation Site will be used to mitigate impacts to the Croatan National Forest and to wetlands. The NCDOT proposes to deed fee simple approximately 1300 acres of land from this site in exchange for the fragmented lands from the Croatan. The remaining 3000 acres of the Croatan Mitigation Site will be developed as a wetland mitigation bank. The NCDOT anticipates that upon demonstration of success, the mitigation site will be deeded to the Croatan National Forest for perpetual management.

Please confirm your continued interest in this property exchange. If you have any questions concerning this conceptual mitigation plan, please let me know.

Sincerely,

Calvin W. Leggett, P.E., Director
Planning and Programming

CWL/hfv

Attachment

cc: Larry R. Goode, Ph.D., P.E.
H. Franklin Vick, P.E

United States Department of Agriculture
Forest Service
National Forests in North Carolina
160A Zillicoa Street
P.O. Box 2750
Asheville, NC 28802

File Code: 2730/5400

Date: May 15, 1997

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MAY 19 1997
DIVISION OF HIGHWAYS
PLANNING & ENVIRONMENT

Calvin W. Leggett, P.E.
Director, Planning and Programming
State of North Carolina
Department of Transportation
Division of Highways
P.O. Box 25201
Raleigh, NC 27611-5201

Dear Mr. Leggett:

In Response to your March 19, 1997 letter and as discussed during the meeting held on May 5, 1997, we concur with the exchange and transfer of lands as part of the mitigation for the US 70, Havelock Bypass, project.

Your proposal indicates that approximately 1,300 acres of lands would be exchanged to mitigate the effects to National Forest System lands and the remaining acres (approximately 2,900 acres) would be retained by the State as a wetland mitigation bank. Upon demonstration of success, the mitigation site would be donated to the U.S. Forest Service for perpetual management.

Our authority to enter into this transfer is limited to exchanging lands of equal value based on appraised fair market value or donation. To minimize the cost in processing this transaction (re-survey of tract into two parcels, title insurance, etc...) we would like you to consider transferring the entire tract as one parcel. In this, your agency would reserve the right within the deed to complete the wetlands restoration to meet Corps of Engineers (COE) mitigation requirements.

Prior to this, appraisals will have to be conducted to establish the fair market value of the exchange tracts so we can transfer ownership of the fragmented lands to the State of North Carolina based on equal values. This will not effect COE wetlands restoration requirements as we would be willing to stipulate within the deed that the identified areas could be restored to wetlands on the entire tract regardless of the actual acres involved in the exchange and donation.

Thank you for the efforts both you and your staff have placed in the coordination of this project on National Forest System lands. Should you have any questions regarding this, please call Ray Johns at 704-257-4859.

Sincerely,

John F. Ramey

JOHN F. RAMEY
Forest Supervisor

United States Department of Agriculture
Forest Service
National Forests in North Carolina
160A Zillicoa Street
P.O. Box 2750
Asheville, NC 28802

File Code: 2360

Date: June 11, 1997

Mr. Nicholas L. Graf, P.E.
Division Administrator
U.S. Dept. of Transportation
310 New Bern Avenue, Suite 410
Raleigh, N.C. 27601

Dear Mr. Graf:

Thank you for sending a copy of the "Archeological Background Report, US 70 Havelock Bypass, Craven County, NC" by Greg C. Smith. This report is an excellent synthesis of archeological research and environmental information. We agree that testing of significant sites is a preferred alternative to preservation by avoidance. Archeological testing will add to our understanding of the area.

Please let us know when fieldwork is planned so we can coordinate with the crew and expedite ARPA permitting and review.

Sincerely,

for PAUL F. SCHULLER
Director, Forest, Fire &
Heritage Resources Staff

cc: A. Lee Novick, NC DOT
Greg C. Smith
Croatan
Lands

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

January 22, 1998

Regulatory Division

Ms. Gail Grimes, P.E.
North Carolina Department of Transportation
Division of Highways
Post Office Box 25201
Raleigh, North Carolina 27611-5201

Dear Ms. Grimes:

We have reviewed the preliminary Environmental Assessment (EA) for the proposed US 70 Havelock Bypass (TIP No. R-1015) and offer the following comments:

1. From a Section 404 perspective, this EA appears to be adequate to meet our requirements under the National Environmental Policy Act (NEPA).

2. Clarification needs to be provided in the document that all species, both proposed and listed, that are subject to Section 7 of the Endangered Species Act (ESA) have been adequately addressed. It should be explained in the document why Proposed Endangered, Threatened, and Sensitive (PETS) species are discussed. Without such explanation it appears that proposed species are treated differently from listed species under the ESA. An explanation why the PETS term is used and a statement that all species subject to the ESA are addressed within the Section 7 discussion should make this more clear.

3. An agreement with the U.S. Forest Service will need to be developed that will preclude timber cutting within the proposed mitigation site.

4. We believe that it would be advantageous to place this project under the new NEPA/404 processing procedures. Accordingly, once the Draft EA is completed, you should submit your permit application and circulate the Draft EA for review.

If we can provide additional assistance, please let me know. I can be reached at (910) 251-4952.

Sincerely,

David Franklin
Special Projects Manager

Copy Furnished:

Mr. Roy Shelton
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

Mr. H. Franklin Vick, P.E.
Manager, Planning and Environmental Branch
Division of Highways
North Carolina Department of Transportation
Post Office Box 25201
Raleigh, North Carolina 27611

Davis/Grimes

U.S. Department of Transportation
United States Coast Guard

Commander
United States Coast Guard
Atlantic Area

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol:
Phone: (757)398-6587

16590
March 30, 1998

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DIVISION OF HIGHWAYS
PLANNING & ENVIRONMENTAL BRANCH

H. Franklin Vick, PE
North Carolina Dept. of Transportation
N.C. Division of Highways
Planning and Environmental Branch
P.O. Box 25201
Raleigh, North Carolina 27611

Dear Mr. Vick:

This is in response to your letter dated February 23, 1998, requesting Coast Guard review of the Environmental Assessment (EA) for the Havelock Bypass in Craven County, North Carolina.

The EA states there will be five stream crossings (pgs. 4-17), four on Slocum Creek and one on Tucker Creek. These waterways are subject to tidal influence, thus, they are considered legally navigable for Bridge Administration purposes. These creeks, at the bridge sites, also meet the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70. Advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given his advance approval to the construction of bridges across such waterways; therefore, an individual permit will not be required for any bridge in this project.

If you have any questions regarding this matter, please contact Mr. Terrance Knowles, at the phone number or address shown above.

Sincerely,

ANN B. DEATON
Chief, Bridge Administration Section
By direction of the Commander
Fifth Coast Guard District

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

April 20, 1998

Mr. David Robinson, P.E., Acting Manager
Planning and Environmental Branch
N.C. Division of Highways
P.O. Box 25201
Raleigh, NC 27611

Dear Mr. Robinson:

This responds to your letter of February 23, 1998, requesting comments from the U.S. Fish and Wildlife Service (Service) on the Environmental Assessment (EA), dated January 1998, for the US 70, Havelock Bypass (TIP No. R-1015), Craven County, North Carolina. This report is provided in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661-667d) and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

According to the EA, the North Carolina Department of Transportation (NCDOT) proposes the construction of a new location, 16-kilometer (10-mile), four lane divided, controlled-access freeway for US 70 around the southwest side of the City of Havelock and the Cherry Point U.S. Marine Corps Air Station (MCAS). All of the reasonable and feasible alternatives will impact lands within the Croatan National Forest (CNF).

Purpose and Need

The EA points out that existing US 70 is the only principal arterial through the City of Havelock, and is one of only three routes providing highway access into the City and to the Cherry Point MCAS. In Havelock, US 70 is a multilane arterial with twelve signalized intersections concentrated along the route. Each new traffic signal and crossing along US 70 delays through traffic and deteriorates the level of traffic service through the City. Reducing congestion along existing US 70 by constructing the Havelock Bypass will eliminate the need for other highway improvements in the area and will reduce accident rates along the existing route through the City by removing vehicular traffic that is just passing through in either direction. Other needs that will be addressed include contributing to improving hurricane evacuation efficiency, improved commuter access to Cherry Point MCAS and Naval Aviation Depot, the principal employer for both civilian and military personnel, and decreased response time for emergency vehicles.

The Service concurs that the primary purpose and needs for this project have been adequately stated and supported by written discussion and tabular data.

However, due to the magnitude of the impacts associated with this project we do not believe this project should be processed as an EA/FONSI as stated in the cover letter. Particularly since the meeting notes of June 19, 1997 for this project indicate that the Federal Highway Administration (FHWA) has decided to process this as an EA rather than an EIS simply to reduce review time. While we acknowledge that the document has been prepared in more detail than the usual EA there are, never-the-less, significant questions regarding mitigation for the loss of riverine wetlands, and compliance with Section 4(f) of the Department of Transportation Act of 1966.

Alternatives Analysis

Initially, three alternatives were carried forward for detailed study, an Improve Existing US 70 Freeway alternative, and two bypass corridors. The improvements on existing alignment would provide a six-lane, controlled-access, median-divided freeway with interchanges at six locations. This alternative would reduce congestion and delay, and provide adequate traffic service for a substantial volume of through traffic. However, this alternative would require the relocation of many businesses (57) adjacent to the existing route and the construction of adjacent parallel service roads to serve the remaining businesses. This alternative would add approximately $40,000,000 over and above the cost for either of the two by-pass alternatives.

Two by-pass corridors providing a controlled-access, four-lane divided freeway on new alignment were selected as reasonable and feasible alternatives for the proposed project. Alternative 1, the outside preliminary Corridor C was developed to minimize impacts to existing development in the area, and Alternative 2, the inside preliminary Corridor A, was developed to minimize impacts to the natural areas in the Croatan National Forest. Alternative 2 has more social and economic impacts than Alternative 1, which is further from the City of Havelock, requires more wetland acreage and is more expensive than Alternative 1 because, being closer to the City, Alternative 2 requires almost 5 times as many residential re-locations than Alternative 1. However, being closer to the City, Alternative 2 fragments a much smaller portion of the Croatan National Forest.

After further assessment and coordination with resource agencies, Alternative 3 was developed to further reduce impacts. Alternative 3 is a compromise that combines advantages of the other two alternatives. As with 1 & 2, the natural resource agencies encouraged the placement of Alternative 3 as close to existing cleared power transmission line easements as possible to avoid additional fragmentation of wildlife habitat. Consequently, Alternative 3 was located along an existing cleared power transmission line easement connecting Alternative 1 near SR 1756 (Lake Road) with Alternative 2 to the north. To reduce fragmentation of the Croatan National Forest, Alternative 3 is closer to the City than Alternative 1, and to reduce the residential relocations in the vicinity of SR 1756 (Lake Road), Alternative 3 is further from the City than Alternative 2.

NCDOT has selected Alternative 3 (now known as Corridor 3) as the preferred alternative. The Service supports this decision. However, the Service retains the right to recommend other alternatives if data not contained in this EA become available and to provide comments on the final alignment of the highway within the corridor selected.

Wetlands

As required by the 404(b)(1) guidelines of the Environmental Protection agency, the NCDOT should first endeavor to avoid, then minimize, and finally compensate for wetland losses that would be incurred if this project is implemented. As noted in Table 4.7.1 (pg. 4-46) there will be wetland losses associated with construction of the preferred alternative. The EA (pg. 4-48) presents measures that the NCDOT has committed to for avoidance and minimization of wetland losses. These include selection of an alternative that minimizes encroachment into, and fragmentation of, the large pocosin-like pine dominated wetlands in the study corridor including the Croatan National Forest, siting the corridor as close to existing power line right-of-way as practicable, reducing the planned median width from 70 feet to 46 feet, and the use of Best Management Practices for Protection of Surface Waters.

The EA indicates (pg. 4-49) that a 4100-acre mitigation site has been purchased, portions of which will be used to mitigate for unavoidable impacts associated with this project. Known as the Croatan Wetland Mitigation Bank (CWMB), this parcel is within the boundaries of the Croatan National Forest and contiguous to parcels owned by the U.S. Forest Service (USFS). Parts of the tract were formerly used as a private hunting club and for commercial timber production. The entire site is non-riverine pocosin which has been ditched and drained, and timbered for 45 years. About 93 percent of the site has been drained. Soils mapping and site investigations indicate approximately 95 percent of the site was wetland historically. NCDOT proposes to restore and enhance the degraded wetlands within the CWMB and ultimately to deed the entire site, fee simple, to the USFS.

While the Service is satisfied that NCDOT has arrived at a satisfactory mitigation compromise for non-riverine wetland losses, the issue of compensation for riverine wetland impacts is left unresolved except to say that these project-related losses will be mitigated elsewhere once they have been quantified and a suitable mitigation site has been identified. Table 4.7.1 (pg.4-46) indicates that at least 11.0 acres of riverine wetlands will be impacted by Corridor 3, however, notes from the monthly permit meeting of June 16, 1997 indicate that approximately 40 acres of riparian habitat will be impacted. In addition, it is stated on page 1 of Appendix G, Conceptual Mitigation Plan, that "efforts are underway to identify suitable sites elsewhere for mitigating riverine wetland impacts associated with the Havelock Bypass." The NCDOT should describe what effort has been made to accurately quantify riverine wetland losses (is it 11 or 40 acres, or somewhere in between?), and describe, in more detail, what effort has been made to locate and evaluate suitable potential mitigation sites for the riverine wetland losses associated with implementation of the preferred alternative. If preliminary candidate sites are under consideration, these should be presented for agency review and comment.

Endangered Species

The Service notes that the EA provides a detailed discussion of the potential project related impacts on Federally-listed threatened and endangered species, in particular the red-cockaded woodpecker (RCW) (*Picoides borealis*), and includes our letter of November 13, 1996 giving our concurrence that implementation of the Corridor 3 alternative is not likely to adversely affect the RCW or any other Federally-listed or proposed species, or their habitats, under our jurisdiction. As noted, however, this decision would be reconsidered if additional information on listed species that could be impacted by this project comes to light, or if there is a significant change in project plans.

Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966 specifies that the Secretary of Transportation may not approve the use of land from any publicly owned park, recreational area, wildlife and waterfowl refuge, or other designated area, purchased all, or in part, with Federal funds unless a determination has been made that: (1) there is no feasible and prudent alternative to the use of the land from the property and (2), the action includes all possible planning to minimize harm to the property from such use.

The EA is incomplete in that it does not address Section 4(f) even though it is our understanding that National Forests have been established using Federal funding and among their purposes are use and enjoyment of recreational opportunities by the public. This document should either address this issue or provide justification for a declaration of no 4(f) involvement. Either way there should be a statement in the EA addressing Section 4(f).

Summary

The Service considers many sections of this EA to adequately address the impacts of the proposed project. However, issues that are yet to be resolved are; (1) mitigation for a significant number of acres of riverine habitat, and (2) the question of a 4(f) taking has not been adequately addressed, making this an incomplete environmental document.

A plan for compensatory mitigation of unavoidable riverine wetland losses has not been developed and a Section 4(f) statement has not been included in the EA. In light of these concerns, the Service does not concur with a FONSI for this project and we feel that these issues would be better addressed in an EIS. We request that documentation, other than the opportunity to reduce internal review time, be provided to justify preparation of an EA rather than an EIS.

The Service appreciates the opportunity to comment on the project. Please advise us of any changes in project plans and provide us with your response to the issues we have raised in this letter. If you have any questions regarding these comments, contact Tom McCartney at (919) 856-4520, ext. 32.

Sincerely

John M. Hefner
Field Supervisor

cc:
NCDOT, Raleigh, NC (Charles Burton)
FHWA, Raleigh, NC (Nicholas Graf)
WRC, Raleigh, NC (Frank McBride)
EPA, Atlanta, GA (Ted Bisterfeld)
COE, Washington, NC (Mike Bell)

FWS/R4:TMcCartney:TM:04/17/98:919/856-4520 extenion 32:\havelock.wpd

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
9721 Executive Center Drive N
St. Petersburg, Florida 33702

April 27, 1998

Mr. H. Franklin Vick, P.E. Manager
Planning & Environmental Branch
N.C. Division of Highways
P.O. Box 25201
Raleigh, North Carolina 27611

Dear Mr. Vick:

The National Marine Fisheries Service (NMFS) has reviewed the Federal Environmental Assessment (EA) for US 70, Havelock Bypass, Craven County, North Carolina, State Project No. 8.T170701 Federal Aid Project No. STP-NHF-F-56-4(34), TIP ID No. R-1015. The EA addresses the environmental impacts associated with the North Carolina Department of Transportation's planned US 70 Bypass of Havelock, North Carolina.

NMFS trust resources and the proposed project's potential impacts on these resources are adequately addressed in the EA. Therefore, we have no comments.

Sincerely,

for Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

cc: FWS, ATLA, GA
FWS, Raleigh, NC
EPA, ATLA, GA
NCDEHNR, Raleigh, NC
NCDEHNR, Morehead City, NC
COE, Wilmington, NC
F/SER4

United States Department of Agriculture
Forest Service
National Forests in North Carolina
160A Zillicoa Street
P.O. B0x 2750
Asheville, NC 28802

File Code: 2730/7710

Date: May 1, 1998

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MAY 13 1998
DIVISION OF HIGHWAYS
PLANNING & ENVIRONMENTAL BRANCH

Mr. Richard B. Davis
North Carolina Department of Transportation
Planning and Environmental Branch
P.O. Box 25201
Raleigh, NC 27611-5201

Dear Mr. Davis:

The proposed State Highway Project for the construction of US 70 (Havelock Bypass) in Craven County, North Carolina involves National Forest lands within the boundary of the Croatan National Forest. Since this is a Federal-Aid project, a determination of the applicability of Section 4(f) of the Department of Transportation Act of 1966, 23 USC 138, is required.

The National Forest System lands affected by the proposed project are presently designated and utilzed for multiple use pruposes under the Multiple Use Sustained Yeild Act. The management of these lands is directed by the Croatan/Uwharrie Forest Land and Resource Management Plan, as required by the National Forest Management Act.

This document recognizes that the Forest Service is the Agency responsible for coordinating the resource use and values of National Forest lands and for determining the proper use of such lands in accordance with the purposes for which the lands were acquired and reserved. This document does not subordinate the use and/or managment of the lands in question to a single resource, nor does it limit or affect in any way the authority of the Forest Service in connection with the proper administration and protection of National Forest System Land.

The proposed highway project does not require the use of lands from any presently used or planned park or recreational area within the Croatan National Forest. The project does not encroach on any special interest areas, preserves, sanctuaries, reservations or other specialy designated lands established by Congress. The project will not affect any historic site on or eligible for the National Register of Historic Places, nor will it require the use of lands fro any historic site of state or local significance.

The proposed State Project to construct the US 70 Bypass (TIP #R-1015) located in Craven County, North Carolina, has been reivewed against the criteria of Seciton 4(f) of the Department of Transportation Act of 1966 (28 USC 138), as amended. With this, I have determined that this project does not encroach on or use land form any of the types of specially designated areas described above and consideration under Section 4(f) is not required.

Sincerely,

John F. Ramey

JOHN F. RAMEY
Forest Supervisor

Caring for the Land and Serving People

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DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

REPLY TO
ATTENTION OF

July 2, 1998

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DIVISION OF
HIGHWAYS
ENVIRONMENTAL BRANCH

Planning Services Section

Mr. William D. Gilmore, P.E., Manager
Planning and Environmental Branch
North Carolina Division of Highways
Post Office Box 25201
Raleigh, North Carolina 27611-5201

Dear Mr. Gilmore:

This is in response to a letter from your office dated February 23, 1998, requesting our comments on the "Federal Environmental Assessment for US 70, Havelock Bypass, Craven County, State Project No. 8.T170701, Federal Aid Project No. STP-NHF-F-56-4(34), TIP ID No. R-1015" (Regulatory Branch Action I.D. 199302466).

Our comments involve impacts to flood plains and jurisdictional resources, which include waters, wetlands, and U.S. Army Corps of Engineers projects. There are no Corps projects which would be impacted by the proposed improvements. Enclosed are our comments on the other issues.

We appreciate the opportunity to comment on this project. If we can be of further assistance, please contact us.

Sincerely,

John B. Woolwine
for C. E. Shuford, Jr., P.E.
Chief, Technical Services Division

Enclosure

U.S. ARMY CORPS OF ENGINEERS, WILMINGTON DISTRICT, COMMENTS ON:

"Federal Environmental Assessment for US 70, Havelock Bypass, Craven County, State Project No. 8.T170701, Federal Aid Project No. STP-NHF-F-56-4(34), TIP ID No. R-1015" (Regulatory Branch Action I.D. 199302466).

1. **FLOOD PLAINS: POC - Bobby L. Willis, Planning Services Section, at (910) 251-4728**

The proposed project is located in Craven County and partially within the jurisdiction of the city of Havelock, both of which are participants in the National Flood Insurance Program. Based on a review of Panels 390 and 480 of the May 1987 Craven County Flood Insurance Rate Map (FIRM), Corridor 1 crosses an approximately mapped portion of Southwest Prong Slocum Creek. From a review of Panels 8 and 12 of the May 1987 City of Havelock FIRM, Corridors 2 and 3 cross approximately mapped portions of Southwest Prong Slocum Creek and East Prong Slocum Creek. These crossings are identified in Sections 3.6.4 and 4.5.3 and shown on Figure 3.4 of the Environmental Assessment (EA). For these crossings, we suggest that your agency coordinate with the county and city to ensure compliance with their flood plain ordinances.

Incidentally, we wish to commend your agency on the extensive discussion of flood plains contained in the EA. However, we would like to suggest some corrections in the description of the flood plains, as contained on page 3-35. For the first and second sentences on this page, we suggest the following revisions, as shown in bold: "According to the detailed flood study for Tucker Creek, immediately downstream of the study area, the designated floodway is 30 meters (100 feet) wide, with a 100-year **floodway** elevation of 6.6 meters (21.7 feet **N.G.V.D.). The 100-year unencroached flood elevation (without floodway) at this location is 6.4 meters (20.9 feet) N.G.V.D."** For the last two sentences of the second paragraph, we suggest the following wording: "The 100-year **riverine** flood elevation with the floodway at this location is 2.6 meters (8.6 feet) **N.G.V.D.** The 100-year storm surge elevation, **which controls** at this location, is 2.7 meters (8.9 feet) **N.G.V.D.**" For the fourth and fifth sentences of the third paragraph, we suggest the following: "The floodway width **on the upstream side of Miller Boulevard,** (downstream of existing US 70), is 41 meters (135 feet). The 100-year **floodway elevation at this location is 10.9 feet, and the unencroached 100-year flood elevation is** 3.2 meters (10.4 feet) **N.G.V.D.**"

U.S. ARMY CORPS OF ENGINEERS, WILMINGTON DISTRICT, COMMENTS ON:

"Federal Environmental Assessment for US 70, Havelock Bypass, Craven County, State Project No. 8.T170701, Federal Aid Project No. STP-NHF-F-56-4(34), TIP ID No. R-1015" (Regulatory Branch Action I.D. 199302466).

2. **WATERS AND WETLANDS: POC - Mr. Michael Bell, NCDOT Coordinator/Regulatory Project Manager, Washington Field Office, Regulatory Division, at (919) 975-1616, Extension 26**

a. Please reference our February 7, 1997, letter from Mr. Michael Smith, Chief, North Section, Regulatory Branch, to Mr. H. Franklin Vick of NCDOT. The letter provides concurrence with NCDOT's preferred alternative for the subject project. All the selected alternatives have substantial wetland impacts. Our concurrence with this EA and the preferred alternative corridor is contingent upon the bridging of Tucker Creek, the Southwest Prong of Slocum Creek, and the East Prong of Slocum Creek and all adjacent wetlands. The bridging of these floodplains would minimize riverine wetland impacts associated with this project. In addition, it is stated on page one of Appendix G, "Conceptual Mitigation Plan," that "efforts are underway to identify suitable sites elsewhere for mitigating riverine wetland impacts associated with the Havelock Bypass." By bridging all riverine wetlands, NCDOT can concentrate its efforts on mitigation for non-riverine wetlands.

b. Page S-12. S.8. **"UNRESOLVED ISSUES."** The EA states there are no unresolved issues associated with this project. We believe there is a major unresolved issue. This section should include compensation for, and the bridging of, riverine wetlands as major unresolved issues. Our concurrence with the preferred alternative is contingent upon the avoidance of high quality wetland systems. Additionally, it is our policy that prior to issuance of a Department of the Army (DA) Permit, NCDOT will provide this office with an approved, final mitigation plan for this project. Development of these plans can require a significant amount of time and could lead to delays in the issuance of permits if not addressed in a timely manner. Accordingly, NCDOT should pursue development of this plan as early as possible. Bridging riverine systems is an appropriate wetland avoidance measure for this project. This avoidance method would alleviate the need for a riverine wetland mitigation plan.

c. Page S-12. S.9. **"AREAS OF CONTROVERSY."** The EA states there are no areas of controversy associated with this project. The repeated issue of NCDOT filling high quality riverine wetlands is a major area of controversy. To date, very little success has been attained by NCDOT attempting to restore riverine systems. This lack of success compels NCDOT to bridge the riverine systems.

U.S. ARMY CORPS OF ENGINEERS, WILMINGTON DISTRICT, COMMENTS ON:

"Federal Environmental Assessment for US 70, Havelock Bypass, Craven County, State Project No. 8.T170701, Federal Aid Project No. STP-NHF-F-56-4(34), TIP ID No. R-1015" (Regulatory Branch Action I.D. 199302466).

2. **WATERS AND WETLANDS: (Continued)**

d. Page 4-38. **"Aquatic."** This paragraph states, "The bridges proposed for the Southwest Prong of Slocum Creek and the East Prong of Slocum Creek, and the three barrel at 3-meter by 1.8-meter (10-foot by 6-foot) reinforced box culvert proposed for Tucker Creek will allow for continuation of present flow at these major stream crossings, thereby protecting stream integrity and maintaining access for aquatic wildlife." As mentioned above, our concurrence of the preferred alternative is contingent on bridging these streams and all adjacent wetlands. Bridging these wetland systems will protect stream integrity and maintain access for aquatic life.

e. Page 4-51. **"4.11 CONSTRUCTION IMPACTS."** This paragraph does not discuss the issues of waste disposal and borrow and fill activities with regard to regulated wetlands. The contractors are not responsible for these activities, NCDOT is the applicant and has sole responsibility. The following paragraph is our policy concerning responsibility for borrow and waste activities and should be reflected in the document.

"NCDOT and its contractors and/or agents shall not excavate, fill, or perform landclearing at any time in the construction or maintenance of this project within waters and/or wetlands, except as authorized by the Department of the Army (DA) permit or any modification to the permit. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this project without appropriate modification of the individual permit. To ensure that all borrow and waste activities occur on high ground, except as authorized by individual DA permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. Documentation of the location and characteristics of all borrow and disposal sites associated with this project will be available to the Corps on request."

As a cooperating agency, we appreciate the opportunity to coordinate with your staff prior to the finalization of the DEIS. As stated above, our main concern with this project is the avoidance of impacts to riverine wetland systems associated with the proposed project. Also, as agreed to in our recent interagency agreement, please notify us as soon as you schedule a public hearing concerning this project.

If you have any questions regarding our comments, please do not hesitate to contact Mr. Bell.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

199302466
MB
EPA

NOV 4 1998

4WM-WCWQG/KM

RECEIVED
NOV 13 1998
REGULATORY BRANCH

Colonel Terry R. Youngbluth
District Engineer
ATTN: Mr. Michael F. Bell
Washington Regulatory Field Office
Wilmington District, Corps of Engineers
P.O. Box 1000
Washington, NC 27889-1000

SUBJ: NCDOT; Construction of U.S.70 - Havelock Bypass
Action ID No. 199302466

Dear Colonel Youngbluth:

This is in response to the above-referenced public notice for North Carolina Department of Transportation (NCDOT), dated October 15, 1998, for proposed alternatives for construction of the U.S. 70 Bypass around Havelock, Craven County, North Carolina.

The U.S. Environmental Protection Agency, Region 4, Wetlands Section (EPA), has reviewed this proposal, along with the Environmental Assessment and Natural Systems Report, and believes that, for all three alternatives, the permit applicant has not avoided or minimized wetland impacts to the maximum extent. Prior to a discharge of fill material into waters of the United States, the 404(b)(1) Guidelines of the Clean Water Act (Guidelines) require a sequential evaluation and reduction in impact. By Memorandum of Agreement (MOA) between the U.S. Army Corps of Engineers (Corps) and EPA dated February 6, 1990, this sequencing may be circumvented when the Corps and EPA agree that the proposed discharge is either necessary to avoid environmental harm, or can be reasonably expected to result in environmental gain or insignificant environmental loss. At this point in time, we have not agreed that this project meets these requirements. EPA believes that the NCDOT should propose bridging of all riverine wetlands and as much of the forested non-riverine wetlands as feasible, in order to further minimize impacts.

Until wetlands impacts are minimized as much as possible for each alternative, EPA cannot concur with the preferred alternative or recommend either of the other two alternatives.

It is the opinion of EPA that this project, as proposed, may result in substantial and unacceptable impacts to aquatic resources of national importance. Areas such as the one

proposed for impacts are important to North Carolina in terms of water quality, water quantity, flood attenuation, and wildlife habitat and food chain maintenance. The proposed design does not avoid or minimize the proposed impacts, and therefore appears contrary to the 404(b)(1) Guidelines.

EPA recognizes that the property for the Croatan Wetland Mitigation Bank has been purchased by NCDOT for use as mitigation of non-riverine wetland impacts. Also, EPA commends the NCDOT for accepting in the Environmental Assessment that EPA mitigation guidelines require 2:1 mitigation ratio for wetland restoration, 3:1 for creation, 4:1 for enhancement, and 10:1 for wetland preservation. However, a mitigation plan for this project has not been submitted. Further, no site has been identified or proposal has been submitted to compensate for losses of riverine wetlands. EPA recommends that without specific information on proposed mitigation or a functional, approved mitigation bank, the project should not be authorized.

EPA recommends denial of the proposed activity because of the importance of the wetlands resource which would be adversely impacted by the issuance of this permit, the lack of a complete mitigation plan, and non-compliance with the Section 404(b)(1) Guidelines. This letter follows the field level procedures outlined in the August 1992 Memorandum of Agreement between the EPA and the Corps, Part IV, paragraph 3, regarding Section 404(q) of the Clean Water Act, 33 U.S.C. §1344(q).

Thank you for the opportunity to comment on this project. If you have any questions regarding these comments, please contact Kathy Matthews at the above address or by telephone at (404) 562-9373.

Sincerely,

William L. Cox, Chief
Wetlands Section

cc: NCDENR, Raleigh
USFWS, Raleigh
NCWRC, Raleigh
NCDOT, Raleigh

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive N
St. Petersburg, Florida 33702

November 4, 1998

Colonel Terry R. Youngbluth
District Engineer, Wilmington District
Department of the Army, Corps of Engineers
P. O. Box 1890
Wilmington, North Carolina 28402-1890

Attention Michael F. Bell

Dear Colonel Youngbluth:

In accordance with Part IV, Section 3(a) of the current Memorandum of Agreement between the Departments of Commerce and the Army, I am notifying you of the National Marine Fisheries Service's (NMFS) intent to consider referral of Department of the Army (DOA) permit application 199302466 dated October 15, 1998. At issue is the request by the North Carolina Department of Transportation (NCDOT) to place fill material in wetlands associated with the Neuse River and its tributaries to construct the proposed improvements to US 70 from southeast of SR 1824 to SR 1760 in the vicinity of Havelock, Craven County, North Carolina. The purpose of the project is to improve traffic flow on US 70 by providing a bypass of the Town of Havelock. This letter details reasons: (1) why there may be substantial and unacceptable adverse impacts to aquatic resources of national importance; and (2) why issuance of the specified permit must be conditioned or denied to protect these resources.

This public notice addresses three alternative by-pass corridors each providing a controlled-access, four-lane divided freeway on a new alignment. The Corridor 1 alternative minimizes effects on existing development in the area and impacts 15.6 acres of riverine and 145.6 acres of non-riverine wetlands for a total wetland loss of 161.2 acres. The Corridor 2 alternative minimizes effects on the natural areas of the Croatan National Forest and impacts 11.3 acres of riverine and 156.5 acres of non-riverine wetlands for a total wetland loss of 167.8 acres. The Corridor 3 alternative is a compromise that combines the advantages of the other two alternatives and impacts 11.0 acres of riverine and 144.5 acres of non-riverine wetlands for a total wetland loss of 155.6 acres.

The NMFS has participated in scoping meetings and preapplication on-site inspections of the various alternative alignments since 1992. We have also reviewed and commented on the Federal Environmental Assessment (EA) dated January 27, 1998. Wetlands impacted by the project include

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a mixture of riverine and non-riverine wetland types. Non-riverine wetlands found in the project area are vegetated with species such as river birch (*Betula nigra*), loblolly pine (*Pinus taeda*), red maple (*Acer rubrum*), red bay (*Persea borbonia*), sweet bay (*Magnolia virginiana*), tulip poplar (*Liriodendron tulipifera*), and sweet gum (*Liquidambar styraciflua*). These wetlands play an important role in maintaining water quality in the project area by intercepting storm water run-off and removing sediments, excessive nutrients, and pollutants before they can reach adjacent surface waters.[1] The North Carolina Division of Water Quality, Wetland Restoration Program, has identified this type of wetlands as very important for maintaining water quality in the Neuse River.[2]

Of particular concern to the NMFS is the loss of riverine wooded swamp wetlands associated with project area streams which flow into the Neuse River. These wetlands are vegetated with species such as black gum (*Nyssa sylvatica*), tupelo gum (*Nyssa aquatica*), green ash (*Fraxinus pennsylvanica*), bald cypress (*Taxodium distichum*), and water oak (*Quercus nigra*). Seasonally flooded riverine swamps also function to maintain water quality and are a source of primary productivity that provides organic detritus, an important component of the aquatic food chain that supports fishery resources.[3]

All project alternatives would cross the upper reaches of Slocum and Tucker Creeks, tributaries of the Neuse River. The Neuse River supports estuarine dependent and anadromous fishery resources for which the NMFS is responsible. Commercially and recreationally important fishery resources found in the project area include striped bass (*Morone saxatilis*), American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), spot (*Leiostomus xanthurus*), flounders (*Paralichthys spp.*), Atlantic menhaden (*Brevoortia tyrannus*), striped mullet (*Mugil cephalus*), shrimp (*Penaeus spp.*), and blue crab (*Callinectes sapidus*).[4] A fishery management plan (FMP) for shrimp has been developed by the South Atlantic Fishery Management Council (SAFMC) because shrimp stocks are reduced. Additionally, the Mid-Atlantic Fishery Management Council, in cooperation with the SAFMC, has developed a FMP for summer flounder. The FMPs for shrimp and flounder specify rigorous management and protection of the managed species and their essential habitat.

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[1]USDA. Forested Wetlands: Functions, Benefits, and Use of Best Management Practices. 1995. Forest Service. NA-PR-01-95. 60 pp.

[2]Basin Wide Wetlands and Riparian Restoration Plan for the Neuse River Basin, 1998. NC wetland Restoration Program, Division of Water Quality, Raleigh, NC.

[3]Wharton, C.H., W.M. Kitchens, E.C. Pendleton, and T.W. Sipe. 1982. The ecology of bottomland hardwood swamps of the Southeast: a community profile. U.S. Fish and Wildl. Serv., Biol. Ser. Prog., Washington, D.C. FWS/OBS-81/37.

[4]Nelson, D.M., E.A. Irlandi, L.R. Settle, M.E. Monaco, and L.C. Coston-Clements. 1991. Distribution and Abundance of Fishes and Invertebrates in Southeast Estuaries. ELMR Rept. No. 9. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD. 177p.

Anadromous fishes are dependent on hardwood swamps for pulses of detritus which form the basis of complex food webs that support fish productivity in this ecosystem.[5] The decline in landings of these important species in recent years has been attributed to declines in water quality and losses of habitat.[6] Under the Atlantic Coastal Fisheries Cooperative Management Act of 1993, the Atlantic States Marine Fisheries Commission is developing management plans for these species which include protection of managed species and their essential habitats. In addition, pursuant to Section 906(e)(1) of the Water Resources Development Act of 1986 (PL 99-602) we regard these fishery resources and their associated habitat as aquatic resources of "national economic importance".

The public notice requests input on the merits of the project and on the selection of the least environmental damaging practical alternative (LEDPA). Wetland impacts are unavoidable if this project is to be constructed. The EA and this notice identify Corridor 3 as the applicant's preferred alternative. We concur with the selection of Corridor 3 as the LEDPA.

Even thought this project has been under development for some time, a number of issues remain unresolved. For example, following selection of the LEPDA, site specific highway design plans that include measures such as bridging high quality wetlands, reductions in median width, and steep side slops to further minimize wetland losses must be provided for review and comment. In addition, while the mitigation site (Croatan Wetland Mitigation Bank) proposed in the public notice is acceptable to the NMFS, neither a mitigation banking instrument nor a mitigation plan for the site is available at this time. Furthermore, mitigation related, project specific details such as, the ratios needed to offset wetland losses and/or credits to be debited from the bank have not been discussed.

In view of the above unresolved issues, we recommend against federal authorization of this project at this time. A representative of our Beaufort Facility is available at 252-728-5090 to discuss our concerns. Thank you for the opportunity to provide these comments early in the project planning process. If we can be of further assistance, please advise.

Sincerely,

for Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

---

[5]Meeter, D.A., R.J. Livingston, and G.C. Woodsum. 1979. Long term climatological cycles and population changes in a river-dominated estuarine system. pp. 315-338. In R.J. Livingston (ed.) Ecological Processes in Coastal and Marine Systems. Plenum Press. New York, New York.

[6]Epperly, S.P. and S.W. Ross. 1986. Characterization of the North Carolina Pamlico-Albemarle Estuarine Complex. NOAA Technical Memorandum NMFS-SEFC-175.

United States Department of Agriculture | Forest Service | National Forests in North Carolina Supervisor's Office | 160A Zillicoa Street P.O. Box 2750 Asheville, NC 28802 828-257-4200

File Code: 2730-2
Date: 9/29/02

John G. Conforti
Project Manager
NC Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Conforti:

Since our June 12 meeting, we have received several letters regarding the process that the U.S. Forest Service will follow to approve the construction of the Havelock Bypass (T.I.P. Project No. R-1015) on National Forest System (NFS) lands in Craven County, North Carolina. To ensure that this project moves forward in a timely manner and meets our regulatory requirements, the following actions must be completed:

1. The Administrative Action, Mitigated Finding of No Significant Impact issued by the Federal Highway Administration (FHWA) and the North Carolina Department of Transportation (NC DOT) must be revised by removing all references to the proposed land exchange, construction of a borrow pit and the disposal of waste material on the forest.

2. The spring botanical survey must be completed as noted in Appendix A, page 3-1, of the Environmental Assessment dated January 27, 1998. The results should be sent to us as soon as possible so we can incorporate into our analysis.

3. Complete the field survey for red-cockaded woodpecker (RCW) and associated habitat. Consult with the U.S. Fish and Wildlife Service to ensure that their November 13, 1996 finding that the project is not likely to adversely affect the species or its critical habitat is still applicable.

It should be noted that our Forest Ecologist, Steve Simon, has been working with Mary Frazer over the last several months regarding the spring botanical survey and RCW consultation. Should additional information be needed in this area, he can be reached at 828-257-4810.

The next step in the process involves the final approval of the design of the project and development of the construction stipulations as follows:

1. Review and approval of the final design for construction on NFS Lands. Consideration should be give to mitigation measures within the analysis corridor to minimize the loss of wetlands, RCW habitat/fragmentation, *Solidago verna* habitat and maintaining access on existing road systems to NFS lands.

2. Finalization of the mitigation plan for the *Solidago verna* in accordance with the proposal submitted by Jon M. Stucky, North Carolina State University.

3. Development of construction standards that address wildfires and controlled burns, discovery of archeological sites during construction, timber removal and payment, and the treatment of slash material.

4. Development of a sign plan noting National Forest boundaries (entering and leaving), intersecting Forest Service roads and directional signs to nearby National Forest facilities.

Once this has been completed, the Forest Service will issue a "Letter of Consent" for the construction of the project on NFS lands noting that the potential impacts of the former landfill site at the northwestern terminus of the project have yet to be finalized in accordance with our agreement with FHWA (enclosed). At this time, FHWA will be authorized to issue the State of North Carolina a Public Road Easement for the construction, operation and maintenance of the Havelock By-pass on NFS lands.

Concurrent with this, several other questions have surfaced regarding compliance with the National Environmental Policy Act (NEPA) for this project. The U.S. Forest Service, in accordance with our agreement with FHWA, acts as a cooperating agency in the process. We assist in identifying impacts, mitigation and rehabilitation that need to be included in the environmental document in accordance with our Land and Resource Management Plan. We do not prepare a separate environmental document, as the FHWA is the lead agency for compliance with the National Environmental Policy Act (NEPA).

With this, FHWA is responsible for completing the NEPA document and makes the final decision regarding the construction of the project. The Forest Service does not issue a separate decision document for the appropriation of land for highways by the FHWA but conditions its consent to the FHWA with the requirements deemed necessary for the protection and utilization of NFS lands.

Hopefully, we can work through this process and ensure that we meet the timelines you have established for construction of the project. If you have any questions, please contact Ray Johns at 828-257-4859.

Sincerely,

Monica J. Schwalbach

for JOHN F. RAMEY
Forest Supervisor

cc: Lauren Hillman, District Ranger
Roy Shelton, NC DOT
Vince Bellis, Sierra Club
Derb Carter, SELC

RECEIVED

SEP 30 2005

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)	Date Of Land Evaluation Request: August 18, 2005
Name Of Project: TIP R-1015 Havelock Bypass	Federal Agency Involved: FHWA
Proposed Land Use: Highway	County And State: Craven County, NC
PART II (To be completed by NRCS)	Date Request Received By NRCS: ~ Aug. 20, 05
Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply – do not complete additional parts of this form)	Yes ☒ No ☐ — Acres Irrigated: 0 — Average Farm Size: 289 ac
Major Crop(s): CORN	Farmable Land In Govt. Jurisdiction: Acres: 326,947 — %: 70.5 — Amount Of Farmland As Defined In FPPA: Acres: 144,065 — %:
Name Of Land Evaluation System Used: CRAVEN LE	Name Of Local Site Assessment System: NONE — Date Land Evaluation Returned By NRCS: 9-23-05

PART III (To be completed by Federal Agency)	Alt. 1 Site A	Alternative Site Rating Alt. 3 Site B	Site C	Site D
A. Total Acres To Be Converted Directly	465	432	438	
B. Total Acres To Be Converted Indirectly wetlands Crooked Nat Forest	120	95	83	
C. Total Acres In Site	344	336	355	
PART IV (To be completed by NRCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	66	112	71	
B. Total Acres Statewide And Local Important Farmland	135	64	29	
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.06	0.06	0.05	
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	100	100	100	
PART V (To be completed by NRCS) Land Evaluation Criterion: Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)	0 42.0	0 44.4	0 32.8	0

PART VI (To be completed by Federal Agency) Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))	Maximum Points	Alt. 1 Site A	Site B	Site C	Site D
1. Area In Nonurban Use	15	12	5	8	
2. Perimeter In Nonurban Use	10	10	6	10	
3. Percent Of Site Being Farmed	20	6	0	0	
4. Protection Provided By State And Local Government	20	5	5	5	
5. Distance From Urban Built-up Area	0	N/A	N/A	N/A	
6. Distance To Urban Support Services	0	N/A	N/A	N/A	
7. Size Of Present Farm Unit Compared To Average	10	10	5	8	
8. Creation Of Nonfarmable Farmland	25	25	25	25	
9. Availability Of Farm Support Services	5	3	3	3	
10. On-Farm Investments	20	8	12	8	
11. Effects Of Conversion On Farm Support Services	25	10	8	10	
12. Compatibility With Existing Agricultural Use	10	7	5	7	
TOTAL SITE ASSESSMENT POINTS	160	0 96	0 74	0 84	0
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)	100	0 42.0	0 44.4	0 32.8	0
Total Site Assessment (From Part VI above or a local site assessment)	160	0 96.0	0 74.0	0 84.0	0
TOTAL POINTS (Total of above 2 lines)	260	0 138.0	0 118.4	0 116.8	0

Site Selected:	Date Of Selection:	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side)

Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

RECEIVED
MSP Date 9/20/06
R-1015

Action Id. 2006-32109-125 County: Craven U.S.G.S. Quad: Masontown/Havelock

NOTIFICATION OF JURISDICTIONAL DETERMINATION

G. James

RECEIVED
MAY 17 2006
DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT

Property Owner/Agent: NCDOT, Gregory J. Thorpe, Ph.D.
Address: Environmental Management Director, PDEA
1548 Mail Service Center
Raleigh, North Carolina 27699-1548
Telephone No.: (919) 733-3141

Property description:
Size (acres) Approximately 2,146 acres Nearest Town Havelock
Nearest Waterway Slocum Creek River Basin Neuse
USGS HUC 03020204 Coordinates N 34.8951452 W 76.9417571
Location description The project area includes three alternative corridors with widths ranging from 1,000-feet to 2,500-feet. The project starts at the Craven/Carteret County line just south of Havelock and continues northward along the west side of Havelock ending just south of the US 70 and NCSR 1105 intersection. The project area is adjacent to Goodwin Creek, Daniels Branch, an unnamed tributary to Tucker Creek, unnanmed tributaries to the Southwest Prong of Slocum Creek, the East Prong of Slocum Creek and the Black Swamp. TIP # R-1015

Indicate Which of the Following Apply:

A. Preliminary Determination

_ Based on preliminary information, there may be wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).

B. Approved Determination

_ There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

X There are waters of the U.S. including wetlands on the above described project area subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ We strongly suggest you have the wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.

X The waters of the U.S. including wetland on your project area have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.

_ The wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ Please be advised that a Prior Converted Cropland (PC) determination made by the Natural Resource Conservation Service (NRCS) remains valid as long as the area is devoted to an agricultural use. If the land changes to a non-agricultural use, the PC determination is no longer applicable and a new wetland determination is required for Clean Water Act purposes.

_ There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Action ID: 2006-32109-125

X The property is located in one of the 20 Coastal Counties subject to regulation under the Coastal Area Management Act (CAMA). You should contact the Division of Coastal Management in Morehead City, NC, at (252) 808-2808 to determine their requirements.

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you bave any questions regarding this determination and/or the Corps regulatory program, please contact **Bill Biddlecome** at **(252) 975-1616 ext. 26**.

C. Basis For Determination

This site exhibits wetland criteria as described in the 1987 Corps Wetland Delineation Manual and is part of a broad continuum of wetlands connected to the East and Southwest Prongs of Slocum Creek, which are tributaries to Slocum Creek.

D. Remarks

Cooridors 1 and 2 were field verified by Mike Bell in October 2004. Cooridor 3 was field verified by Mike Bell in 1999. Corridor 3 was re-evaluated and approved by Mike Bell in January 2005. Scott Jones field verified stream # 9 in corridor 3 in May 2005. No jurisdictional tearsheets were issued previously for these approvals.

E. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the South Atlantic Division, Division Office at the Following address:

Mr. Michael F. Bell, Administrative Appeal Review Officer
CESAD-ET-CO-R
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-8801

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **July 10, 2006**.

It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: William J. Biddlecome

Date 05/10/2006 Expiration Date 05/10/2011

Copy furnished:
Robert Turnbull
Environmental Services Inc.
524 South New Hope Road
Raleigh, North Carolina 27610

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: NCDOT	File Number: 2006-32109-125	Date: 5/10/2006
Attached is:		See Section below
☐ INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
☐ PROFFERED PERMIT (Standard Permit or Letter of permission)		B
☐ PERMIT DENIAL		C
☒ APPROVED JURISDICTIONAL DETERMINATION		D
☐ PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Bill Biddlecome Washington Regulatory Field Office P.O. Box 1000 Washington, North Carolina 27889 (252) 975-1616 ext. 26.	If you only have questions regarding the appeal process you may also contact: Mr. Michael F. Bell, Administrative Appeal Review Officer CESAD-ET-CO-R U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 9M15 Atlanta, Georgia 30303-8801

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

DIVISION ENGINEER:
Commander
U.S. Army Engineer Division, South Atlantic
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-3490

APPENDIX A2

State Agencies

Forestry
ANNIVERSARY
N.C. - Where it all began

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Forest Resources
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor
William W. Cobey, Jr., Secretary

Stanford M. Adams
Director

Griffiths Forestry Center
2411 Garner Road
Clayton, North Carolina 27520
July 23, 1992

Mr. Jay Bissett, Project Engineer
N. C. Department of Transportation
Planning & Environmental Branch
P. O. Box 25201
Raleigh, North Carolina 27611-5201

RE: Formal DOT Scoping for the Proposed US 70 Havelock Bypass in Craven County TIP# R-1015

Dear Jay:

Reference is made to our telephone conversation on July 22, 1992, advising I would not be able to attend the scoping meeting on July 29 for the above project. We do have the following comments concerning this project:

1. This project will impact the following -
   a. Woodland (Longleaf pine and low pocosin species).
   b. Red-Cockaded Woodpecker habitat.
   c. Wetlands (Pocosin types).
   d. Sensitive plants and birds.

2. We would hope that the final alignment design would not create any unmanageable strips of timber for the U.S. Forest Service on the Croatan National Forest.

3. The proposed bypass would help to eliminate traffic problems for our emergency fire control equipment going to wildfires.

4. Since woodland is involved, the DEIS should also address the following -
   a. The total forest land acreage that would be taken out of forest production as a result of new right-of-way purchases.
   b. The productivity of the forest soils as indicated by the soil series that would be involved within the proposed project.

c. The impact upon existing greenways within the area of the proposed project.

d. The provisions that the contractor will take to sell any merchantable timber that is to be removed. This practice is encouraged to minimize the need for piling and burning during construction. If any burning is needed, the contractor should comply with all laws and regulations pertaining to debris burning.

e. The provisions that the contractor will take during the construction phase to prevent erosion, sedimentation and construction damage to forest land outside the right-of-way and construction limits. Trees outside construction limits should be protected from construction activities to avoid:
   (1). Skinning of tree trunks by machinery.
   (2). Soil compaction and root exposure or injury by heavy equipment.
   (3). Adding layers of fill dirt over the root systems of trees, a practice that impairs root aeration.
   (4). Accidental spilling of petroleum products or other damaging substances over the root systems of trees.

5. You indicated you would send me any information that was generated at the July 29th meeting. After receiving this information, we may have further comments.

6. We would hope that a route could be chosen, that would have the least impact to the forest and related resources.

Sincerely,

Don H. Robbins
Staff Forester

DHR:la

pc: Warren Boyette -- CO
Ralph Callom - District Forester - D4
File

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Environmental Management
512 North Salisbury Street • Raleigh, North Carolina 27604

James G. Martin, Governor
William W. Cobey, Jr., Secretary

A. Preston Howard, Jr., P.E.
Acting Director

July 31, 1992

AUG 1992

MEMORANDUM

To: Jack L. Ward
DOT

Through: John Dorney

From: Eric Galamb

Subject: Scoping Comments for US 70 - Havelock Bypass
Craven County
TIP # R-1015

Thank you for the opportunity to attend the formal scoping meeting held for the subject project on July 29, 1992. DOT requested that written comments be submitted.

The NEPA document and corridor study being prepared for this project should extensively study the upgrade of the existing US 70. DEM acknowledges that this alternative would cause the most social impact, however, it should have the least impact on red-cockaded woodpecker habitat, wetlands and other vegetative types.

DOT informed the participants that the 404(b) process will be used in the early stages of this project. DEM praises DOT for taking the initiative to reduce wetland impacts.

Wetland mitigation is preferred onsite rather than off-site. In addition, restoration, creation, enhancement, and banking is the preferred order of mitigation.

The US Forest Service stated that CGIA has maps available for the entire Croatan Forest. If this is the case, this project would be an excellent candidate for ARCINFO corridor selections.

DEM offers field and any other assistance to determine specific wetland significance within the chosen alternatives.

State of North Carolina
Department of Environment, Health, and Natural Resources

INTERGOVERNMENTAL REVIEW — PROJECT COMMENTS

Reviewing Office: Washington Regional Office	
Project Number: 93-0056	Due Date: 8/18/9

After review of this project it has been determined that the EHNR permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law.

Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of the form.

All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Proce Time (statutory lin limit)
☐	Permit to construct & operate wastewater treatment facilities, sewer system extensions, & sewer systems not discharging into state surface waters.	Application 90 days before begin construction or award of construction contracts On-site inspection. Post-application technical conference usual	30 days (90 days)
☐	NPDES - permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begin activity. On-site inspection. Pre-application conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90-120 days (N/A)
☐	Water Use Permit	Pre-application technical conference usually necessary	30 days (N/A)
☐	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well.	7 days (15 days)
☐	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site Inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
☐	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15A NCAC 21H.0600	N/A	60 days (90 days)
☒	Any open burning associated with subject proposal must be in compliance with 15A NCAC 2D.0520.	N/A	60 days (90 days)
☒	Demolition or renovations of structures containing asbestos material must be in compliance with 15A NCAC 2D.0525 which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-733-0820.		
☐	Complex Source Permit required under 15A NCAC 2D.0800.		
☐	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Sect.) at least 30 days before beginning activity. A fee of $30 for the first acre and $20.00 for each additional acre or part must accompany the plan.		20 days (30 days)
☐	The Sedimentation Pollution Control Act of 1973 must be addressed with respect to the referenced Local Ordinance:		(30 days)
☐	Mining Permit	On-site inspection usual. Surety bond filed with EHNR. Bond amount varies with type mine and number of acres of affected land. Any area mined greater than one acre must be permited. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
☐	North Carolina Burning permit	On-site Inspection by N.C. Division Forest Resources if permit exceeds 4 days	1 day (N/A)
☐	Special Ground Clearance Burning Permit - 22 counties in coastal N.C. with organic soils	On-site inspection by N.D. Division Forest Resources required "if more than five acres of ground clearing activities are involved. Inspections should be requested at least ten days before actual burn is planned."	1 day (N/A)
☐	Oil Refining Facilities	N/A	90-120 days (N/A)
☐	Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction, certify construction is according to EHNR approved plans. May also require permit under mosquito control program. And a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of $200.00 must accompany the application. An additional processing fee based on a percentage or the total project cost will be required upon completion.	30 days (60 days)

AUG 1992 RECEIVED DEQ WASHINGTON REGIONAL OFFICE

PS-105

Continued on reverse

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Soil and Water Conservation
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor
William W. Cobey, Jr., Secretary

David W. Sides
Director

August 3, 1992

MEMORANDUM

TO: Melba McGee

FROM: David Harrison DEH

SUBJECT: Proposed US 70 Bypass at Havelock, Craven County.
Project No. 93-0056

The Environmental Assessment should identify any unique, prime, or important farmlands that will be impacted by the project. A wetlands evaluation should also be included. Actions that minimize impacts are desired.

DH/tl

DIVISION OF LAND RESOURCES
LAND QUALITY SECTION
August 6, 1992

MEMORANDUM

TO: Lorraine Shinn
Regional Manager
Washington Regional

FROM: Floyd R. Williams
Regional Engineer
Land Quality Section
Washington Regional Office

SUBJECT: A-95 Review
Project #93-0056
N.C. Department of Transportation Proposed US 70
Havelock Bypass - Craven County
State Project #8.T170701

This project must be consistent with the NC Sedimentation Pollution Control Act of 1973. Temporary and permanent erosion and sedimentation control measures and devices must be utilized throughout the project to prevent offsite sedimentation of adjacent natural watercourses and properties.

Borrow and waste areas, along with other land-disturbing activities, must be addressed according to the NC Dept. of Transportation's Division of Highways Sediment and Erosion Control Program that was approved by the NC Sedimentation Control Commission on February 25, 1991.

Periodic inspections will be made by personnel of the Land Quality Section to ensure compliance.

DIVISION OF ENVIRONMENTAL MANAGEMENT

August 6, 1992

MEMORANDUM

TO: Lorraine G. Shinn, Regional Manager
Washington Regional Office

THROUGH: Roger K. Thorpe, Water Quality Regional Supervisor
Washington Regional Office

FROM: Scott Jones, Environmental Technician
Water Quality Section, WaRO

SUBJECT: Division of Planning and Assessment
Project Review Form
Project #93-0056, Proposed US 70 Havelock Bypass
Craven County

The above subject project has been reviewed by this office. The project involves the proposal for the NC Department of Transportation to construct the US 70 Havelock Bypass (four lane, divided highway). Preliminary comments are as follows:

1. Any wetland impacts should be studied for alternatives and/or minimization of impacts.

2. Stream crossing proposals must provide information showing no restriction of flow will incur.

3. If any fill in waters or wetlands is proposed, a Water Quality 401 Certificate will be required.

This office will supply additional comments for this proposal when the Environmental Impact Statement has been prepared and submitted for review.

If you have any questions or comments, please call this office at (919) 946-6481.

North Carolina Wildlife Resources Commission

512 N. Salisbury Street, Raleigh, North Carolina 27604-1188, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Melba McGee, Planning and Assessment
Dept. of Environment, Health, & Natural Resources

FROM: Dennis Stewart, Manager
Habitat Conservation Program

Date: August 21, 1992

SUBJECT: Request for comments pertaining to formal scoping meeting on US 70 Havelock Bypass, Craven County, North Carolina, TIP No. R-1015, SCH Project No. 93-0056.

The N. C. Wildlife Resources Commission (NCWRC) has completed a review of the proposed project and possible impacts on existing wildlife and fishery resources on the area. A formal scoping meeting was attended by a NCWRC staff biologist on July 29, 1992. Our comments are provided in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332 (2)(C)), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

This project involves a proposed bypass of Havelock, N. C., by US 70, involving approximately 9 miles of highway construction on new alignment. Portions of the study area lie within the Croatan National Forest. The N. C. Department of Transportation (NCDOT) has proposed the highway as a limited access facility to alleviate present and future traffic congestion in the area.

The NCWRC recommends that use of existing alignment be maximized on this project. In addition to wetland impacts, any new alignment located west of Havelock will eliminate, degrade, and fragment high quality upland wildlife habitat in and near National Forest lands. These lands provide habitat for several species of threatened and endangered plants and animals and are regionally significant as some of the largest surviving areas of undeveloped land, vital to populations of area-sensitive vertebrate species, including black bear and red-cockaded woodpecker. Highway construction within Forest boundaries would isolate large tracts of otherwise suitable habitat, present a barrier to wildlife travel, and increase the risk of

animal/vehicle collisions. Subsequent development at interchanges will result in further habitat loss.

In areas where existing development precludes use of existing right of way, the NCWRC recommends that the NCDOT include corridors east of Havelock in the study area. We also request that any unavoidable construction on new alignment be kept in or near the corporate limits, thereby minimizing the acreage of forest and wetland which would be isolated and subjected to future secondary development.

Once alternative corridors have been selected, acreages of upland and/or wetland habitat impacted should be listed and mapped by cover type, and the contribution of this project to the cumulative loss of such habitats should be assessed in the environmental document. Borrow or fill sites should be included in projections of habitat impacts, if applicable.

The environmental document should also include complete inventories of fisheries and wildlife resources within, adjacent to, or using the construction corridor, including accurate data on State and Federally listed rare, threatened, endangered, or "special concern" species. Additional information on listed species may be obtained from Randy Wilson, Nongame and Endangered Species Program Manager, at (919) 733-7291.

Thank you for the opportunity to provide input to planning stages for this project. If we can further assist your office, please call David Yow, Highway Project Coordinator, at (919) 528-9887.

cc: Bobby Maddrey, District 2 Wildlife Biologist
Bennett Wynne, District 2 Fisheries Biologist
Randy Wilson, Nongame and Endangered Species Program Manager
Warren Starnes, Wildlife Biologist, USDA Forest Service
David Yow, Highway Project Coordinator

DLS/DLY/lp

AUG 1992

Vick

North Carolina Department of Cultural Resources

James G. Martin, Governor
Patric Dorsey, Secretary

Division of Archives and History
William S. Price, Jr., Director

August 27, 1992

MEMORANDUM

RECEIVED
AUG 31 1992
DIVISION OF HIGHWAYS
PLANNING & RESEARCH BRANCH

TO: L. J. Ward, P.E., Manager
Planning and Environmental Branch
Division of Highways
Department of Transportation

FROM: David Brook for David Brook
Deputy State Historic Preservation Officer

SUBJECT: US 70 Havelock Bypass, Craven County, R-1015, 8.T170701, CH 93-E-4220-0056

We have received information concerning the above project from the State Clearinghouse.

We have conducted a search of our maps and files and have located the following structures of historical or architectural importance within the general area of the project:

Havelock Multiple Structures (Jesse Trader House, Hugh Trader Store, Havelock Station Depot, Store, or School). Junction of NC 101, SR 1745, SR 1746, and Atlantic & East Carolina Railroad tracks, Havelock vicinity.

U.S. Marine Corps Station at Cherry Point. North side of US 70, Havelock vicinity.

House. Southeast side of SR 1746, 1.8 mile southwest of the junction with SR 1745, Havelock vicinity.

None of the above properties have been evaluated for National Register eligibility.

Since the comprehensive survey of Craven County's historic architectural structures was conducted over twelve years ago, there may be additional structures in the study area which we would now consider historic. Therefore, we recommend that a comprehensive survey be conducted by a qualified architectural historian to identify the presence and significance of any additional historic structures, buildings, or districts.

We have determined that an archaeological survey will be necessary for all new alignments. This assessment was previously provided during the "meeting of the minds" of August 2, 1990.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

DB:slw

cc: State Clearinghouse
B. Church
T. Padgett

RECEIVED
JUN 14 1994
DIVISION OF HIGHWAYS
PLANNING & ENVIRONMENTAL BRANCH

North Carolina Department of Cultural Resources

James B. Hunt, Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
William S. Price, Jr., Director

June 10, 1994

Nicholas L. Graf
Division Administrator
Federal Highway Administration
Department of Transportation
310 New Bern Avenue
Raleigh, N.C. 27601-1442

Re: Historic Structures Survey Report for Havelock Bypass, Craven County, R-1015, 8.T170701, F-56-4(34), ER 94-8850

Dear Mr. Graf:

Thank you for your letter of May 3, 1994, transmitting the historic structures survey report by Richard L. Mattson concerning the above project.

The following property was placed on the state study list on April 13, 1989:

Needham B. White House (CR354)

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is eligible for the National Register of Historic Places under the criterion cited:

Needham B. White House (CR354). Criterion C--Though this ca. 1840 small farmhouse has undergone some alterations, its impressive late Federal interior features are among the finest surviving in rural Craven County.

In general the report meets our office's guidelines and those of the Secretary of the Interior. However, the results of the phase I (reconnaissance) survey were not reviewed in consultation with us. We understand that during the phase I survey the principal investigator photographed and mapped "other properties which . . . warranted further study" [Mattson, page 14].

So we may concur with the Federal Highway Administration's determination that the Needham B. White House is the only historic property in the area of potential effect, we would like to review the results of the phase I survey. Please send us photographed, keyed to a USGS map, of those properties which warranted further study. With this information, we will be able to complete our review of potential historic properties.

If possible, we would also like an additional copy of the report so we will have one for our files and one for our library which is used by consultants, survey specialists, and the public.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

Sincerely,

David Brook

David Brook
Deputy State Historic Preservation Officer

DB:slw

cc: H. F. Vick
B. Church
Richard Mattson

Fishburne.

RECEIVED
SEP 06 1994
DIVISION OF HIGHWAYS
PLANNING & ENVIRONMENTAL BRANCH

North Carolina Department of Cultural Resources

James B. Hunt, Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
William S. Price, Jr., Director

August 31, 1994

Nicholas L. Graf
Division Administrator
Federal Highway Administration
Department of Transportation
310 New Bern Avenue
Raleigh, N.C. 27601-1442

Re: Havelock Bypass, Craven County, R-1015, 8.T170701, F-56-4(34), ER 95-7271

Dear Mr. Graf:

Thank you for your letter of August 4, 1994, concerning the above project.

We have reviewed the addendum to the phase I historic architectural resources survey report. We concur with the Federal Highway Administration's determination that the vernacular cottage is not eligible for listing in the National Register of Historic Places since the building has little historical or architectural significance.

This means the Needham B. White House is the only historic property in the area of potential effect for the project.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

Sincerely,

Renee Gledhill-Earley

for David Brook
Deputy State Historic Preservation Officer

DB:slw

cc: H. F. Vick
B. Church

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Water Quality

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
A. Preston Howard, Jr., P.E., Director

DEHNR

February 26, 1997

Mr. Frank Vick
NCDOT
P.O. Box 25201
Raleigh NC 27611-5201

Dear Mr. Vick:

Subject: US 70, Havelock Bypass
Craven County
TIP No. R-1015

On January 30, 1997, the Department of Transportation (DOT) provided the minutes to the December 18, 1996 steering committee meeting for the Havelock Bypass. The minutes accurately reflect the discussion at the meeting. However, the request for a one half clover design for the interchange at SR 1756 to minimize stream and wetland impacts was not included. The Division of Water Quality (DWQ) and the Wildlife Resources Commission (WRC) have made this request several times. DOT has requested that DWQ concur with Corridor 3 as the preferred corridor. DWQ concurs with this request provided that a half clover leaf interchange be constructed at SR 1756 to minimize environmental impacts.

Thanks for the opportunity to participate on the steering committee. DWQ will provide comments on the EIS when it is circulated for review. Should you have any questions, please contact me at 733-1786.

Sincerely,

Eric Galamb

Eric Galamb
Environmental Specialist

cc: Mike Bell, Washington COE
David Cox, WRC
Jim Buck, DOT

P.O. Box 29535, Raleigh, North Carolina 27626-0535 Telephone 919-733-9960 FAX # 733-9919

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North Carolina Wildlife Resources Commission

512 N. Salisbury Street, Raleigh, North Carolina 27604-1188, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Mr. H. Franklin Vick, Manager
Planning and Environmental Branch, NCDOT

FROM: David Cox, Highway Coordinator
Habitat Conservation Program

DATE: March 4, 1997

SUBJECT: US 70, Havelock Bypass, Craven County, North Carolina. TIP No. R-1015.

We have reviewed the information sent to us regarding the subject project, including the minutes of the December 18, 1996 Steering Committee Meeting.

We concur with the selection of corridor 3 as the preferred corridor for the Havelock Bypass. However, we continue to request that a half-clover interchange be studied at SR 1756 to minimize stream and wetland impacts.

Thank you for the opportunity to review and comment in the early stages of this project. If we can further assist your office, please contact me at (919) 528-9886.

cc: Melba McGee, Office of Intergovernmental and Legislative Affairs, DEHNR
Howard Hall, U.S. Fish and Wildlife Service, Raleigh
Mike Bell, USACOE, Washington

Grumes / Buck

North Carolina Department of Cultural Resources

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

May 15, 1997

Nicholas L. Graf
Division Administrator
Federal Highway Administration
Department of Transportation
310 New Bern Avenue
Raleigh, N.C. 27601-1442

Re: Background report, US 70, Havelock Bypass,
Craven County, Federal Aid Project F-56-4(34),
State Project 8.T170701, R-1015, ER 97-8934

Dear Mr. Graf:

Thank you for your letter of April 14, 1997, transmitting the background archaeological report by Environmental Services, Inc., concerning the above project.

We have reviewed the background report and find that it meets our guidelines and those of the Secretary of the Interior. Based on the information presented in this report and the well reasoned conclusions, we agree with the recommendations presented. We look forward to reviewing the field report when it is available.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

Sincerely,

David Brook

David Brook
Deputy State Historic Preservation Officer

DB:slw

cc: H. F. Vick
T. Padgett
Environmental Services

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

James B. Hunt, Jr., Governor
Wayne McDevitt, Secretary
A. Preston Howard, Jr., P.E., Director

D E N R

98 MAR 27 AM 8:12

March 25, 1998

MEMORANDUM

To: Lisa Martin Cyndi Bell

Through: John Dorney

From: Cyndi Bell

Subject: Environmental Assessment for US 70, Havelock Bypass
Craven County
State Project No. 8.T170701, T.I.P. No. R-1015; DENR #98-0539, DWQ#11988

The referenced document has been reviewed by this office. The Division of Water Quality (DWQ) is responsible for the issuance of the Section 401 Water Quality Certification for activities which impact waters of the state including wetlands. The proposed work will involve fill in up to 168 acres of wetlands. Potential impacts to perennial streams were not quantified in the EA. Overall, the EA provides balanced information with respect to the three Build Alternatives. There are several issues that we suggest that DOT should keep in mind during further planning and design work, and should address in the FONSI as much as possible.

1) DOT has identified Alternative 3 as the Preferred Alternative. DWQ agrees that of the three major practical alternatives, Alternative 3 will be least damaging to wetlands and water quality.

2) We are encouraged by DOT's efforts to develop a wetland mitigation plan at this stage in the planning process. We ask DOT to continue with development of this plan, so that more details can be included in the FONSI. Optimally, the mitigation plan should be completely developed and included with the permit application, so that construction of the mitigation site can be implemented prior to or concurrent with the construction of the highway project. NCDOT is also advised that, in accordance with DWQ Wetland Rules {15A NCAC 2H.0506(h)(2)}, the Wetland Restoration Program will be available to use for wetland mitigation.

3) DOT has identified the three major stream crossings in the project area; however, a complete listing of all perennial streams is needed for DWQ to complete our review. We presume that this project will involve new culvert crossings at numerous locations throughout the project corridor, regardless of the alternative selected. The potential linear distances of these stream impacts should be included in the FONSI. It would be

P.O. Box 29535, Raleigh, North Carolina 27626-0535 Telephone 919-733-5083 FAX 919-733-9919
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helpful if NCDOT included stream geometry data for each perennial stream in the study area. NCDOT is reminded that stream relocations, new culverts or culvert extensions exceeding 150 feet linear distance of stream channel impact at any perennial stream crossing will require mitigation in accordance with current DWQ Wetland Rules {15A NCAC 2H.0506(b)(6)}. Stream relocations should be designed to ensure that existing stream uses will be maintained following construction. If necessary, the stream mitigation proposal must be included with the permit application. The Wetland Restoration Program will be available to use for stream mitigation for this project.

4) This project occurs within the Neuse River Basin; therefore, it is crucial that DOT demonstrate avoidance and minimization of wetland and stream impacts during the design process. The avoidance and minimization requirements for the alternatives analysis have already been satisfied. We advise DOT to take note of the following during the design of the this project, as this information will be required for our review of the permit application:

- In accordance with 15A NCAC 2B.0233, DOT is required to maintain a 50-foot vegetated buffer to each side (100 feet total) of relocated intermittent and perennial streams, to the maximum extent practical. Where the required buffer width cannot be provided, design and right-of-way constraints should be thoroughly described and illustrated. Also, DOT is required to ensure that stormwater runoff will not be directed into surface waters prior to some form of treatment (i.e. diversion through vegetated swales). This means that weep holes will not be permitted on bridge decks. Finally, DOT should provide evidence that stream relocations have been bioengineered to ensure long-term viability and replacement of stream values lost, including the restoration of 50-foot wooded buffers on each side of these systems.

5) We encourage NCDOT to investigate whether or not temporary fill will be required during construction to build haul roads and place culverts. We suggest that NCDOT include this information with the permit application, rather than applying for a permit modification after the project has been let to contract. NCDOT is advised that full restoration (including removal of fill material and planting/monitoring of vegetation) of temporary fill areas exceeding one acre will be required in accordance with Condition #4 of General Certification 3114 (Nationwide Permit 33). All temporary fill material must be removed from construction access areas. On May 27, 1997, DWQ submitted a draft restoration policy for temporary impact areas to NCDOT. We anticipate finalization of this policy prior to the construction of this project.

6) NCDOT should describe how stormwater is to be diverted along the project corridor. Wherever possible, we encourage DOT to divert highway runoff onto vegetated swales or into wetlands, rather than directly into streams.

Based upon the wetland impacts described in the EA, an Individual 401 Water Quality Certification will be required for this project. Final permit authorization will require formal application by NCDOT and written concurrence from DWQ. Please be aware that this approval will be contingent upon evidence of avoidance and minimization of wetland and stream impacts to the extent practical, and provision of wetland and stream mitigation where necessary.

DWQ appreciates the opportunity to provide comments on the EA. DOT is reminded that issuance of a 401 Water Quality Certification requires satisfaction of water quality concerns, to ensure that water quality standards are met and no wetland or stream uses are lost. Questions regarding the 401 Certification should be directed to Cyndi Bell at (919) 733-1786 in DWQ's Water Quality Environmental Sciences Branch.

cc: Mike Bell, COE, Washington
Howard Hall, FWS
David Cox, WRC

R1015EA.DOC

North Carolina Wildlife Resources Commission

512 N. Salisbury Street, Raleigh, North Carolina 27604-1188, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Melba McGee
Office of Legislative and Intergovernmental Affairs, DENR

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: April 13, 1998

SUBJECT: North Carolina Department of Transportation (NCDOT) Environmental Assessment (EA) for the US 70 Havelock Bypass, Craven County, North Carolina. TIP No. R-1015, SCH Project No. 98-E-0539.

Staff biologists with the N. C. Wildlife Resources Commission have reviewed the subject EA and are familiar with habitat values in the project area. The purpose of this review was to assess project impacts to fish and wildlife resources. Our comments are provided in accordance with certain provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

NCDOT proposes to construct a US 70 Bypass on new location to the southwest of Havelock. The new roadway will be a four-lane divided freeway with full control of access. The project length is approximately 10 miles. Projected wetland impacts for the preferred alternative is approximately 156 acres. Wetland mitigation for unavoidable wetland impacts will be provide at a site known as the Croatan Wetland Mitigation Bank.

We have reviewed the information contained in the subject document and have attended scoping and steering committee meetings on the project. We concur with the selection of Alternative 3 as the preferred alternative for the project. We request that NCDOT continue to minimize wetland impacts during the design phase of the project. Also during design of the hydraulic crossing structures, we request that consideration be given to providing adequate sized structures to allow for wildlife passage underneath the new roadway.

At this time, we concur with the EA for this project. We request that NCDOT continue to minimize impacts to natural resources. NCDOT Best Management Practices should be strictly followed to minimize impacts to water quality.

Thank you for the opportunity to comment on this EA. If we can be of any further assistance please call me at (919) 528-9886.

cc: Howard Hall, U.S. Fish and Wildlife Service, Raleigh

NCDENR

JAMES B. HUNT JR.
GOVERNOR

WAYNE McDEVITT
SECRETARY

ROGER N. SCHECTER
DIRECTOR

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF COASTAL MANAGEMENT

MEMORANDUM

TO: Melba McGee, NC Division of Policy and Development
FROM: Steve Benton, NC Division of Coastal Management

SUBJECT: Review of SCH# 98-0539 DATE: 4.14.98

___ A COPY OF ALL COMMENTS RECEIVED BY THE SCH IS REQUESTED

___ REVIEWER COMMENTS ATTACHED

Review Comments:

___ This document is being reviewed for consistency with the NC Coastal Management Program pursuant to federal law and or NC Executive Order 15. Agency comments received by SCH are needed to develop the State's consistency position.
Project Review Number (if different from above) _____.
A consistency position will be developed based upon our review on or before _____.

✓ A Consistency Determination document ✓ is, or ___ may be required for this project pursuant to federal law and or NC Executive Order 15. Applicant should contact Steve Benton or Caroline Bellis in Raleigh, phone (919)733-2293, for information on proper document format and applicable state guidelines and land use plan policies.

___ Proposal is in draft form, a consistency response is inappropriate at this time. A Consistency Determination should be included in the final document.

___ A Consistency Determination Document (pursuant to federal law and/or NC Executive Order 15) is not required.
- ___ A consistency response has already been issued.
  Project Number _____ Date Issued _____
- ___ Proposal involves < 20 Acres and or a structure < 60,000 Square Feet and no AEC's or Land Use Plan problems.
- ___ Proposal is not in the Coastal Area and will have no significant impacts on any land or water use or natural resources of the Coastal Area.

✓ A CAMA Permit ___ is, or ✓ may be required for all or part of this project. Applicant should contact Ted Tyndall in Morehead City, phone # 252-808-2808, for information.

___ A CAMA Permit ___ has already been issued, or ___ is currently being reviewed under separate circulation. Permit Number _____ Date Issued _____

✓ Other (~~see attached~~): WILL FORWARD ANY FIELD COMMENTS UPON RECEIPT

State of North Carolina Consistency Position:

___ The proposal is consistent with the NC Coastal Management Program provided that all conditions are adhered to and that all state authorization and/or permit requirements are met prior to implementation of the project.

___ The proposal is inconsistent with the NC Coastal Management Program.

___ Other (see attached).

P.O. BOX 27687, RALEIGH, NC 27611-7687 / 2728 CAPITAL BLVD., RALEIGH, NC 27604

Dunnes / Elmore

North Carolina Department of Cultural Resources

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

April 15, 1998

MEMORANDUM

RECEIVED
APR 17 1998
DIVISION OF HIGHWAYS
PLANNING & ENVIRONMENTAL BRANCH

TO: H. Franklin Vick, P.E., Manager
Planning and Environmental Branch
Division of Highways
Department of Transportation

FROM: David Brook David Brook/s
Deputy State Historic Preservation Officer

SUBJECT: US 70 Havelock Bypass, Federal Aid Project STP-NHF-F-56-4(34), State Project 8.T170701, TIP R-1015, 98-E-4220-0539

We have received the Environmental Assessment concerning the above project from the State Clearinghouse.

We note that there is a statement concerning archaeological survey of high probability areas within the project area. We previously agreed to this course of action and look forward to reviewing the survey report.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

DB:slw

cc: State Clearinghouse
N. Graf
T. Padgett

J. Conforti

North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary
Office of Archives and History

Division of Historical Resources
David J. Olson, Director

RECEIVED
JUL 1 2002
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

June 25, 2002

MEMORANDUM

TO: William D. Gilmore, Manager
Project Development and Environmental Analysis Branch
Division of Highways
Department of Transportation

FROM: David Brook RSB for David Brook

SUBJECT: Archaeological Survey, US 70 Havelock Bypass Preferred Corridor, Federal Aid #R-56-4(34), R-1015, Craven County, ER 91-7033 and 99-7654

Thank you for your letter of July 24, 2000, transmitting the survey report by Greg Smith of Environmental Services, Inc. for the above project. We apologize for the delay in our response.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is eligible for listing in the National Register of Historic Places under Criterion D:

31CV302

This Middle and Late Woodland site contains intact cultural deposits that are likely to contribute important information on prehistoric socio-economic and political aspects of the region.

The following properties are determined not eligible for listing in the National Register of Historic Places:

31CV292&292**, 31CV293&293**, 31CV294**, 31CV295**, 31CV296**, 31CV297**, 31CV298&298**, 31CV299, 31CV300**, 31CV301**, 31CV303**, 31CV304**, 31CV305**, 31CV306 and 31CV164**

None of these sites contain undisturbed cultural deposits or are likely to yield information important to history or prehistory.

Until additional information for the property listed below is provided, we are unable to assess their eligibility for listing in the National Register:

31CV170**

This site is located outside the area of potential effect (APE), however, and will not be affected by the project as currently proposed.

31CV301** is an historic period cemetery. While it is not eligible for the National Register, the cemetery should either be avoided or removed in accordance with NC General Statutes Chapter 65. Current plans for the proposed Havelock Bypass place the eligible site 31CV302 outside the APE, so no additional archaeological investigation is recommended at this time. If project plans change and the site will be affected, appropriate mitigation measures should be developed and forwarded to as for review.

The report meets our office's guidelines and those of the Secretary of the Interior.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

DB:kgc

cc: Matt Wilkerson, NCDOT
FHwA
Greg Smith, Environmental Services, Inc.

CITIZENS PARTICIPATION
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DEC 2 4 2004

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

December 22, 2004

MEMORANDUM

TO: Matt Wilkerson, Archaeology Supervisor
Office of Human Environment
NCDOT Division of Highways

FROM: Peter Sandbeck PBS for Peter Sandbeck

SUBJECT: Archaeological Survey, US 70 Havelock Bypass, State Project No. 8.T170701, TIP No. R-1015, ER 91-7033, Craven County

We have reviewed the archaeological survey report by Greg Smith of Environmental Services, Inc. for the above project and offer the following comments.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following sites are not eligible for listing in the National Register of Historic Places under criterion D:

31CV292&292**, 31CV293&293**, 31CV294**, 31CV295**, 31CV296**, 31CV297**, 31CV298&298**, 31CV299, 31CV303**, 31CV304**, 31CV305**, 31CV306, and 31CV164**

All of these sites have been disturbed by agricultural and/or silvicultural activities and retain no integrity. None are capable of yielding information important to history or prehistory.

Sites 31CV170** and 31CV302 may be eligible for the National Register of Historic Places but were not evaluated during the investigation as they are located outside of the area of potential effect (APE) for the project. 31CV300** and 31CV301** ate cemeteries and are not eligible for the National Register. 31CV300** is located outside the APE. If 31CV301** is affected by the proposed project, it should be relocated in accordance with NCGS Chapter 65.

The report meets our office's guidelines and those of the Secretary of the Interior.

As no archaeological sites eligible for inclusion in the National Register of Historic Places will be affected by the project as presently ptoposed, we concur with the recommendation that no additional archaeological investigation is warranted.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Paul Mohler, NCDOT

NCDENR

North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

February 22, 2005

Mr. John Conforti
Project Planning Engineer
Project Development and Environmental Analysis
NC Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Conforti:

We are writing to you to share new information and to reiterate our concerns about the proposed Havelock Bypass. Most of these concerns have been expressed previously, in meetings and in documents, dating back to our initial review of the project in 1992. Due to the high conservation significance of the lands on the Croatan National Forest likely to be impacted by the proposed project, the Natural Heritage Program greatly appreciates DOT's interest in reducing ecological impacts in this area.

The following are points to consider about possible direct and indirect impacts of the proposed project:

- Approximately 320 acres of Croatan National Forest land may be directly impacted.
- The proposed bypass will fragment public lands and habitat -- Approximately 1,070 acres of national forest east of the proposed project will be isolated from core national forest lands.
- Of the total acres which may receive direct or indirect impacts, approximately 700 acres contain longleaf pine forest natural communities, much of which is mature and thus of high conservation value. Maintenance of mature longleaf communities is a stated goal of the Croatan National Forest. Maintenance requires prescribed fire
- The preferred highway alternative impacts several small depression ponds, a rare natural community type, and significant breeding habitat for rare amphibians.
- The proposed project would result in the fragmentation of approximately 570 acres of Habitat Management Area for the Federally Endangered red-cockaded woodpecker (*Picoides borealis*). Recovery of the red-cockaded woodpecker, and specifically recruitment of colonies in the eastern part of the national forest to add to the stability of the entire Croatan population, are long-term goals of the Croatan National Forest.

1601 Mail Service Center, Raleigh, North Carolina 27699-1601
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One NorthCarolina Naturally

- More than half of the forestwide population of spring-flowering goldenrod (*Solidago verna*), a Federal Species of Concern, may be directly or indirectly impacted by the proposed project.

- Three Significant Natural Heritage Areas (SNHAs) would be directly and indirectly impacted by the proposed project. See the enclosed summary and map.

    1. Havelock Station Flatwoods and Powerline Corridor SNHA is ranked regionally significant, and provides habitat for a cluster of rare species, including six rare plant species and three rare animal species. Impact from the proposed project would be direct and indirect, as it is aligned to bisect much of the natural area, and would also restrict ecological management.
    2. Southwest Prong Flatwoods SNHA is of statewide significance for several rare longleaf pine forest community types, rare vernal pool communities, four rare plant species, and the federally listed red-cockaded woodpecker; impact to the natural area would be direct and indirect as alignment could both destroy habitat as well as constrain management outside of the highway corridor by restricting prescribed burning.
    3. Masontown Pocosin SNHA is of statewide significance. It provides habitat for several rare and high-quality natural community types, a rare animal species, and black bear populations benefiting from its extensive, unfragmented forests. Impact to the Masontown Pocosin SNHA would be mostly indirect, as the proposed project cuts across the top, rather than bisecting the natural area.

Recent field surveys have provided new information that might contribute to thinking about location of Havelock Bypass. For instance, the natural area referred to as Havelock Station Flatwoods and Powerline Corridor has been identified within the past several months, and it appears that the proposed project will significantly fragment the habitat. See the enclosed summary for more information on these natural areas.

We request that the project EIS address the following concerns:

- Siting of the bypass should avoid, or at least minimize, all direct and indirect impacts to significant natural areas, rare species habitats, and animal movement corridors. In order to accomplish this, the bypass needs to be located as far east and as close to Havelock as possible; this alternative needs to be fully evaluated. This would preserve a larger contiguous portion of the natural areas and provide a buffer for the controlled burns essential to the well-being of the longleaf pine ecosystem, including the colony of red-cockaded woodpeckers. Placement of the roadbed along the eastern edge of the corridor would also reduce impacts to one of the world's largest populations of the spring-flowering goldenrod. Although part of the population will be extirpated no matter where in the preferred corridor the roadbed is placed, a more eastern alignment will permit a larger portion of the surviving population to benefit from controlled burns.

- The evaluation of direct and indirect impacts needs to be thorough and accurate, so that avoidance, minimization, and mitigation efforts can reduce those impacts. We would like to participate in the discussion of whether the Biological Evaluation and Biological Assessment has adequately assessed rare species occurrences.

- Every effort should be taken to minimize direct and indirect impacts of the bypass. Reduced connectivity within animal and plant populations, increased mortality of animal species, resulting limitations on prescribed burning, and effects of altered hydrology on plant communities all need to be addressed. It should be kept in mind that prescribed burning is essential to the viability of the longleaf pine habitat directly or indirectly impacted. Because much of this habitat occurs on loamy soils, sweetgum and shrub invasion is likely to occur in the absence of burning. Growing season or very frequent burning may be required to initially restore the habitat, and regular burning (at least every 3 years) will be required to maintain it; natural community-specific restoration and maintenance should be the goal of the prescribed burning program. Structural modifications permitting animal movement in key areas and DOT's facilitation of prescribed burning within the fragmented lands east of the bypass should be included among the provisions.

- Fencing of all sensitive areas (Significant Natural Heritage Areas, rare species population areas, or other high-quality habitat) during construction should prevent equipment from impacting these areas.

- In most cases, the effects of fragmentation of Croatan National Forest lands by a bypass are going to be difficult to minimize. In such a situation, in-kind mitigation, replacing the 1070 acres impacted with the same type of high-quality natural communities, located close to the core of Croatan National Forest lands, would be ideal. Acquiring lands in the vicinity of the forest with the same rare species populations and the sasme loamy souls as those impacted, particularly those that are extremely rare, may be extremely difficult.

If you would like to meet to discuss these concerns, please contact me at 919-715-4195 or Scott Pohlman at 919-715-8696. We appreciate your consideration of these issues.

Sincerely,

Linda Pearsall

Linda Pearsall
Director, NC Natural Heritage Program

Enclosures
LPP/smp

cc: Lauren Hillman, USFS
Steve Simon, USFS
Travis Wilson, WRC
Onslow Bight Conservation Forum Steering Committee

Attachment 1

Description of Significant Natural Heritage Areas Directly
or Indirectly Impacted by Preferred Alternative for Havelock Bypass

Below are descriptions of the Significant Natural Heritage Areas (SHNAs). They are listed in approximate order based on perceived impact from proposed project:

Havelock Station Flatwoods and Powerline Corridor The natural area consists of pine flatwoods dominated by longleaf pine (*Pinus palustris*), with a powerline running NW - SE thorugh the middle. The powerline is damp and has created savanna-like conditions conducive to many rare plants -- significant that such a collection would occur at a site which would not appear to be pristine. The site will be fragmented from most of Croatan by the preferred alternative. Rare species known to occur at this site include:

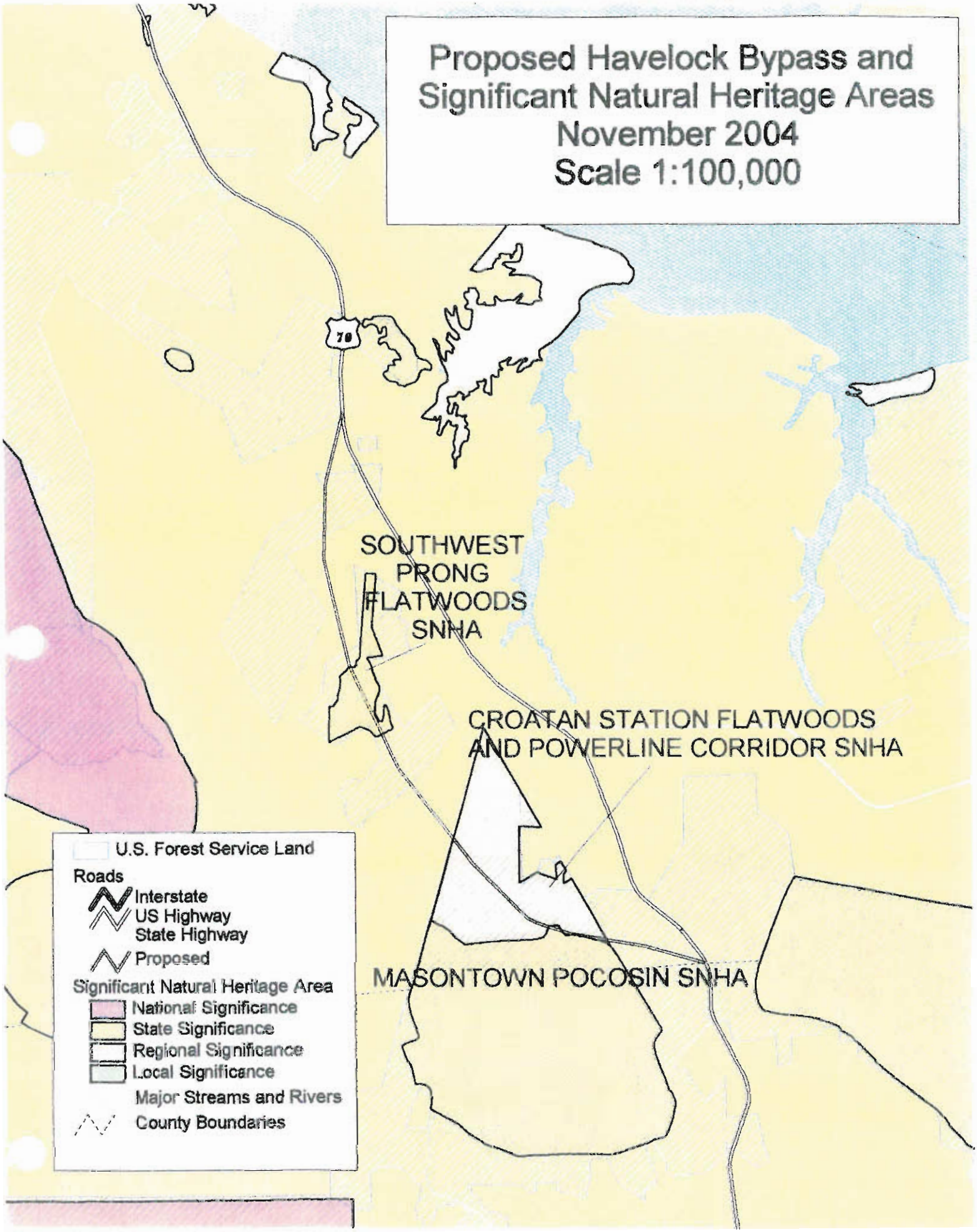
- Spring-flowering goldenrod (Solidago verna), State Threatened and Federal Species of Concern (FSC)
- Carolina goldenrod (Solidago pulchra), State Significantly Rare
- Hooker's milkwort (Polygala hookeri), State Significantly Rare
- Scale-leaf gerardia (Agalinis aphylla), State Significantly Rare
- Yellow fringeless orchid (Platanthera integra), State Threatened
- Leconte's thistle (Cirsium leconte), State Significantly Rare (and one of the best populations known in the State)
- Bachman's sparrow (Aimophila aestivalis), State Species of Concern, FSC
- Little metalmark (Calephelis virginiensis) State Significantly Rare
- Reversed roadside skipper (Amblyscirtes reversa) State Significantly Rare

Historical records indicate that there are other rare species associated with this natural area that have not been observed recently.

Southwest Prong Flatwoods The natural area includes examples of three community types that are uncommon to rare -- the Pine Savanna Wet Ultisol Variant is a globally rare community type, the Mesic Pine Flatwoods community is uncommon in North Carolina, and the Vernal Pool community is rare in Croatan National Forest. Rare species known to occur at this site include:

- Red-cockaded woodpecker (*Picoides borealis*), federally and state listed as Endangered
- Spring-flowering goldenrod (*Solidago verna*), state listed as Threatened and FSC
- Snowy orchid (*Platanthera nivea*), state listed as Threatened
- Savanna cowbane (*Oxypolis ternata*), FSC
- Georgia nutrush (*Scleria georgiana*), significantly rare in North Carolina

Masontown Pocosin The natural area contains one of the best examples of a domed peatland complex in the State, with a cluster of high quality associated pocosin communities. A core of Low Pocosin in the center is surrounded by High Pocosin and then Pond Pine Woodland on the edge. All communities are in excellent condition. Low Pocosin is a globally rare community type. This large area provides habitat for black bear. The rare Croatan crayfish (*Procambarus plumianus*) is known from upper Northwest Prong creek on the west side of the site. The proposed alignment appears to cut across the top of the Masontown Pocosin natural area, therefore posing less potential threat than to the other two natural areas.


Proposed Havelock Bypass and
Significant Natural Heritage Areas
November 2004
Scale 1:100,000
70
SOUTHWEST
PRONG
FLATWOODS
SNHA
CROATAN STATION FLATWOODS
AND POWERLINE CORRIDOR SNHA
MASONTOWN POCOSIN SNHA
U.S. Forest Service Land
Roads
Interstate
US Highway
State Highway
Proposed
Significant Natural Heritage Area
National Significance
State Significance
Regional Significance
Local Significance
Major Streams and Rivers
County Boundaries

APPENDIX A3

Local Agencies & Organizations

RESOLUTION
CRAVEN-PAMLICO TRANSPORTATION COMMITTEE

WHEREAS, the Craven-Pamlico Transportation Committee ("Committee") previously has indicated its strong support for the construction of the U.S. Highway 70 Bypass around Havelock, North Carolina; and,

WHEREAS, studies of the impact of BRAC 1993 upon the Havelock area reflect a significant increase in both the military and civilian populations, which increase already has begun to occur; and,

WHEREAS, the increase in population will materially and adversely aggravate the existing congestion on U.S. Highway 70 in the Havelock area; and,

WHEREAS, the Committee desires to go on record requesting that the U.S. Highway 70 Bypass project priority be increased.

NOW, THEREFORE, BE IT HEREBY RESOLVED, that the Craven-Pamlico Transportation Committee respectfully does request, due to unexpected and currently increasing military and civilian population and traffic in the Havelock area, that Governor James Hunt, Secretary of Transportation Sam Hunt and the North Carolina Department of Transportation accelerate the priority of the U.S. Highway 70 Bypass of Havelock project.

This the 12th day of April, 1994.

CRAVEN-PAMLICO TRANSPORTATION COMMITTEE

By: Troy Smith
J. Troy Smith, Jr., Chairman

WSMAIN/100379.

Carteret County Government

Board of Commissioners
David E. Yeomans, *Chairman*
Opal D. Hill, *V. Chairman*
Bettie H. Bell
Kim Bennett
Carol C. Long

Henry L. Gunn, III
County Manager
Tel: (919) 728-8450
Fax: (919) 728-2092

RESOLUTION
CARTERET COUNTY COMMISSIONERS

WHEREAS, the Carteret County Board of Commissioners previously has indicated its strong support for the construction of the U.S. Highway 70 Bypass around Havelock, North Carolina; and,

WHEREAS, studies of the impact of BRAC 1993 upon the Havelock area reflect a significant increase in both the military and civilian populations, which increase already has begun to occur; and,

WHEREAS, the increase in population will materially and adversely aggravate the existing congestion on U.S. Highway 70 in the Havelock area, and,

WHEREAS, the Commissioners desire to go on record requesting that the U.S. Highway 70 Bypass project priority be increased.

NOW, THEREFORE, BE IT HEREBY RESOLVED, that the Carteret County Commissioners respectfully do request, due to unexpected and currently increasing military and civilian population and traffic in the Havelock area, that Governor James Hunt, Secretary of Transportation, Sam Hunt, and the North Carolina Department of Transportation accelerate the priority of the U.S. Highway 70 Bypass of Havelock project.

This the 13th day of April, 1994.

Opal D. Hill

Opal D. Hill, Chairman
Carteret County
Board of Commissioners

Deborah W. Swain

Deborah Swain, Clerk

HWY70RES.DOC

North Carolina Chapter

802 River Road
Greenville, NC 27858
April 17, 1998

Regional Groups

Blue Ridge
Boone

Broad River
Shelby

Cape Fear
Wilmington

Capital
Raleigh

Central Piedmont
Charlotte

Cypress
Greenville

Foothills
Winston-Salem

Haw River
B ton

Headwaters
Durham

Horace Kephart
Fayetteville

Medoc
Rocky Mount

Piedmont Plateau
Greensboro

Pisgah
Brevard

Research Triangle
Chapel Hill

Sandhills
Southern Pines

South Mountains
Morganton

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APR 28 1998
DIVISION OF HIGHWAYS
PLANNING & ENVIRONMENTAL BRANCH

Mr. H. Franklin Vick, P.E.
Manager, Planning & Environmental Branch
Division of Highways
N.C. Dept. of Transportation
P.O. Box 25201
Raleigh, NC 27611

Dear Mr. Vick,

This letter is in response to your Environmental Analysis (EA) for the US 70, Havelock Bypass, Craven County, North Carolina.

The Cypress Group of the Sierra Club expects the environmental analysis process to result in full disclosure of all anticipated environmental impacts and identification of all practical mitigative measures. Furthermore, we expect the N.C. Dept. of Transportation to adopt all such mitigative measures for rare, threatened and endangered species. Because of numerous errors, omissions and inconsistencies in the document, it is our opinion that your January 1998 EA is inadequate on all three counts and that an Environmental Impact Statement is required. Errors, omissions and inconsistencies we found are as follows:

1. There is much internal inconsistency within the document. The body of the EA often contradicts or ignores the various appendices, especially the U.S. Forest Service Analysis of the Alternatives (Appendix A).

For example, page S-4 states "All of these Bypass Alternatives were located to allow at least a 800 meter (half mile) distance between the woodpecker (RCW) colony in the Croatan National Forest." However, based on Figure 4 of the *Red Cockaded Woodpecker Assessment: Havelock Bypass US 70 (R-1010) Craven County North Carolina* (Appendix B), the selected corridor will pass within 250 to 300 feet of a cavity tree in CNF 58 and less than 1000 feet of the seven other cavity trees in this cluster.

2. The U.S. Fish & Wildlife Service's determination that the project is "not likely to adversely impact" the red-cockaded woodpecker is inconsistent with identified adverse impacts.

This determination (during Informal Consultation) was apparently based solely on direct impacts associated with construction of the bypass. However, this determination is inconsistent with a previous U.S.F.& W.S. determination (during Formal Consultation) that "permanent clearings" can be a negative impact, i.e., it should not be done within 1/4 mile of groups in MIL 3 and MIL 4 (see U.S.F & W.S. Biological Opinion, p. 43, in *Final*

Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region, June 1995). All known cavity trees in CNF 58 are located within 1000 feet of the proposed Alternative 3 corridor - the closest is within 300 Feet.

The EA acknowledges that indirect impacts are also important, i.e., it will become impossible for the U.S. Forest Service to carry out prescribed burning in RCW habitat which is essential to maintain the suitability of this habitat for use by RCWs. This affects land that will be isolated (= lies inside of) by the constructed bypass. In fact, the EA frequently underscores this fact by stating that the U.S. Forest Service intends to dispose of all lands isolated by the constructed bypass (e.g., page 4-38). It will also affect non-isolated lands within close proximity of the bypass. This situation applies to the RCW colony E02 (the one that lies on U.S. Forest Service land that will become isolated by construction of the bypass) and CNF 58, *Red-cockaded Woodpecker Assessment: Havelock Bypass US 70 (R-1015), Craven County, North Carolina* (Appendix B).

The above impacts are important because they affect lands within a U.S. Forest Service designated RCW Habitat Management Area (see *Final Environmental Impact Statement For the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region)* - a fact that the Havelock Bypass EA fails to mention. The EA also fails to identify the Management Intensity Level (MIL) designated for the RCW population that occupies the HMA. Therefore, the EA also fails to evaluate the level of risk to the population if CNF 58 is extirpated by impacts, direct & indirect, associated with the project.

In our opinion, the preferred alternative poses a direct threat to the viability of CNF 58 as a result of clearing within close proximity of 8 cavity trees. The preferred alternative will clearly impact the red-cockaded woodpecker by preventing the U.S. Forest Service from managing important habitat associated with CNF 58 and the CNF E02. This will harm the species by allowing some of its habitat to deteriorate and become useless - resulting in incidental take of an Endangered Species under Section 7 of the ESA. Therefore, it is our opinion that the U.S. Forest Service should request Formal Consultation and a Biological Opinion from the U.S. Fish and Wildlife Service regarding the affects of this project on the RCW.

3. Dept. of Transportation (DOT) field work associated with this project was inadequate.

(A) For example, the EA does not describe what sort of surveys were carried out for the RCWs within the project area. Apparently, no new surveys were carried out on U.S. Forest Service or private land lying inside of the proposed bypass corridor. RCW assessments to evaluate impacts to foraging habitat (Appendix B) were based solely on previously known cavity trees and birds on U.S. Forest Service lands. However, the *Red-*

cockaded Woodpecker Assessment: Havelock Bypass US 70 (R-1015), Craven County, North Carolina (Appendix B) presents evidence of an unknown RCW cluster, or clusters, in the vicinity of the bypass project. Appropriate surveys should have been conducted in an attempt to locate this "unknown" colony.

(B) Also, a very impressive feature of the project area is the expansive tracts of flatwoods that are strongly dominated by longleaf pine - many of these tracts are of very good quality, from a natural community perspective. Further, these longleaf pine flatwoods occur on various soil types, including ones such as Lenoir. The combination of high quality longleaf pine flatwoods over Lenoir soil is of interest - most such areas were long ago converted to agricultural fields or intensively managed tree farms.

These longleaf pine areas are of special concern. The longleaf pine ecosystem is considered to be critically endangered, i.e., greater than a 98% historical decline (see *Endangered Ecosystems of the United States: a Preliminary Assessment of Loss and Degradation,* National Biological Service, Biological Report 28). Further, much of this flatwoods acreage is of the community type "Mesic Pine Flatwoods". High quality examples of this community type are now rather rare. Given the widespread acreage of mesic soils now under cultivation in the Coastal Plain, this is probably the longleaf pine community type that has declined the most from presettlement times." (See DEHNR, N.C. Natural Heritage Program 1994.)

However, in the discussion of "Biotic Communities" (p. 3-46), the Pine Flatwoods communities are said to be dominated by loblolly pine, and the significance of these flatwoods tracts is not even mentioned. Such an omission strongly brings into question the adequacy of this document.

(C) Equally troublesome is the fact that DOT biologists, or biologists contracted by DOT, obviously overlooked a major population of spring-flowering goldenrod (*Solidago verna*), a Federal Species of Concern. On pages 4-44, the EA states that Corridor 3 "borders documented populations of spring-flowering goldenrod, flaxleaf gerardia, and Georgia nutrush. These documented populations inhabit the power line easement denoting the western corridor boundary." However, in late November 1996, a biologist contracted by the U.S. Forest Service (see Section 3*: Botanical Analysis, Proposed U.S. 70 Bypass, Havelock North Carolina*, in Appendix A) discovered a major population of spring-flowering goldenrod in the area. This population not only lies within the powerline corridor that makes up the western boundary of the proposed corridor, but also occurs within adjacent flatwoods and within powerline corridors farther north, such that Alternative 3 will destroy a major portion of the population.

(D) Apparently no survey work was conducted for rough-leaf loosestrife, a Federally listed species, within the proposed corridors or elsewhere.

Although the EA discusses leatherback sea turtle and West Indian manatee, species that of course do not occur within the project area, it does not evaluate impacts to the rough-leaf loosestrife (*Lysimachia asperulifolia*), a Federally listed species known to occur in the vicinity (documented records from Carteret and Pamlico counties). The U.S. Forest Service notes that suitable habitat for this species occurs in Alternatives 1 and 3, and that the "loss of suitable habitat has a strong probability of causing the loss of individuals" *Botanical Analysis of the Proposed U.S. Highway 70 Bypass, Havelock, North Carolina (Section 3 of Appendix A)*".

(E) Field work carried out by DOT biological personnel was apparently limited to the actual corridors.

The EA frequently stresses the project will lead to extreme environmental degradation to all lands that lie inside of the selected corridor. For instance, on page 4-57, the EA states, "The value of the prime farmland, wetlands, and the biotic communities associated with the land within the construction limits will for all practical purposed be permanently lost. The land will no longer provide the associated benefits to the natural environment."

Field surveys carried out by U.S. Forest Service personnel and by a contractor for the U.S. Forest Service carried out in late October and November, were not intended to be adequate surveys for rare species of the project area. These surveys were intended merely to identify suitable habitat for such species (see Appendix A).

4. The EA does not appear to accurately reflect the extent of wetlands that will be lost as a direct result of bypass construction. Further, the EA does not adequately address the topic of secondary loss of wetlands resulting from bypass construction.

The EA states that wetlands were identified based on the U.S. Army Corps of Engineers Wetland Delineation Manual (U.S. Department of Army 1987). However, based on Figures 3-6a-c, it appears that wetlands were defined by a more exclusive methodology, and not based on the Wetland Delineation Manual. Extensive areas of hydric soils - Rains, Leaf, Pantego, Bayboro and Torhunta soils are shown in Figures 3-6a-c as being nonwetlands. These are shown as being "poorly drained soils" in Section 5: *Soils/Wetlands Analysis in Appendix A: U.S. Forest Service Analysis of the Alternatives for the Proposed U.S. Highway 70 Bypass, Craven County, North Carolina.* Most of these areas certainly have dominant vegetation that averages FAC (=facultative), or wetter, e.g., loblolly pine, red maple (Acer rubrum), cane (Arundinaria gigantea), netted chainfern (Woodwardia areolata), and Virginia chainfern (Woodwardia virginica).

Thus, we can only assume that these areas were considered to be nonwetland based on lack of hydrology. How was this supposed lack of hydrology determined? Based on the EA, it appears that certain areas were "written off" (i.e., considered not to have adequate hydrology) based on visits on April 26, 1994 and June 21, 1995 (see pages 3-54). Such

one day visits are not adequate to determine that an area does not meet the hydrology criterion. On 3 April 1998, Sierra Club members examined a tract immediately adjacent to FSR 601 (north side) that was mapped as being nonwetland (see Figure 3-6a). The soil type of the area is Leaf, a hydric soil. Loblolly pines were planted in the area (we assume the presence of these trees is the reason this area was considered to be nonwetland). Other vegetation is predominantly hydrophytic, e.g., red maple, pepperbush (Clethra alnifolia), fetterbush (Lyonia lucida), Virginia chainfern, etc. On the day of our visit, at the beginning of the growing season, the watertable was within inches of the soil surface. That an area such as this is considered nonwetland suggests that the wetland mapping for this project was inaccurate.

The EA acknowledges some degree of secondary loss of wetlands resulting from the bypass construction but does not attempt to quantify these losses or offer any mitigative measures. For example, page S-9 states "Therefore, the wetland impacts associated with Alternative 1 [outermost alternative] may be considered more substantial than Alternatives 2 & 3 [more interior alternatives] due to secondary effects on contiguous wetland communities." A substantial acreage of high quality wetlands lies within the portion of Croatan National Forest lands that will be fragmented by the proposed project. These wetlands, which are now protected because of Forest Service ownership, will undoubtedly be subject to degradation and nickel-and-dime losses after they pass into private ownership.

5. The discussions regarding the impacts of the project on the Southwest Prong Flatwoods Priority Area and on the major population of spring-flowering goldenrod referred to earlier are misleading and inadequate.

The EA states that Southwest Prong Flatwoods Priority Area (an area of high quality Mesic Pine Flatwoods, with associated Pine Savanna and Vernal Pool) has "not been given specific boundaries by NCNHP". However, this is in error. Specific boundaries of the priority area are shown in Appendix A, Section 3: *Botanical Analysis, Proposed U.S. 70 Bypass, Havelock, North Carolina*. Further, the EA states that Corridor 3 will "encroach upon the eastern extent of the Southwest Prong Flatwoods Priority Area". This statement is misleading at best, as Corridor 3 will , in addition to destroying portions of the eastern and central sections of the priority area (45.28 acres according to Appendix A) will also isolate the northern portion of the priority area (which will subsequently be disposed of by the U.S. Forest Service).

The major population of spring-flowering goldenrod found within the Southwest Prong Flatwoods Priority Area was referred to earlier. This population, at least the major portion of it, was apparently overlooked by DOT biologists. The EA (p. 44) implies that the selected corridor will not destroy any spring-flowering goldenrod plants ("populations inhabit the power line easement denoting the western corridor boundary"). However, this

population is found not only within the portion of the powerline corridor that forms the western boundary of Corridor 3. Much of it (perhaps 50%) lies farther north within sections of powerline easements (and also in adjacent sections of flatwoods) that lie either directly in the path of Corridor 3, or north of Corridor 3 - on U.S. Forest Service land that will become fragmented and disposed of.

The existence of this major population has also been documented by Dr. Jon Stukey, Botany Department, N.C. State University, who is conducting research on the species within the Croatan National Forest. Dr. Stukey (pers. com., April 1998) estimates that the proposed corridor (No. 3) is likely to lead to direct destruction, or gradual loss of habitat, for up to 35% of the population of this species found within the National Forest.
It is now known that this species is not as rare as once thought. On the other hand, the species is endemic to eastern North Carolina (and extreme northeastern South Carolina), and the Croatan National Forest is likely of major importance to the continued viability of the species. Elsewhere, most populations are small and scattered - many are apparently remnant populations that are in decline.

6. The EA does not offer any assurance that riverine wetland habitats destroyed by the project, most of which lie within boundaries of the Croatan National Forest, will be mitigated in a manner that will add to the acreage of such habitat within the Forest Service boundary.

The *Conceptual Mitigation Plan* (Appendix G) states that "riverine wetland impacts associated with Havelock Bypass will be mitigated elsewhere once impacts have been fully quantified and a suitable mitigation site has been identified."

7. Mitigation for the type of Forest Service habitats that will be lost as a result of this project is inappropriate and inadequate.

Approximately 1070 acres of Croatan National Forest land will be ultimately lost as a result of this project (selection of Alternative 3 - see pages 4-37). The majority of this acreage consists of medium to high quality flatwoods dominated by longleaf pine, approximately 683 acres based on U.S. Forest Service stand maps. As stated earlier, the longleaf pine ecosystem is considered to be an endangered ecosystem. "Mitigation for these fragmented lands will be provided as a condition of the land transfer under the provisions of 23 U.S.C. Section 317(b). NCDOT is planning to mitigate the fragmented CNF lands by transferring the ownership of the uplands portion of a 1659 hectare (4100 acre) tract purchased for wetlands restoration and preservaion." (page 4-38).
However, according to Appendix G (Conceptual Mitigation Plan), nonhydric soils make up only 100 acres of the proposed mitigation site, and these areas are shown in the Plan to have been cutover. Perhaps the term "uplands" above refers to hydric soils area (swamp forest) that have been partially drained and ditched, and also cut over. While we do

support the acquisition and enhancement of this nonriverine swamp forest tract, which we recognize as potentially being of major ecological significance, we nevertheless believe that this is not an appropriate means of mitigating for the loss of nearly 700 acres of longleaf pine flatwoods, much of which is of high quality and provides habitat for rare plant species and the red-cockaded woodpecker.

8. Running Alternative 3 parallel to and immediately adjacent to the powerline easement that runs north from FSR 613 will result in adverse impacts that the EA fails to recognize.

On page 4-36, the EA points out the desirability of running the selected corridor immediately adjacent to established powerline corridors "in order to avoid additional migration obstruction and fragmentation of wildlife habitat." In general, we believe that this is a valid philosophy. However, in the case of the Havelock Bypass, adverse impacts will result.

This powerline corridor supports an abundance of savanna species, including PETS species such as flaxleaf gerardia, Gerogia nutrush and spring-flowering goldenrod (Federal species of concern). Apparently, frequent mowing of the right-of-way mimics frequent fire, to which these species are adapted. However, the establishment of a highway with maintained shoulders adjacent to the powerline corridor will almost certainly lead to the establishment of alien weedy species within the powerline corridor. Although this process is likely to be gradual, it will likely result in severe competition with the PETS plant species.

Also, as is shown in Figure 4 of Appendix B: *Red-cockaded Woodpecker Assessment and Addendum to the Red-cockaded Woodpecker Assessment, Havelock Bypass, US 70 (R-1015), Craven County, North Carolina*, neither the bypass alone, or the powerline corridor alone, would effectively serve as a barrier to feeding red-cockaded woodpeckers. However, the two combined will constitute a barrier.

9. Environmental Consequences are ignored and no mitigation is proposed for numerous PETS and MIS species that will be impacted.

The "Wildlife Analysis" identifies numerous impacts to PETS and MIS species - including the possibility that there could be a trend toward federal listing or loss of viability to Rafinesque's big-eared bat. The Environmental Consequences section (4.6.3), however, ignores these impacts, and mitigation recommended by the USFS (p. 216 of the Wildlife Analysis) and refers the reader to an innocuous matrix (Table 3.7.4b.) that identifies "Preferred habitat for documented or high probability PETS Species". Since species like Rafinesque's big-eared bat are not listed in the table, it seem the intent is for the reader to believe they are unimportant. DOT's criteria for determining which species are "high

probability" species (and included in Table 3.7.4b) should be clearly identified.
The USFS's Wildlife Analysis includes a brief listing (p. 2-16) of mitigation measures that "must be implemented in order for a no effect determination....", etc. This was a good idea on the part of the USFS, but it could have been more comprehensive. For example, according to Table 2, the Rafinesque's big-eared bat, and the southeastern bat, roost in old buildings and hollow trees. Construction of artificial structures for roosting by these species could have been prescribed. Also, special design features to provide roosting sites for bats could be incorporated into bridges to be constructed. These and other mitigative measures that could possibly be identified should be built into the Preferred Alternative. This should be done in section 4.6 - which should be renamed "Natural Resources & Mitigation" - like section 4.7 "Wetlands & Mitigation". Also, section 4.7 should include a matrix showing adverse impacts and adopted mitigative measures for each PETS species

As mentioned earlier, the red-cockaded woodpecker will surely be impacted by this project. Reasonable mitigation must therefore be developed for this species.

10. Use of the term "Protected Species" is misleading and devalues species not currently on federal or state lists.

Federal and state listed species and species on the USFS "PETS" list are included in the term "Protected Species" in sections 3.7.4 & 4.6.3. While it is true that listed species are "protected" by the Endangered Species Act and other regulations, it is misleading relative to unlisted species which are also "protected" by other laws and regulations. The EA establishes a biased "Wildlife Community" and "Protected Species" dichotomy which implies there is no need to even bother to summarize impacts to the "unprotected" wildlife community. The above sections should be renamed "Listed Species", or "Special Status Species", or "PETS Species".

Based on the inadequacy of the EA and earlier surveys, and the large number of rare species likely to occur within the project area (see Appendix A), we request that DOT prepare an Environmental Impact Statement for this project.

Thank you for the opportunity to submit these comments - we hope they are helpful. If you have any questions, you can contact me at the above address and by phone at 919-758-8959.

Sincerely,

John Anema, Chair
Cypress Group, Sierra Club

CC:
J.Ramey - Supervisor, National Forests of NC
L.Hillman - District Ranger, Croatan NF
M.Diggins - State Director, Sierra Club
C.Herlevich - State Director, National Audubon Society
S.Hall - NC Natural Heritage Program
D.Stewart - NC Wildlife Resources Commission
J.Hefner - USF&WS
T.Miller - NC Coastal Federation
D.Carter - Southern Environmental Law Center

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JAN 18 2002
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ANALYSIS BRANCH

Ron Elmore

1205 E Wright Road
Greenville, NC 27858
January 14, 2002

Mr. Bill Gilmore, PE Manager
NCDOT
Project Development & Environmental Analysis
1548 Mail Service Center
Raleigh, NC 27699-1548

JAN 22 2002

Dear Mr. Gilmore:

In April of 1998 the Cypress Group of the Sierra Club submitted seven pages of comments to NCDOT regarding the draft Environmental Analysis (EA) for the Havelock Bypass. Because of the seriousness of probable unmitigated adverse environmental impacts likely to occur to the Croatan National Forest (CNF) we advised NCDOT to do a full environmental impact statement.

Today, after field trips to the CNF and communications with the USFS regarding the Bypass, we are even more concerned. We would therefore greatly appreciate a letter from you addressing the following questions.

1. Is NCDOT willing to mitigate adverse impacts (to lands with unique ecological values and numerous USFS PETS and MIS species) by closing the Bypass as needed to allow prescribed burning of lands in close proximity to the Bypass? Included in this concern are lands that would be fragmented by the Bypass due to their location between the Bypass and the Town of Havelock. According to the Draft EA, NCDOT assumed the USFS would dispose of these lands thereby eliminating the need to provide for continued management. However, the USFS has assured us in recent correspondence that it is not their intent to dispose of these lands. The above question is important because, under the preferred alternative some 700 acres of these lands consist of good to high quality longleaf pine, and since longleaf pine savanna has been reduced to approximately 3% of its original size throughout the South it is therefore considered an endangered ecosystem. Also, because longleaf pine restoration is the cornerstone of the CNF's Draft Land Use Plan, disposal of lands conflicts with high priority CNF goals and objectives.

2. Have NCDOT engineers met, or do they plan to meet, in the field with USFS botanists/ecologists to select a roadway alignment that will miss the proposed Southwest Prong Flatwoods Natural area and other rare communities in USFS forest compartment 12? The USFS ecologist stated (See the USFS botanical analysis in Appendix A of the Draft EA.) that impacts to rare plants/communities in this compartment would be "major." He therefore recommended such a meeting to search for a way to protect a major population of spring-flowering goldenrod – in order to avoid loss of viability of this species on the CNF and throughout its range.

3. Will NCDOT construct bridges (as opposed to culverts) over streams and associated riparian & wetland habitats associated with Daniels Branch, southwest prong of Slocum Creek and the east prong of Slocum Creek? This was recommended by the USFS biologist in order to avoid causing a "trend toward federal listing and loss of viability to the Rafinesque's big-eared bat." Also, see question # 8 below.

4. Would NCDOT consider meeting in the field with USFS biologists (and other interested parties) to discuss opportunities for mitigating adverse impacts to RCW nesting area CNF 58 and the power line right-of-way which currently supports several species of rare plants. The US Fish & Wildlife Service reviewed the Bypass EA and determined that the preferred alternative is "not likely to adversely impact" the RCW. However, the Service had previously stated (in a 1995 EIS pertaining to management of red-cockaded woodpecker habitat) that permanent clearings (e.g., the Bypass right-of-way) could have a negative impact on the RCW if closer than ¼ mile of an active group. Corridor 3 passes within 250 to 300 feet of an active cavity tree and within 1000 feet of the seven other cavity trees in the group. It therefore seems reasonable to conclude that this could cause the birds to abandon the site. Regardless of whether or not this may affect the species it represents and adverse impact that deserves mitigation. According to the consultant's RCW analysis a 40ft. buffer of trees will be left between the Bypass and the power line. No rationale is given for why the 40ft distance was selected which leaves the biological effectiveness of this buffer in question.

5. Will NCDOT commit to buying suitable replacement land for unique areas destroyed by the Bypass, e.g.; the Southwest Prong Flatwoods Natural Area, RCW nesting area CNF 58, and lands dominated by longleaf pine? We recommend this contingency in case planned mitigation is unsuccessful and because such areas are not adequately represented within the wetlands mitigation bank to be transferred to CNF ownership.

6. Has NCDOT conducted growing season surveys for rare plants as recommended by the USFS's contract biologist following his survey in October of 1996? The contractor recommended surveys only on lands "having potential for additional rare plants" in specific areas as mapped in his report. Up to date and accurate surveys are essential for developing effective mitigation.

7. Has NCDOT conducted surveys for RCW activity in the project area since the April 1996 analysis by the contract biologists? The contract biologists relied entirely upon existing data, i.e.; they conducted no new surveys. Up to date and accurate surveys are also essential for developing effective mitigation for the RCW.

8. How will NCDOT mitigate for wildlife/vehicle collisions? Besides the damage to wildlife, such collisions are, as you well know, extremely expensive in terms of both economic damage to vehicles and injuries to humans including loss of life. Black bears and white-tailed deer can cause severe damage upon impact with vehicles while smaller animals likely to be involved in incidents on the Bypass (e g., alligator, bobcat, foxes, raccoon, and even opossum and skunks) can cause drivers to swerve

into the travel lane of another vehicle. It is difficult to tell from the EA which alternative is best/worst regarding this concern. Since bridges (as opposed to culverts) provide potential wildlife travel corridors for wildlife to move between habitats, we would appreciate receiving (1) a map showing the location of planned bridges on each corridor alternative and (2) a table showing the width available as a travel corridor beneath each bridge.

Thank you in advance for your comments on the above concerns.

Sincerely,

Vince Bellis/by Charles L. Hunter

Vince Bellis, Chair
Cypress Group Sierra Club

CC:
Vic D'Amato, NC Sierra Club
John Ramey, USFS National Forests of NC
Lauren Hillman, USFS CNF
Lark Hayes, Southern Environmental Law Center

FILE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

February 14, 2002

Mr. Vince Bellis, Chair
Cypress Group Sierra Club
1205 East Wright Road
Greenville, North Carolina 27858

Dear Mr. Bellis:

Thank you for your letter regarding the Proposed Havelock Bypass Project (TIP No. R-1015). The North Carolina Department of Transportation (NCDOT) is currently finalizing a Finding of No Significant Impact (FONSI) for the subject project that addresses many of the issues you have raised. I will address each of your questions in a numbered format as expressed in your letter.

1- According to the United States Forest Service it is rarely necessary to close a road unless a fire accidentally gets out of control, in which case emergency personnel take appropriate action. Law enforcement and emergency services are alerted prior to activities. The proximity of the Havelock Bypass to the Croatan National Forest should not present unusual problems associated with USFS management practices. As indicated on the Compartment Map (2nd figure in Appendix A of the EA, USFS Analysis of the Alternatives), the two parcels most affected by the proposed project are Compartments 11 and 12. These compartments are isolated parcels of USFS land surrounded by privately held tracts. It is difficult for the USFS to manage these lands because the impacts of active management to private properties, a prescribed burn will result in smoke impacts to private citizens regardless of the direction of the wind.

The NCDOT has a number of existing transportation corridors located in around USFS properties (e.g. NC 58 near Maysville). The USFS posts signs warning of "heavy smoke" prior to burning, and they schedule these activities according to prevailing weather patterns in order to minimize smoke problems. The USFS starts the fires on the road "side" of the parcel to create a buffer between the fires and the road. USFS personnel stand by during the operation to maintain control of the situation.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

2- The NCDOT coordinated with the North Carolina Natural Heritage Program (NCNHP), to identify and avoid impacting the Southwest Prong Flatwoods Priority Area to the extent possible early in the study process. The USFS conducted a survey for the spring-flowering goldenrod (Solidago verna), a plant which is protected under the North Carolina Endangered Species Act and included on the USFS Proposed, Endangered, Threatened, and Sensitive (PETS) species list, within the Recommended Alternative in late 1996. This is included in Section 3 of Appendix A of the EA. The survey found that most of the state species identified and/or their potential habitat, including the spring-flowering goldenrod, occurs along transmission line corridors which crisscross the project area.

The NCDOT, USFS, North Carolina State University (NCSU) and NCDENR Natural Heritage Program (NHP) met in August 1999 to discuss the impacts of the Recommended Alternative on the spring-flowering goldenrod. It was decided the NCDOT would survey the corridor of the Recommended Alternative for the goldenrod and identify verified populations using Global Positioning System (GPS) technology. NCDOT conducted this survey and a GPS map of the locations was developed to allow the roadway to be aligned within the corridor so impacts to the spring-flowering goldenrod populations were minimized.

Jon Stucky, PhD (NCSU) developed a transplanting plan for NCDOT to relocate some populations of the spring-flowering goldenrod as part of the project mitigation efforts.

3- In December 1999, representatives from the U.S. Army Corps of Engineers (USACE), the U.S. Fish and Wildlife Service (USFWS), the U.S. Forest (USFS), the NCDENR Division of Water Quality (DWQ), the NC Wildlife Commission (WRC), The FHWA and NCDOT met to discuss the minimization of avoidable wetland and stream impacts. The NCDOT's commitment to bridge all high quality, riverine wetland systems was noted at the start of the meeting. The WRC expressed an interest in providing bridge lengths sufficient to accommodate wildlife crossings: East Prong Slocum Creek, Southwest Prong Slocum Creek and Tucker Creek. In consultation with these agencies a culvert was proposed for Tucker Creek and bridges were proposed at the Slocum Creek crossings. It was decided to conduct a field review to to determine appropriate bridge lengths.

On April 20, 2000 the USFWS, WRC, USFS, and NCDOT met at the Croatan National Forest Service Ranger's Office in Craven County. The representatives noted that the proposed Tucker Creek crossing is in the system headwaters and is a short distance upstream of the existing US 70 crossing, which is accommodated by a culvert.

The WRC determined the proposed Bypass crossing of Tucker Creek would not need Bridging due to the location and nature of the crossing. However, it was determined the Southwest Prong Slocum creek and Eastern Prong Slocum Creek would require additional bridging to accommodate wildlife crossings. The increased lengths of the proposed bridges were established in the field. The overall length of the Southwest Prong bridge was increased from 50 meters (165 feet) to 450 meters (1,475 feet) and East Prong bridge was increased from 40 meters (130 feet) to 230 meters (750 feet) to provide dry wildlife crossings and to bridge high quality riverine wetland systems in accordance with NCDOT policy.

4- Previous studies performed by Dr. Jay Carter for NCDOT showed "no effect" on CNF 58, and therefore no mitigation is required. A transplanting plan for the Goldenrod was already discussed above in bullet point 2.

5- The NCDOT will not be purchasing land to replace unique areas. Currently there are no mitigation requirements for areas such as the Southwest Prong Flatwoods or the longleaf pine. As stated earlier, due to the lack of adverse impacts to the RCW nesting area CNF 58, no mitigation is required or planned. We do wish to point out however that the Department has made substantial investment in protection of the RCW species. This advance mitigation includes a 9400 acre purchase of land in Tyrell County at the Palmetto Peartree Preserve and the recent acquisition of 2400 acres of land in the Sandhills community. These purchases involve over 20 clusters of RCW.

6- Growing season surveys were conducted for all federally protected plant species. Additional surveys will be conducted again in spring 2002 to update the findings of the previous surveys. USFS biologists will perform this work for NCDOT.

7- Dr. Jay Carter will perform an RCW survey update in the spring 2002 for the NCDOT.

8- NCDOT will provide controlled access fencing as well as the previously mentioned extended bridge lengths at the Slocum Creek crossings to reduce the wildlife/vehicle collisions and accommodate wildlife crossings. The proposed lengths of these crossings were determined by the NC Wildlife Resources Commission Wildlife Biologist and are listed above.

I hope all of your questions have been answered. If you need additional information please do not hesitate to contact Mr. John Conforti at (919) 733-7844 ext. 208. He is the project manager for the Havelock Bypass project and is familiar with many aspects of the proposed road.

Sincerely,

William D. Gilmore, P.E., Manager
Project Development & Environmental Analysis

WDG/jc/lbj
cc: Collice C. Moore, Member, Board of Transportation

APPENDIX B

Merger Process Team / Steering Committee Meetings and Concurrence Points

MEMO TO: Meeting Attendees

FROM: J. K. Burleson, P.E.

SUBJECT: Summary Minutes of Steering Committee Meeting for US 70, Proposed Havelock Bypass, Craven County, NC TIP No. R-1015, State Project No. 8.T170701, Federal-Aid Project No. R-56-4(34), TGS No. 89406

DATE: May 21, 1993

The first steering committee meeting for the subject project was held on Friday, May 15, 1993 at 10:00 a.m. in room 470 of the Highway Building in Raleigh. The following attended:

NAME	ORGANIZATION
Gail Grimes	NCDOT - Planning and Environmental
Michelle Wagoner	NCDOT - Planning and Environmental
Frank Vick	NCDOT - Planning and Environmental
Charles Bruton	NCDOT - Planning and Environmental
David G. Modlin, Jr.	NCDOT - Statewide Planning
Wes Stafford	NCDOT - Statewide Planning
LeRoy Smith	NCDOT - Roadway Design
Bill Garrett	NCDOT - Citizens Participation
Alan Weakley	NC DEHNR - Parks & Recreation/Natural Heritage
Charles Jones	NC DEHNR - Division of Coastal Management
Eric Galamb	NC DEHNR - Division of Environmental Management
Ken Burleson	TGS Engineers
Norm Sanders	COE - Washington, NC
David Dell	U.S. Fish & Wildlife Service
H. Ralph Kennedy	City of Havelock
Mike Nunn	City of Havelock
Lauren Hillman	Croatan National Forest
W. F. Caddell	Craven County Transportation Committee
Hugh Burton	MCAS - Cherry Point
David Yow	NCWRC - Habitat Conservation
Don Baumgardner	Craven County Planning
John Wadsworth	FHWA

Michelle Wagoner the NCDOT project engineer for the planning phase of this project, opened the meeting with a welcome and brief explanation of the purpose of the steering committee. Gail Grimes, Unit Head for the consultant engineering unit gave a brief history of the project and studies that have been completed to date concerning the project.

Ken Burleson went over the current tentative schedules for the project and noted that the actual project status was behind due to the lack of traffic and natural resources information. Ralph Kennedy urged the State to expedite the project and Frank Vick indicated that the State would make special efforts to do so.

David Modlin indicated that the NCDOT Statewide Planning Unit could provide current and projected traffic for the route from the Havelock Thoroughfare Plan model. Since this traffic is now available, it was suggested to arrange a meeting with the NCDOT Statewide Planning and Planning and Environmental Branch representatives to determine the appropriate projections to use for the development of this project.

The public involvement process was discussed next with Ken Burleson providing the TGS toll-free number for the project and the plans for three newsletters and two informal workshops. Bill Garrett requested that his office be involved in the entire public involvement process and offered several suggestions for better public involvement. Eric Galamb suggested public notification through fliers in Havelock utility bills. Ralph Kennedy indicated the Town would be cooperative with this distribution method. Gail Grimes noted that NCDOT is now providing and paying for newspaper advertisements. She suggested that TGS representatives meet with NCDOT representatives from Mr. Garrett's office and Planning and Environmental to work out public involvement details. Ralph Kennedy suggested that Channel 12 TV and the Cherry Point Base newspaper be included in our public notification plans. Mr. Kennedy also noted the local business community is probably split 50/50 on support of a bypass but that the majority of the residential community favored a bypass. Bill Garrett suggested possible meetings with several civic groups to explain alternatives once they are developed.

Eric Galamb suggested that several methods be addressed in the DEIS to improve traffic service along the existing corridor. Bill Caddell urged that no alternative that destroys existing development be considered along on the existing alignment. Lauren Hillman did not favor presenting a preferred alternative at the second public workshop and in the DEIS. Frank Vick noted that an alternative that provides an acceptable level of service would have to be considered along the existing alignment. After considerable discussion concerning alternatives to be considered, it was determined to address this issue at the next steering committee meeting.

The existing status of the various study elements, including the need for archaeological information, was presented by Ken Burleson. Lauren Hillman indicated the Forest Service would be cooperative in supplying information and access to the area with proper requests.

The status of available and necessary natural resources information was discussed at various occasions throughout the meeting. Lauren Hillman suggested that mitigation for losses might be available through acquisition of suitable lands. She indicated that her staff is conducting habitat mapping studies that will be available by the end of September 1993. After much discussion of available information, It was decided that NCDOT would develop a scope of services for the natural resources investigations in cooperation with the consultant for the project. This scope will be coordinated with Lauren Hillman and Alan Weakley to assure no duplication of efforts. The meeting ended with a decision for appropriate NCDOT staff to meet with Ken Burleson and Jerry McCrain, the natural resources subconsultant, as soon as possible to begin development of this scope.

Please contact me before May 31, 1993 if you desire any corrections, modifications or additions to these summary minutes. My local number is (919) 851-7144 and the Havelock number is 1-800-736-7144.

Thank you.

MEMO TO: Meeting Attendees

FROM: J. K. Burleson, P.E.

REFERENCE: Summary Minutes of Second Steering committee Meeting for US 70, Proposed Havelock Bypass Craven County NC TIP No. R-1015, State Project 8.T170701, Federal-Aid Project No. R-56-4(34), TGS No. 89406

DATE: November 2, 1994

The second steering committee meeting for the subject project was held on Wednesday, October 19, 1994 in Room 470 of the Transportation Building in Raleigh. The following attended:

Frank Vick	NCDOT - Planning and Environmental
Richard Davis	NCDOT - Planning and Environmental
Gail Grimes	NCDOT - Planning and Environmental
Michelle Fishburne	NCDOT - Planning and Environmental
Dean Sarvis	NCDOT - Roadway Design
Roy Shelton	FHWA - Operations Engineer
Ken Burleson	TGS Engineers
Bill Stephens	TGS Engineers
Jerry McCrain	Environmental Services, Inc.
Wes Dickson	Environmental Services, Inc.
Holly Jenkins	Croatan National Forest USDA - FS
Hugh Burton	MCAS, C.P. - Fac. Dev. Off.
Tyler Harris	MCAS, C.P. - Community Plans/Liaison Office
Don Baumgardner	Planning Director - Craven County
Gary Peterson	Peterson Arch.
Wes Stafford	NCDOT - Statewide Planning
Beth Martin	Commissioner - City of Havelock
Frank McBride	Program Manager - NCWRC
Howard F. Hall	USDOI Fish & Wildlife Service
Steven Kroger	Water Quality - NC DEM
Steve Hall	Natural Heritage - DPR

Michelle Wagoner, the NCDOT Project Engineer for the planning phase of this project, opened the meeting with a welcome and a request for each attendee to introduce themselves and explain their affiliation with the project. After the introductions, Ken Burleson of TGS Engineers, using

a handout provided to all attendees, summarized the project schedule and described the work completed to date on the capacity analysis and the existing corridor. He then introduced Jerry McCrain and Wes Dixon of Environmental Services, Inc. to describe the natural resources investigation conducted within the bypass study window. Dr. McCrain described the plant community mapping, the potential endangered and threatened species (PETS) and priority habitat mapping, as well as the wetlands mapping. All of this mapping was done with existing data file collection and some spot field verification by ESI and US Forest Service personnel. The mapping was presented on a 1"=500' scale aerial mosaic of the study area with overlays for the plant communities, PETS, and wetlands.

Mr. Burleson then presented several preliminary 500-foot wide corridors on another overlay. He explained that these corridors were presented only to generate comments and discussion of factors to determine corridors selected for more detailed study. After a brief discussion among attendees, Mr. Burleson then asked any with comments and concerns to express them to the entire committee.

Frank Vick of NCDOT recommended that alternatives east of existing US 70 on the north side of Havelock be eliminated from further consideration since this corridor does not suitably provide the intended function of the facility. Design restrictions and potential damages created by the consideration of this corridor were described. It was pointed out that this portion of the study window was considered early in the study to accommodate a corridor shown in the local thoroughfare plan to facilitate Cherry Point access. However, physical constraints such as existing base housing, development along US 70, a new elementary school and the location of US 70, Slocum Road and the railroads prohibit a functional design in this area that fulfills project objectives.

Beth Martin, Commissioner from Havelock, recommended consideration of a corridor along Greenfield Heights Boulevard closer to existing US 70. She indicated that this recommendation was previously presented to NCDOT for consideration. Mr. Vick noted several concerns relating to this corridor for a bypass. These concerns include the limited distance to the necessary railroad separation and the existing and proposed development along existing US 70 north of where it ties to existing US 70. Mr. Vick also recognized the merits of this corridor to alleviate local traffic congestion and suggested that it be given more consideration by NCDOT for the local thoroughfare plan.

General discussions concerning the study window led to a question concerning the western window limits. It was noted that more sensitive natural environmental concerns such as wetlands, and woodpecker colonies existed west of the window and that infringement further into these areas would be out of direction for the intended facility.

Steve Hall, of Natural Heritage, recommended a corridor closer to town than shown to decrease impacts to the RCW colony. NCDOT displayed maps with the locations of other colonies in the region and it was also noted that the subject colony is the only colony in the study area and appears to be rather isolated.

Holly Jenkins of the Croatan National Forest expressed concerns about the impacts the proposed

bypass could have on fire management and controlled burning in the Croatan National Forest. It was suggested that all bypass corridors be evaluated for this impact.

Gail Grimes of NCDOT questioned the possibility of relocating the isolated RCW colony which is reportedly already distressed. Several responded, including US Fish and Wildlife, indicating that such efforts were not usually successful.

Ken Burleson questioned those responsible for natural resource protection of their opinions and preferences concerning an alignment located beside the existing cleared power transmission line corridors with regard to wildlife fragmentation. A general performance for a parallel alignment was expressed since one wide obstruction to lateral movement was considered less damaging than two separate narrower obstructions to wildlife migration.

Frank Vick directed that the project corridors for further consideration be revised to reflect the principal concerns stated at this meeting and then shown to the public for comment. The revised corridors will include two basic alignments, one on each side of the existing RCW colony as far away from them as possible while minimizing the acreage of wetland involvement. He also indicated that no further consideration of the existing US 70 corridor and corridors east of the existing route will be needed.

Roy Shelton of the Federal Highway Administration emphasized further close coordination of the corridor with the US Forest Service since almost half of the alignment will be in the lands of the Croatan National Forest. It was decided to provide the same project presentation as provided for this meeting to the Corps of Engineers representative at their general meeting with NCDOT on Thursday, October 20 (the next day) since the Corps was not in attendance.

The meeting ended at approximately 1:30 pm.

ADDITIONAL NOTE

On Thursday, October 20 the same project presentation as provided for this meeting was presented to Mike Bell of the US Army Corps of Engineers. Frank Vick, Michelle Fishburne, and Charles Bruton of NCDOT along with Ken Burleson of TGS Engineers and Jerry McCrain of ESI attended. After a brief presentation during which Mr. Bell asked questions for clarification, he concurred with the procedures that had been followed to this point in the study and with the decision to eliminate the existing alignment and the corridors east of the existing route from further consideration.

MEMORANDUM

DATE: December 20, 1995

TO: Meeting Attendees

FROM: TGS Engineers

SUBJECT: Summary Minutes of Third Steering Committee Meeting for US 70, Proposed Havelock Bypass Craven County NC TIP No. R-1015, State Project 8.T170701, Federal-Aid Project No. R-56-4(34)

The third Steering Committee Meeting for the subject project was held on Tuesday, December 19, 1995 in Room 470 of the Transportation Building in Raleigh. The following attended:

Ken Burleson	TGS Engineers
Louis Raymond	TGS Engineers
Pat Cook	US Forest Service - Asheville
Jim Gilpin	US Forest Service - Asheville
Barnie Gyant	US Forest Service - Croatan National Forest
Joe Huffman	City of Havelock
Annette Stone	City of Havelock
Frank Vick	NCDOT - Planning and Environmental
Richard Davis	NCDOT - Planning and Environmental
Gail Grimes	NCDOT - Planning and Environmental
Barney O'Quinn	NCDOT - Planning and Environmental
Jim Buck	NCDOT - Planning and Environmental
Tim Savidge	NCDOT - Planning and Environmental
Hal Bain	NCDOT - Planning and Environmental
Hugh Burton	MCAS, C.P. - Fac. Dev. Off.
Tyler Harris	MCAS, C.P. - Community Plans/Liaison Office
Dean Sarvis	NCDOT - Roadway Design
Jimmy Norris	NCDOT - Roadway Design
Eric Galamb	NCDEHNR DEM - Water Quality
Charles Jones	NCDEHNR Div. Coastal Mgmt.
John Wadsworth	FHWA
Roy Shelton	FHWA
Jerry McCrain	Environmental Services, Inc.
Dicky Harmon	Environmental Services, Inc.
Whit Webb	NCDOT - Program Development
Don Baumgardner	Craven County - Planning Director
Rick Shirley	NCDOT - Division 2 Engineer

Gail Grimes, the NCDOT Consultant Engineering Unit Head opened the meeting with a welcome and requested each attendee to introduce themselves and explain their affiliation with the project. After the introductions, Ken Burleson of TGS Engineers, updated everyone on the last Steering Committee Meeting where all but two bypass alternatives were eliminated. He presented the two bypass alternatives as Corridor 1 (the outside alignment) and Corridor 2 (the inside alignment) on a 1" = 500' scale aerial mosaic of the study area. Using a handout provided to all attendees, he proceeded to describe the impacts of the Corridors as listed in Table 1 of the handout. He then introduced Jerry McCrain of Environmental Services, Inc. to describe the natural resources investigations. Dr. McCrain described the plant community mapping, wetlands mapping, as well as the potential endangered and threatened species (PETS). This mapping was presented on the 1" = 500' scale mosaic with overlays for the plant communities and wetlands.

After the project study presentation, Ken Burleson stated that TGS Engineers would like to develop the Draft EIS for the project around a preferred corridor. Due to the results of the studies as shown in Table 1, he indicated Corridor 1, the outside alignment, is the corridor TGS Engineers recommends as a preferred corridor. The meeting then proceeded with discussions of the various impacts.

During the discussion of wetlands, it was noted that Corridor 2 contains the most wetland acreage and that the Improve Existing US 70 option involves almost no wetland acreage. Eric Galamb noted that Corridor 1 has greater acreage of PFO1 and PFO6 wetlands, which DEM considers higher quality. Ken Burleson noted that due to high costs and numerous business and residential relocations, Improve Existing US 70 should no longer be considered a feasible alternative. Since the US Army Corps of Engineers was not in attendance, a decision to eliminate Improve Existing US 70 from further consideration could not be made due to the wetland involvement.

A more lengthy discussion concerning the one red-cockaded woodpecker (RCW) colony in the project area followed. It was noted that both Corridors 1 and 2 could allow alignments that are located outside a half-mile radius of the RCW colony. This would allow the project to proceed without the US Fish and Wildlife Service requiring a foraging analysis for the RCW. The US Forest Service stated that if an alignment within Corridor 1 is built, the RCW colony and foraging area would not be in a manageable area of the Croatan National Forest (CNF). They also noted other major concerns regarding fragmentation, fire management and uses of the CNF lands inside Corridor 1. The CNF Ranger stated that translocation of the woodpeckers in the colony may be possible, but ESI noted that other such attempts had been unsuccessful. It was also noted that no foraging analysis on the RCW colony was available and no decision on the possible translocation of the colony could be made without the presence of the US Fish and Wildlife Service, which did not attend due to a Federal Government furlough.

The possible translocation of the RCW colony lead to the general discussion of another possible corridor between the RCW colony and Corridor 2 that would be within a one-half mile radius of the colony. Such a corridor could reduce the fragmentation of the Croatan National Forest required by Corridor 1 while also eliminating some of the residential

relocations required by Corridor 2. A suggested possible alignment paralleled the power transmission line located near the RCW colony. It was determined that a meeting with the US Fish and Wildlife Service was needed to discuss the possibility of serious consideration of another corridor within the one-half mile radius.

The USFS officials expressed general support for the project and indicated they may possibly support an outside corridor depending on the what would happen to the fragmented forest lands. The City of Havelock strongly supported Corridor 1, principally due to the relocations required by Corridor 2. They pointed out that many of the Corridor 2 relocations are near Lake Road and many more single family townhouses were presently being constructed in that area. Ken Burleson mentioned that at the public workshop for the project, it was evident that the local public strongly supported Corridor 1.

It was determined that none of the corridors could be eliminated from further consideration. Planning and Environmental concluded that meetings will need to be set up with the US Army Corps of Engineers and the US Fish and Wildlife Service. Based on the results of these meetings it will be determined whether Corridors 1, 2 and Improve Existing 70 will still be considered and if a new corridor will need to be considered. These meetings and the possible consideration of a new corridor alignment may delay the current project planning schedule.

1215 Jones Franklin Road
Suite 203, North Building
Raleigh, North Carolina 27606
Phone 919 851 7144
Fax 919 550 0557

145 West Parker Road (28655)
Post Office Drawer 1359
Morganton, North Carolina 28680-1359
Phone 704 437 4681
Fax 704 433 9146

MEMORANDUM

TGS ENGINEERS

DATE: December 18, 1996

FROM: TGS Engineers

TO: Meeting Attendees

SUBJECT: Summary Minutes of Fourth Steering Committee Meeting for US 70, Proposed Havelock Bypass Craven County NC TIP No. R-1015, State Project 8.T170701, Federal-Aid Project No. R-56-4(34)

The fourth Steering Committee Meeting for the subject project was held on Wednesday, December 18, 1996 in Room 470 of the Transportation Building in Raleigh. The following attended:

Lauren Hillman	Croatan National Forest USDA - FS
Barnie Gyant	Croatan National Forest USDA - FS
Ray Johns	US Forest Service
Howard Hall	US Fish & Wildlife Service
Joe Huffman	City of Havelock
Frank Vick	NCDOT - Planning and Environmental
Gail Grimes	NCDOT - Planning and Environmental
Jim Buck	NCDOT - Planning and Environmental
Charles Bruton	NCDOT - Planning and Environmental
David Robinson	NCDOT - Planning and Environmental
Lynn Phillips	MCAS, Cherry Point
Steve Hall	DPR - Natural Heritage
David Cox	NCWRC
Jimmy Norris	NCDOT - Roadway Design
Eric Galamb	NC DEHNR - Water Quality
Roy Shelton	FHWA
Jerry McCrain	Environmental Services, Inc.
Dicky Harmon	Environmental Services, Inc.
Wes Dickson	Environmental Services, Inc.
Don Baumgardner	Craven County - Planning Director
Bob Mattocks	NCDOT - Board Member
Ed Latham	Division Construction Engineer
Ken Burleson	TGS Engineers
Louis Raymond	TGS Engineers

Jim Buck, the NCDOT Project Manager for the planning phase of the project, opened the meeting with a welcome and a request for each attendee to introduce themselves.

After the introductions, Ken Burleson of TGS Engineers, updated everyone on the events since the last Steering Committee Meeting. A new Corridor 3 was developed between Corridors 1 and 2 and the Improve Existing 70 alternative was eliminated.

The feasibility of Corridor 3 depended on a foraging analysis for the nearby red-cockaded woodpecker (RCW). The foraging analysis concluded that suitable habitat for the woodpecker would exist after construction of an alignment within Corridor 3. As a result, functional designs and cost estimates were completed for Corridor 3. Using a handout provided to all attendees, he proceeded to describe the impacts listed in the matrix for each alternative. Based on comparative analysis, TGS Engineers recommended Corridor 3 to be noted as the preferred corridor in the Draft Environmental Impact Statement due to lowest total cost and wetland impacts.

A more lengthy discussion began concerning the fragmented lands from each corridor. The acreage of Croatan National Forest between US 70 and the alternatives was given. NCDOT has been working since the last interagency meeting on land transfer possibilities. This process centers around forest service land and wetlands mitigation for the acreage fragmented.

The City of Havelock was supportive of Corridor 3 as a compromise between 1 and 2. They pointed out that Corridor 2 had many relocations, most of them near Lake Road. Ken Burleson asked if there were any objections to Corridor 3. The agencies upon further review had no objections. The USFS was supportive of Corridor 3 and explained that their NEPA documentation would be incorporated into the Draft Environmental Impact Statement (DEIS). A meeting was held immediately after with NCDOT to coordinate this integration.

Planning and Environmental concluded that a newsletter to the public should be mailed out before an informal informational meeting. The DEIS will be completed this spring. Thereafter, a formal public hearing will be held to solicit public opinion on the preferred corridor.

Gail Grimes

Delmore

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.
GOVERNOR

P.O. BOX 25201, RALEIGH, N.C. 27611-5201

E. NORRIS TOLSON
SECRETARY

August 11, 1998

MEMORANDUM TO: Len A. Sanderson
State Highway Administrator

FROM: Corridor Selection Committee

SUBJECT: US 70 Havelock Bypass, Craven County, Federal Aid Project No. STP-NHF-F-56-4(34), State Project No. 8.T170701, TIP Project No. R-1015,

The Environmental Assessment (EA) for the subject project was approved by the Federal Highway Administration on January 27, 1998. The approved EA was distributed to the Federal and state environmental regulatory agencies and to the public for comment in February 1998. A pre-hearing workshop and a corridor public hearing were on held May 26, 1998. The post hearing meeting to discuss input received during the hearing was held July 20, 1998.

During the planning, environmental and engineering studies, extensive coordination was undertaken with environmental regulatory agencies. A steering committee consisting for federal, state and local representatives was formed to provide assistance, comments and review during the planning process. Numerous meetings were conducted with U. S. Forest Service officials from the Croatan National Forest and the regional office in Asheville, North Carolina. The result of this coordination was concurrence from the agencies with the selection of Alternative 3 as the "least damaging environmentally preferred alternative" (LEDPA) in accordance with the Interagency Agreement Integrating Section 404/NEPA.

The Corridor Selection Committee has endorsed the selection of Alternative 3 as the Preferred Alternative. Attached is a figure showing the corridors considered and a matrix listing the impacts of each corridor. The concurrence of Secretary Tolson, Deputy Secretary King and you with the Preferred Alternative is requested. If you have questions or need additional information, please let me know.

Approved: LA Sanderson — 8-18-98

Len A. Sanderson — date

DS King — 8-26-98

David King — date

E Norris Tolson — 8/27/98

E. Norris Tolson — date

Suite 141
975 Walnut Street
Cary, North Carolina 27511
Phone 919 319 [illegible]
Fax 919 319 [illegible]

145 West Parker Road 28655
Post Office Drawer 1359
Morganton, North Carolina 28680-1359
Phone 828 437 4681
Fax 828 433 9146

TGS ENGINEERS

Memorandum To: File

From: J. Kenneth Burleson, P.E.

Subject: US 70, Proposed Havelock Bypass, Craven County, NC TIP No. R-1015, State Project No. 8.T170701, Federal-Aid Project No. R-56-4(34)

Date: December 17, 1999

On Thursday, December 16, 1999, a merger team meeting was held in Room 470 of the Transportation Building to receive approval of the preliminary design alignment for the subject project. The following personnel attended:

David Arthurs	TGS Engineers
Ken Burleson	TGS Engineers
John Conforti	Project Development
Ron Elmore	Project Development
Neil Lassiter	Division 2
Lauren Hillman	USFS - Croatan
Dennis Foster	USFS - Croatan
Mike Bell	Corps of Engineers
David Cox	NCWRC
John Hennessy	NCDWQ
Marc Clifford	Roadway Design
Nya Boayue	Roadway Design
Kevin Markham	ESI
Scott Seibel	ESI

Mr. Bell began by noting the project status includes a completed public notice and approved LEDPA. He also noted NCDOT's commitment to bridge all high quality riverine wetlands.

I suggested that the meeting was for alignment approval only and began by showing the four sheets of preliminary design displaying the horizontal and vertical alignments. Particular attention was given to the three principal riverine crossings, the East Prong Slocum Creek, the Southwest Prong Slocum Creek and Tucker Creek. The bridge dimensions shown included height and length for the minimum hydraulic openings for bridging the two Slocum Creek crossings. A proposed culvert was shown at Tucker Creek. David Cox was interested in the project providing bridge lengths sufficient to accommodate wildlife crossings. Mr. Bell noted no conclusions could be reached on minimization until bridge lengths and ditching proposals were finalized. Mr. Arthurs noted that minimal ditching would be required due to the proposed grade. Several attendees decided to conduct a field review headed by Mr. Bell and accompanied by ESI personnel to determine the appropriate bridge lengths.

Ms. Hillman noted the concern for the population of spring flowering goldenrod (Solidago verna). I showed the location of the population and noted the alignment had been modified to avoid as much of the species as possible without further wetland impacts.

Mr. Bell questioned the median width and the proposed side slopes used for design. Since the NCDOT standard 46-foot median width was proposed to allow future widening in the median, no objections to the proposed median were addressed. Several attendees noted the proposed 2:1 side slopes to minimize wetland involvement could result in failures causing worse problems after construction. Therefore, it was noted that the adequacy of the proposed 2:1 slopes should be investigated.

The meeting ended with Mr. Bell noting the proposed alignments appear acceptable and that a full team meeting to discuss minimization should not be necessary if the bridge length issues could be resolved.

TGS ENGINEERS

Memorandum To: Merger Team

From: J. Kenneth Burleson, P.E.

Subject: US 70, Proposed Havelock Bypass, Craven County, NC TIP No. R-1015, State Project No. 8.T170701, Federal-Aid Project No. R-56-4(34)

Date: January 11, 2001

The EA for the subject project was approved by FHWA on January 27,1998. A corridor hearing was conducted on May 26,1998. Concurrence from the resource agencies resulted in the approval of Alternate 3 as the LEDPA. The corridor selection committee endorsed the selection of Alternate 3 as the preferred alternative on August 27, 1998 and the public notice has been completed. Preliminary designs were developed and on Thursday, December 16, 1999, a merger team meeting was held to receive approval of the preliminary design alignment for the subject project with the following personnel in attendance.

John Conforti	Project Development
Ron Elmore	Project Development
Neil Lassiter	Division 2
Lauren Hillman	USFS - Croatan
Dennis Foster	USFS - Croatan
Mike Bell	Corps of Engineers
David Cox	NCWRC
John Hennessy	NCDWQ

The preliminary plans shown at this meeting included bridge heights and lengths for the minimum hydraulic openings for the bridging of the two Slocum Creek crossings. David Cox was interested in the project providing bridge lengths sufficient to accommodate wildlife crossings at these locations. Mr. Bell noted no conclusions could be reached on minimization until appropriate bridge lengths were determined. It was decided to conduct a field review to determine the appropriate bridge lengths. The meeting ended with Mr. Bell noting the proposed alignments appeared acceptable and that a full team meeting to discuss minimization should not be necessary if the bridge length issues could be resolved.

On Thursday, April 20, 2000, a field review was conducted by project personnel with the following resource agency personnel to determine the appropriate bridge lengths.

Tom McCartney	USFWS
Mark Jones	NCWRC
Dennis Foster	Croatan National Forest
David Cox	NCWRC

It was noted that the proposed Tucker Creek crossing is in the system headwaters and is not far upstream from the existing US 70 crossing which is accommodated by a culvert. Mr. Cox

determined this proposed crossing of the headwaters of Tucker Creek would not need to be bridged due to the location and nature of the crossing. After reviewing the Slocum Creek crossings in the field, Mr. Cox indicated the requested limits of bridging at both locations on the preliminary plans. The requested overall length of the Southwest Prong bridge is approximately 235 meters which is 185 meters longer than originally shown on the preliminary design. The requested overall length of East Prong bridge is approximately 450 meters which is 410 meters longer than originally shown on the preliminary design. After this review, the preliminary design was revised to reflect these increased bridge lengths.

The current preliminary design reflects NCDOT's commitment to bridge all high quality riverine wetlands and the NCDOT will mitigate the areas of delineated wetlands required for the construction of the proposed Bypass by debiting established credits from the nearby Croatan Wetland Mitigation Bank (CAMB).

Based on the agreement at the December 17, 1999 meeting, and the NCDOT concurrence to provide the requested bridge lengths, The NCDOT and FHWA request concurrence for avoidance and minimization in fulfillment of Concurrence Point Number 4 of the NEPA/404 merger process.

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 4. Avoidance and Minimization.

US 70 Improvements (Havelock Bypass), Craven County, Federal Aid Project No. STP-NHF-F-56-4(34), State Project No. 8.T170701, TIP Project Number R-1015

Avoidance and Minimization Measures:

1. No ditching in wetlands
2. Forty-six foot (46') median
3. Bridging widths as discussed and shown in the attached memorandum to John Conforti from Ken Burleson dated April 21, 1000

The Project Team has concurred on this date of 1-18-01 with the avoidance and minimization measures as stated above, as indicated by the signature(s) below.

USACE		NCDOT	
USEPA		USFWS	
NMFS		DCM	
NCDWQ			
NCWRC		NCDCR	
NCDMF		FHWA	

HYDRAULIC DESIGN/PERMIT DRAWINGS REVIEW
Location and Surveys Conference Room
NCDOT Century Center Complex
June 20, 2002
Agenda

8:30	**David Chang**	Welcome and Old Business
8:45	**Andrew Nottingham**	R-1015B, US 70 Havelock Bypass from .6 mile N of SR 17 1756 to N of Carteret County line, Craven County, (Division 2)- **Hydraulic Design Review**
	Team Members:	Mike Bell-USACE John Hennessy-NCDWQ David Cox-NCWRC Howard Hall-USFWS Lindsey Riddick-PDEA Ron Sechler-NMF Cathy Brittingham-CAMA Bill Arrington-CAMA
10:00	**Andrew Nottingham**	R-1015A, US 70 Havelock Bypass from N of Pine Grove to .6 mile N of SR 1756, Craven County, (Division 2)- **Hydraulic Design Review**
	Team Members:	Mike Bell-USACE John Hennessy-NCDWQ David Cox-NCWRC Howard Hall-USFWS Lindsey Riddick-PDEA Ron Sechler-NMF Cathy Brittingham-CAMA Bill Arrington-CAMA
11:00	**Marshall Clawson**	R-3850, US 17 & SR 1140 (Okisko Rd.), Pasquotank County, (Division 1)- **Permit Drawing Review**
	Team Members:	Mike Bell-USACE John Hennessy-NCDWQ David Cox-NCWRC Howard Hall-USFWS Lynn Smith-PDEA Ron Sechler-NMF Cathy Brittingham-CAMA

		Bill Arrington-CAMA
12:00	**Lunch**	
1:00	**Marshall Clawson**	U-2404A, Newton-Canover Loop from NC 16 S of Newton to SR 1739 (Emanuel Church Road), Catawba County, (Division 12)- **Permit Drawing Review**
	Team Members:	John Hendrix-USACE Cynthia Van Der Wiele-NCDWQ David Cox or Ron Linville-NCWRC Marella Buncick-USFWS Rachelle Beauregard-PDEA
2:00	**Randy Henegar**	I-2511CB, I-85 N of SR 1002 (Bringle Ferry Rd.) to N of SR 2120 (Long Ferry Rd.) near Spencer, Rowan County, (Division 9)- **Hydraulic Design Review**
	Team Members:	Eric Alsmeyer-USACE Cynthia Van Der Wiele-NCDWQ David Cox or Ron Linville-NCWRC Marella Buncick-USFWS Elizabeth Lusk-PDEA
3:00	**Marshall Clawson-**	U-3344A, Morrisville-SR 3015 (Airport Blvd.) from NC 54 to McCrimmon Parkway, Wake County, (Division 5)- **Hydraulic Design Review**
	Team Members:	Eric Alsmeyer-USACE John Hennessy-NCDWQ David Cox-NCWRC Howard Hall-USFWS Heather Montague-PDEA

FINAL MINUTES OF INTERAGENCY 4B MEETING FOR PROJECTS R-1015 A&B (HAVELOCK BYPASS) ON 6/20/02

Team Members: Andrew Nottingham-NCDOT Hydraulics (Present)
Mike Bell-USACE (Present)
John Hennessy-NCDWQ (Present)
David Cox-NCWRC (Absent, provided comments on plans)
Howard Hall-USFWS (Absent)
Lindsey Riddick-PDEA (Present)
Ron Sechler-NMF (Absent)
Cathy Brittingham-CAMA (Present)
Bill Arrington-CAMA (Present)

Participants: Ken Burleson-TGS Engineers
Mary Frazer-PDEA
Nya Boayue –Roadway Design
Ted Walls-Roadway Design
Jason Davis-NCDOT Hydraulics
Marc Shown-NCDOT Hydraulics
Rob Ayers-FHWA

R-1015B

Andrew Nottingham began the meeting with a brief overview of the project. He noted that this project is a merger project and that concurrence point 4 had been agreed upon and signed. He then proceeded to go through the plans sheet by sheet. It was noted that the majority of the project is to be built as a fill section since most of the project is in wetlands. This helps to eliminate new ditches in wetlands.

Andrew Nottingham noted that the project limits had been extended at the beginning and that additional wetland surveys would be needed from station 10+00 –L- to station 18+80 –L-.

A general discussion about ditches in wetlands followed. It was noted that where the bypass connects to existing US 70 at the beginning of the R-1015B project and at the end of the R-1015A project, that it would not be possible to eliminate ditches in wetlands. This is because in some cases existing wetlands along US 70 are immediately adjacent to the existing roadway ditch. Where the project ties into the existing grade along US 70 and where widening occurs along US 70 new roadway ditches will be used in the wetlands in order to maintain tbe existing drainage along US 70. The question arose about how wetland impacts would be determined in areas where an existing roadway ditch is immediately adjacent to wetlands and a new roadway ditch is proposed in the wetlands due to the widening of the existing road. Mike Bell noted that as long as the new roadway ditch is at the same elevation as the existing roadway ditch that no additional impacts would need to be considered to the wetlands adjacent to the new ditch.

However, if the new roadway ditch were at a lower elevation than the existing roadway ditch, then additional impacts to the adjacent wetlands would need to be determined.

The location and placement of equalizer pipes in wetlands was discussed. Cathy Brittingham noted that all pipes in jurisdictional wetlands and streams in CAMA counties must be buried 1 foot below the stream bed or natural ground elevation. Based on this information it was noted that in most cases a 30 inch pipe would be the smallest size pipe that would be used for an equalizer pipe. Mike Bell asked how equalizer pipes locations were determined. Andrew Nottingham noted that they were placed in low areas in the wetlands, in loop areas of interchanges to maintain surface flow and where the wetlands were flat they were spaced approximately 200 meters apart depending on the situation.

It was noted that the ditches along existing US 70 were not considered to be streams.

It was noted that it is acceptable to place 2GI's (median drainage inlets) on equalizer pipes.

Andrew Nottingham noted that the bridge over the railroad and stream (Tributary to East Prong of Slocum Creek) at +/- station 42+00 –L- would be lengthened to span the buffer zone.

Andrew Nottingham noted that the length of the bridge over the East Prong of Slocum Creek and its associated wetland was set based on the length shown on the sketches in the memorandum to John Conforti from Ken Bureleson dated 4/21/2000. He also noted that the length of the bridge had been increased on the east end to span the buffer zone. No deck drains will be used directly over the surface water or buffer zones and they will be eliminated as much as possible over the wetlands. The proposed bridge length is 493.2 meters.

Andrew Nottingham noted that he would look at using a preformed scour hole at the outlet of the 400mm (15 inch) pipe left of station 14+50 –y3- on sheet 20.

On sheet 20 near station 75+70 –L- there is an existing ditch that drains through the buffer zone. The drainage plans call for a 750 mm (30 inch) pipe under the road in this location. Drainage from roadway ditches and the median discharge into this existing ditch approximately 30 feet outside of the buffer zone at this location. John Hennessy noted that drainage from the roadway needs to be treated prior to entering the existing ditch at this location.

The detour for –y3- (sheets 20 and 27) will impact wetlands and a determination will have to be made as to whether this will be considered a temporary or permanent impact.

The crossing at station 82+00 –L- sheets 21 and 22 was discussed. Andrew Nottingham noted that John Hennessy had verified that this crossing was not a stream but that it was a wetland during a field review on 6/5/2002. Mike Bell said he would concur with John Hennessy's determination. John Hennessy said he would prefer a longer pipe that

follows the alignment of the wetland rather than a shorter pipe that would require a ditch through the wetlands at this site.

R-1015A

Andrew Nottingham gave a brief overview of the R-1015A project and then proceeded to go through the plans sheet by sheet.

Andrew Nottingham noted that the length of the bridge over the Southwest Prong of Slocum Creek and its associated wetland was set based on the length shown on the sketches in the memorandum to John Conforti from Ken Burleson dated 4/21/2000. He also noted that no deck drains will be used directly over the surface water or buffer zones and they will be eliminated as much as possible over the wetlands. The proposed bridge length is 274 meters.

Temporary work bridges for the construction of the bridge over the Southwest Prong of Slocum Creek (project R-1015A) and the bridge over the East Prong of Slocum Creek (project R-1015B) were discussed. John Hennessy and Mike Bell agreed that temporary work bridges should be used for the construction of both bridges.

Lindsey Riddick noted that the issue of jetting of piles for the bridges would have to be addressed. Mike Bell and John Hennessy agreed that this topic will have to be addressed.

Andrew Nottingham noted that the Roadway Design Unit is working on shifting the alignment for the temporary detour needed for the construction of –y4- on sheet 32 in closer to the existing road to reduce wetland impacts. It was also noted that a determination would have to be made as to whether the impacts to the wetlands would be considered temporary or permanent for the –y4- detour.

On sheet 9 there is a ditch shown in the wetlands from station 101+60 –L- to station 102+20 –L- on the right. Mike Bell noted that the ditch should be eliminated in the wetlands as much as possible and additional impacts to the adjacent wetlands included where the ditch could not be eliminated in the wetlands.

On sheet 20 it was noted that the proposed 600 mm (24inch) equalizer pipe at station 133+45 –L- and the 450 mm (18inch) equalizer pipe at station 134+85 –L- should be made larger in order to bury the inverts 1 foot.

On sheet 21 it was noted tbat the proposed 600 mm (24 inch) equalizer pipe at station 144+55 –L- should be made larger in order to bury the invert 1 foot.

On sheet 22 it was noted that the proposed 600 mm (24 inch) equalizer pipes at stations 146+40 –L- and 147+40 –L- should be made lager in order to bury the inverts 1 foot.

On sheet 23 it was noted that the proposed 450 mm (18 inch) equalizer pipe system from station 149+80 –L- to station 150+20 –L should be revised. The median drainage should be separated from the equalizer pipe and the equalizer pipe should be made larger and laid on the same alignment as the wetland.

On sheet 25 Andrew Nottingham noted that the proposed double barrel 2.7m (9 feet) by 2.1m (7 feet) reinforced concrete box culvert (RCBC) at station 155+40 –L- (Tributary to Tucker Creek) has been designed with a low flow sill at the bankfull elevation and buried 1 foot below the stream bed. A cross vane rock weir has also been placed at the outlet end to help protect the stream banks.

John Hennessy noted that we need to look at providing treatment for the stormwater generated by the additional pavement and gutter systems where we have eliminated the existing ditch between existing US70 and the service road on the right side from station 160+00 –L- to station 172+00 –L-.

On sheet 34 Andrew Nottingham noted that the existing triple barrel 2.741m (9 feet) by 2.143m (7 feet) RCBC at station 13+67 RP2AC (existing US 70) on Tucker Creek would be extended on the inlet end only. The outlet end would have the headwall raised to avoid extending it on the outlet end. David Cox recommended to try and bury the inlet invert of this box culvert extension 1 foot per a note on plans he returned to the Hydraulics Unit. John Hennessy noted that stormwater runoff from additional pavement would have to be treated before entering Tucker Creek in this location.

Andrew Nottingham noted that in previous discussions with Bill Arrington that a CAMA permit would not be required for this project as long as the existing culvert on Tucker Creek on US70 was not extended on the downstream side.

Suite 141
975 Walnut Street
Cary, North Carolina 27511
Phone 919 319 8850
Fax 919 319 6999

TGS ENGINEERS

MEMO TO: John Conforti

FROM: Ken Burleson

SUBJECT: US 70, Proposed Havelock Bypass, Craven County, NCDOT Division 2, NC TIP No. R-1015, State Project No. 8.T170704, Federal-Aid Project No. NHF-70(49)

DATE: December 22, 2003

On Thursday, December 11 the following met at the NCDOT PDEA conference room in Raleigh to discuss the development of the NEPA documentation for the US 70, Havelock Bypass.

Ken Burleson	TGS Engineers	319-8850x109
Dave Modlin	TGS Engineers	319-8850x106
Kevin Markham	ESI	212-1760x123
Mary Frazer	PDEA	715-1419
John Conforti	PDEA	733-7844x208
Mike Bell	Corps	(252) 975-1616 x26
John Hennessy	DWQ	(919) 733-5694
Ron Lucas	FHWA	856-4350x108
Emily Lawton	FHWA	856-4350x133
Dave Timpy		
Bill Biddlecome		

John Conforti began by describing the events leading up to the decision to provide a new draft and final EIS for the project. John noted the USFS does not have to provide their own document, but can adopt the EIS. The resource agencies were then asked their opinion as to: (1) where in the merger process to place the project, (2) if wetlands delineations were needed for all detailed study alternatives since a preferred was already determined, (3) if the improve the existing alignment alternative should be studied as a detailed study alternative, and the status of the existing wetland delineation on the preferred corridor.

Mike Bell noted the current status of the project as having completed Concurrence Point 4 and stated that this would remain valid unless new information concerning the alternatives becomes available. He suggested that the existing alignment could be eliminated as a preliminary alternative like it was in the EA once the magnitude of the cost and relocation impacts were updated. He indicated that the wetlands issue is completed as far as the Corps is concerned.

Considerable discussion about the wetland delineations resulted in the determination that although the delineation of the other two corridors was not necessary, it was likely needed to be legally defensible since all detailed study alternatives should be compared according to the same level of detail. Emily Lawton indicated that modeling the wetlands with field verification, as was done with the R-2404A Windsor Bypass project, could be used for alternative comparison. However, since full delineation is now the current method of comparison, all agreed full delineation of all corridors would be easier to defend. When asked of the status of the current delineation, Mike Bell noted that since the delineation is near its five-year limit, it would need to be updated with a letter stating there is no change in conditions is needed and should site field verification.

Mr. Hennessey agreed with Mr. Bell on these points but noted any concurrences received to this point would be carefully revaluated when new information becomes available.

Suite 141
975 Walnut Street
Cary, North Carolina 27511
Phone 919 319 8850
Fax 919 319 6999

TGS ENGINEERS

Memorandum To: **Meeting Attendees**
File

From: **David Modlin, Jr., Ph.D., PE**
TGS Engineers

Suject: **Minutes Merger Process Team Informational Meeting**
NC STIP No. R-1015
Federal-Aid Project No. STPNHF-F-56-4(34)

January 16, 2009

On Thursday, August 21, 2008, a merger process team meeting was held in Board Room of the Transportation Building to "reinitiate" the Merger 01 Process for the Havelock Bypass. The following persons attended:

Ken Burleson	TGS Engineers
David Modlin	TGS Engineers
Matt Smith	Environmental Services, Inc.
Eric Lash	Environmental Services, Inc.
Kevin Markham	Environmental Services, Inc.
Dr. J. H. Carter, III	Dr. J.H. Carter III and Associates, Inc.
Lisa Fields	Dr. J.H. Carter III and Associates, Inc.
Whit Webb	HNTB North Carolina, PC
Anne Redmond	HNTB North Carolina, PC
Adin McCann	HNTB North Carolina, PC
Susan Pascal	HNTB North Carolina, PC
Ray Johns	U. S. Forest Service
Karen Compton	U. S. Forest Service
Gary Jordan	U. S. Fish and Wildlife Service
Bill Biddlecome	U. S. Army Corps of Engineers, Washington
Chris Militscher	U. S. Environmental Protection Agency, Raleigh
Steve Sollod	N. C. Division of Coastal Management
Stephen Lane	N. C. Division of Coastal Management
Daniel Van Liere	Down East Regional Planning Organization
David Wainwright	N. C. Division of Water Quality
Travis Wilson	N. C. Wildlife Resources Commission
Suzanne Mason	N. C. Natural Heritage Program
Renee Gledhill-Earley	State Historic Preservation Office

Ron Lucas	Federal Highway Administration
Greg Thorpe	Project Development and Environmental Analysis Branch (PDEA)
Rob Hanson	PDEA, Project Development
Brian Yamamoto	PDEA, Project Development
Mark Pierce	PDEA, Project Development
John Conforti	PDEA, Project Development
Neil Lassiter	NCDOT, Division 2
Ed Eatmon	NCDOT, Division 2
Betty Ann Caldwell	NCDOT, Division 2
Drew Joyner	PDEA, Human Environment
Steve Gurganus	PDEA, Human Environment
Ed Lewis	PDEA, Human Environment
Phil Harris	PDEA, Natural Environment
Elizabeth Lusk	PDEA, Natural Environment
Chris Rivenbark	PDEA, Natural Environment
Mary Frazer	PDEA, Natural Environment
Ray McIntyre	Program Development, STIP Unit
W. M. Petit	Program Development, STIP Unit
Allison White	NCDOT Roadway Design Unit
Lonnie Brooks	NCDOT Structure Design Unit
Dean Argenbright	NCDOT Geotechnical Engineering Unit
Andrew Notttingham	NCDOT Hydraulics Unit

Mark Pierce, NCDOT Project Manager for R-1015, called the meeting to order at 9:00 am. The meeting focused on bringing the Merger Team up to current status on progress made on the study over the past several years and reinitiating the Merger 01 Process.

Following an agenda provided by Mark Pierce, Mark and William Wescott provided opening remarks to the attendees, reviewed the project description and discussed its history.

Environmental Services, Inc., Dr. J. H. Carter, III and Associates, Inc. and HNTB, North Carolina, P.C. representatives then gave short presentations of the updated Natural Environment Studies and Human Environment Studies.

Environmental Services, Inc.

Kevin Markham and Matt Smith discussed recent work Environmental Services, Inc. has completed on the natural environment. A revised Natural Systems Technical Report, dated May 2007, has been completed and approved by NCDOT. Matt Smith has completed a revised PETS Study, dated May 2008, which has been approved by NCDOT.

The U. S. Forrest Service commented that they believed the revised PETS Study is up-to-date.

Dr. J. H. Carter, III and Associates, Inc.

Dr J. H. Carter, III and Lisa Field commented on the firm's Final Biological Analysis for the Red-Cockaded Woodpecker and Bald Eagle Impacts, dated December 11, 2007, and approved by the NCDOT. Lisa Field also introduced a memo prepared following observations during the June 2008 nesting season that indicated there were no active RCW clusters in the project area. The memo also presented an impact matrix for Existing and Future RCW clusters on the Croatan National Forest. The memo also stated that no inactive RCW clusters impacted will result in an Incidental Take due to RCW foraging habitat removal, there would be no RCW group level take, and there would be no RCW neighborhood level take.

HNTB, North Carolina, P.C.

HNTB has prepared Community Impact Assessment and Indirect and Cumulative Effects Studies, both dated July 15, 2008, and approved by NCDOT. Susan Pascal and Adin McCann presented the respective document findings. The final ICE conclusion was that the potential for land use change as a result of the implementation of any of the Bypass Alternates was Low to Moderate.

Discussion followed the presentations.

U. S. Environmental Protection Agency

Would like to see previous corridor selection documentation by the Steering Committee/Merger Process Team.
Expand the Impact Matrix shown by NCDOT.
Final corridor selection (LEDPA) should follow the DEIS
Has NCDOT studied options for the proposed freeway cross section? Would like discussion in the EIS.
Incorporate the completed Technical Documents by reference.
Give detailed description of Croatan Wetland Mitigation Bank site in DEIS

U. S. Fish and Wildlife Service

Informal Section 7 Consultation is needed.
The Final Biological Alternatives Analysis for Red-Cockaded Woodpecker and Bald Eagle Impacts, dated December 11, 2007, is good.
Prepare Biological Assessment after corridor selection.

U. S. Forest Service

Lee Thornhill is the new District Ranger for the Croatan National Forest.

During discussion of fragmentation of the Croatan National Forest, spoke favorably of Alternate 3

N. C. Division of Coastal Management

A CAMA Permit will not be required.

A Consistency Statement will be required.

Mark Pierce indicated that the NCDOT current schedule is for a signed DEIS January 2009 and a Design Corridor Hearing during the summer of 2009. As of the date of these minutes, this schedule is no longer valid and is being updated.

ACTION ITEMS

Distribute copies of Merger Process history to Merger Process Team - PDEA
Coordination on Merger Process schedule - USACE and PDEA
Reconsider freeway design options and effects - NCDOT Roadway Design
Develop Informal Section 7 Consultation after CP4A - Mark Pierce
Consultation with Cultural Resources - PDEA
Discussion of Croatan Wetland Mitigation Bank in DEIS - TGS Engineers
Comments on updated technical reports - Merger Process Team

APPENDIX C

Public Involvement

US 70 - Proposed Havelock Bypass
NCDOT TIP Project R-1015

Issue No. 1 *January, 1995*

PROJECT DESCRIPTION

The North Carolina Department of Transportation (NCDOT) proposes to improve US 70 in the vicinity of the City of Havelock in Craven County. The proposed improvements to US 70 are included in the North Carolina Transportation Improvement Program (TIP) as Project R-1015. The project begins along US 70, west of Havelock and extends eastward approximately 10 miles to the Craven-Carteret County line.

The current TIP project schedule is for right of way acquisition to begin in early 1997 and for construction to begin in early 1998.

PROJECT NEED

A traffic study and capacity analyses of US 70 in the vicinity of Havelock confirms the need for this project. The 1992 average daily traffic volume along existing US 70 through the City of Havelock ranged from 18,900 to 36,700 vehicles per day. By the year 2017, this volume is projected to range from 37,900 to 61,400 vehicles per day. Many of the existing signalized intersections along US 70 (through the City of Havelock) will not accommodate the anticipated volume of traffic at an acceptable level of service. The study shows that a lane in each direction needs to be added to the existing roadway or a four-lane bypass on new location needs to be built to accommodate the anticipated traffic.

ENVIRONMENTAL IMPACT STUDY

A project planning and environmental impact study, began in the Spring of 1992 to determine the type of improvements needed. The preliminary alternatives identified included improving the existing roadway and several bypass corridors on new location. These preliminary alternatives were evaluated based on engineering, environmental and socio-economic factors. The engineering factors included cost estimates, roadway safety, traffic growth and maintenance of existing traffic. The principal environmental factors included red cockaded woodpecker colonies and potential wetland impacts. The socio-economic factors evaluated included impacts to existing homes and businesses.

FIRST CITIZENS WORKSHOP

On Tuesday, January 17, 1995, from 4:00 to 7:00 p.m. an informal "drop in" workshop will be held at the Henry S. Whitten Community Center, 4 Cunningham Avenue near the Havelock City Hall. Engineers from the project study team will be present to provide information and receive comments regarding the proposed project. Maps showing the project study area, the environmental areas of concern, the preliminary bypass corridors and the reasonable and feasible corridors will be presented at this meeting.

TOLL FREE INFO-LINE

To obtain information and offer comments concerning this project, call:

1-800-736-7144

Existing Roadway

A functional design for proposed improvements to existing US 70 to accommodate traffic in the year 2017 was prepared. These roadway improvements affected approximately 230 properties in Havelock requiring the relocation of an estimated 59 businesses and 51 residences. Another 44 businesses would likely be relocated due to the lack of parking. Thirty-four of the displaced families are in military housing.

The following construction and right of way cost estimates were developed for the functional improvements to existing US 70:

CONSTRUCTION	$ 11,400,000
RIGHT OF WAY	31,883,000
TOTAL	**$ 43,283,000**

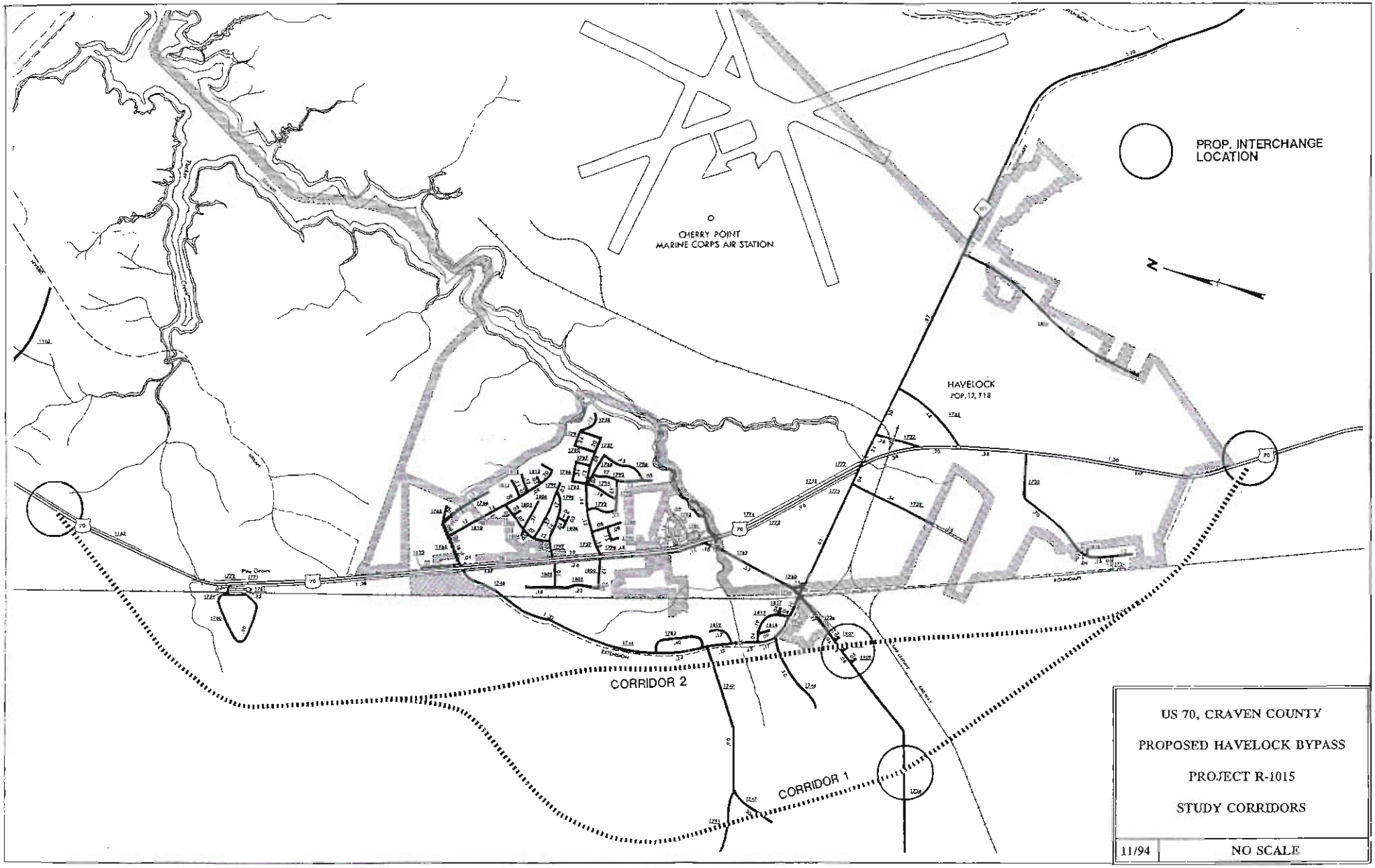
Bypass Corridors

The study area for the proposed Havelock Bypass is approximately 10 miles in length and 1.5 miles in width. Preliminary planning revealed that a significant portion of the bypass corridors on new location are on Croatan National Forest lands.

The NCDOT and the US Forest Service (USFS) at the Croatan National Forest, have developed land suitability mapping to identify potential natural resource impacts. Specifically, the developed mapping details: 1) plant community patterns; 2) soils; 3) wetlands; 4) water resources; and 5) priority natural areas and habitat for proposed endangered, threatened, or sensitive PETS species listed by the USFS. Using this mapping to identify areas of concern, potential environmental impacts of preliminary corridors were evaluated.

Reasonable and Feasible Alternatives

Based on the results of the preliminary evaluations of engineering, environmental and socio-economic factors, two reasonable and feasible corridors were selected and are shown on the map on the following page.


PROP. INTERCHANGE LOCATION
CHERRY POINT MARINE CORPS AIR STATION
HAVELOCK
POP. 12,718
N
CORRIDOR 2
CORRIDOR 1
US 70, CRAVEN COUNTY
PROPOSED HAVELOCK BYPASS
PROJECT R-1015
STUDY CORRIDORS
11/94
NO SCALE

PROJECT MAILING LIST

A mailing list is being created for mailing newsletters and information concerning this project. To add your name to the mailing list, please send your name and address to:

Havelock Bypass
TGS Engineers
Suite 203
1215 Jones Franklin Road
Raleigh, N.C. 27606

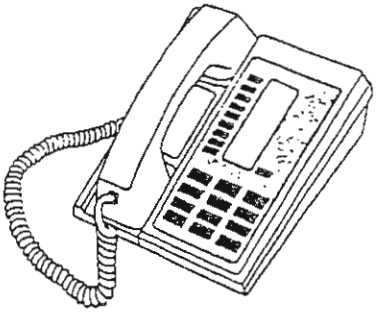
INFORMATION AND COMMENTS

To request additional information about the proposed project, or to express comments or concerns, write to either TGS Engineers or the NCDOT at the addresses below. Please refer to Project R-1015 when writing about the proposed project. All comments and questions will receive attention and be addressed as soon as possible.

J. K. Burleson, P.E.
TGS Engineers
Suite 203
1215 Jones Franklin Road
Raleigh, N.C. 27606
1-800-736-7144

or

H. Franklin Vick, P.E.
Planning and Environmental Branch
N. C. Department of Transportation
P. O. Box 25201
Raleigh, N.C. 27611
1-919-733-3141



TOLL FREE PROJECT INFO-LINE

1-800-736-7144

TGS ENGINEERS

Havelock Bypass Newsletter
% TGS Engineers
Suite 203
1215 Jones Franklin Road
Raleigh, N.C. 27606

1215 Jones Franklin Road
Suite 203, North Building
Raleigh, North Carolina 27606
Phone 919 851 7144
Fax 919 859 0557

145 West Parker Road (28655)
Post Office Drawer 1359
Morganton, North Carolina 28680-1359
Phone 704 437 4661
Fax 704 433 9146

TGS ENGINEERS

MEMO TO: File

FROM: J. K. Burleson

REFERENCE: US 70, Proposed Havelock Bypass, Craven County, NC TIP No. R-1015, State Project No. 8.T170701, Federal-Aid Project No. R-56-4(34), TGS No. 89406

DATE: January 24, 1995

On Tuesday, January 17, 1995, a local officials meeting and a citizens informational workshop was held at the Whitten Community Center in Havelock to present corridors being considered for the subject project. Several handouts that were distributed during these meetings are attached.
The following project officials assisted in the presentations and answered questions regarding the project.

Bob Mattocks	NCDOT Board Member
Rick Shirley	NCDOT Division Engineer
Ed Latham	NCDOT Assistant Division Engineer
Michelle W. Fishburne	NCDOT Planning and Environmental Branch
Cindy Sharer	NCDOT Planning and Environmental Branch
Earl Willis	TGS Engineers
Ken Burleson	TGS Engineers

The following is a summary account of the proceedings at these meetings:

The public officials meeting was conducted from 3:00 pm to 4:00 pm in the Whitten Center. Approximately 20 officials attended this presentation.

This meeting began with Michelle Fishburne welcoming those attending and introducing the NCDOT Board Member, Bob Mattocks. Mr. Mattocks welcomed attendees and emphasized that the project should be considered from a regional perspective. He noted that he had a business along existing US 70 in Havelock but supported a bypass when viewing the project from a regional perspective. He then urged the unified support of the local officials for the construction of a bypass.

After the introductions, I presented the project studies to date following the general agenda included in the attached informational handout. The TIP cost estimate and schedule were noted first. Next, capacity studies that led to the functional design for improvements to the existing alignment were explained. The excessive right of way damages and cost estimates associated with the existing alignment improvements were noted. After describing the existing alignment studies, I then presented the bypass studies that led to the development of the corridors that were shown.

I began the presentation of the bypass corridors by noting that a large portion of the lands in all of the bypass corridors are Croatan National Forest lands and that the Forest Service was a cooperating agency that provided much of our natural resource data on these areas. The plant community patterns were shown on clear overlays displayed on top of 1" = 500' aerial photography of the City and bypass area. This overlay was followed by another overlay showing the preliminary wetland area determinations. Then, the preliminary corridors that had been developed to reduce wetland involvement were displayed. I then explained that the preliminary corridor east of existing US 70 on the northern (New Bern) side of Havelock had been initially considered and later eliminated from further consideration because of design difficulties. These difficulties were due to the proximity of the railroads and existing development which would cause excessive construction damages and right of way costs if the bypass were located in this area. The wetland involvement and the location of the threatened and endangered red-cockaded woodpecker colony were noted as the principal environmental factors considered in the development of the reasonable and feasible corridors that were shown. Previous comments and reviews by the regulatory agency officials were described. Their desire for the corridors to parallel the existing power line rights of way was noted.

I concluded by pointing out that the two reasonable and feasible corridors presented were 1000' wide and that the actual footprint of the facility would be only approximately 300' wide within these 1000' corridors. I also noted that the interchange and grade separation areas had been expanded to reflect the footprint of alignments on either side of the corridors shown. During this meeting, I indicated that the studies had not developed to the point of determining a preference for either of the two corridors presented. However, the review agency officials preliminary preference for the Corridor 2 (inner) alignment to avoid wildlife separation from the undeveloped lands west of Havelock was noted.

After the presentation, I opened the meeting for questions and comments. The most prevalent comments involved a desire to move the northern connection to existing US 70 closer to the Slocum Road (northern entrance) gate to the Cherry Point Marine facility. Also, a desire was expressed to extend the southern end of the facility (towards Morehead City) further out to allow the future development of this area. Several attendees noted that the access into Havelock from the proposed bypass interchange at Lake Road is not desirable principally due to the intersection

of Lake Road, Greenfield Boulevard, Miller Boulevard and Church Road at the railroad. However, there is no other existing facility available to provide another interchange and access to Havelock that avoids this intersection. If a bypass is constructed, the need for improvements to this intersection will be amplified by traffic growth. One resident/developer suggested extending Cunningham Boulevard across US 70 to the Bypass corridors to allow better access to the Cherry Point Marine Base.

The same resident/developer also indicated that the area along the southern end of the project had been assessed for wetlands and approved for development by the Corps of Engineers. Since this property is within the Croatan National Forest, Holly Jenkins from the US Forest Service said they would check to see if they had the study. She also indicated that the Forest Service was reviewing the displayed bypass corridors and would provide NCDOT with an official position concerning their preference in the next several months. Although no official endorsement was received from the City, City officials seemed to prefer the Corridor 1 (outer) alignment since it provides a larger area for development between the City and the bypass.

This meeting ended at approximately 4:00 pm when numerous citizens began arriving at the Whitten Center for the citizens workshop. A large number of interested citizens arrived at 4:00 pm and project officials began to discuss the various concerns of the attendees with them individually. The following are the principal citizen concerns that were noted by the project officials.

- Many attendees desired the southern (Morehead City) end of the project to be extended further eastward along US 70 to allow future development in this area.

- Several attendees noted that the proposed bypass provides no direct access to the Cherry Point Marine Base and noting that the base is the major employer generating much of the existing traffic in the area, suggested that improved access to the base be included with the project.

- Numerous interested citizens desired the consideration of shifting the northern end of the project closer to the City and the northern Cherry Point Base entrance at Slocum Road. Mr. Mattocks informed me that he had heard the same request earlier from numerous citizens. I indicated that the terminus shown was developed due to the proximity of the railroad and the need for distance to allow an appropriate grade to the necessary railroad grade separation. Mr. Mattocks desired further study of the feasibility of moving the northern terminus closer to the City.

- Several attendees indicated a bypass of only Havelock would not improve US 70 as a whole between New Bern and Morehead City due to the continuing development along existing US 70 between Havelock and these areas.

- Several residents with property and homes located at the western end of SR 1747 and SR 1791, Sunset Drive and Pulley Road, pointed out that less wetlands and relocatees would be involved if the Corridor 1 alignment were shifted further west along an existing road alignment in this vicinity. I indicated that we would consider modification to the corridor in this area after further investigation of wetlands in the vicinity.

- One resident with property located near the intersection of Greenfield Heights Boulevard and Sunset Drive (SR 1746 and SR 1747) expressed concerns about the Corridor 2 alignment through their property and suggested that the bypass begin near the intersection of Miller Boulevard and US 70 and continue south with improvements to existing US 70 and the service roads north of this intersection towards New Bern.

- Several attendees noted that Corridor 2 would parallel a proposed Greenfield Heights Boulevard road extension from south of Miller Boulevard to US 70 at McCotter Boulevard. Most felt that this extension to US 70 is needed to serve local traffic demands.

- Several attendees expressed the opinion that the Corridor 1 alignment, further from the business area would promote and better serve future development west of the City.

- One attendee suggested that the numerous service roads along US 70 be connected to serve the local traffic and access needs and, that the signals along US 70 be timed to favor the through traffic.

- Several business owners opposed any bypass since removing the through traffic would adversely affect their businesses.

The meeting ended at 7:00 pm. A total of 76 attendees signed in at the meetings. However, the actual attendance was estimated to be approximately 100.

1215 Jones Franklin Road
Suite 203, North Building
Raleigh, North Carolina 27606
Phone 919 851 7144
Fax 919 859 0557

145 West Parker Road (28655)
Post Office Drawer 1359
Morganton, North Carolina 28680-1359
Phone 704 437 4651
Fax 704 432 9145

TGS ENGINEERS

MEMO TO: File

FROM: Ken Burleson

REFERENCE: US 70, Proposed Havelock Bypass, Craven County, NC TIP No. R-1015, State Project No. 8.T170701, Federal-Aid Project No. R-56-4(34), TGS No. 89406

DATE: January 18, 1996

On Wednesday, January 17, 1996, Louis Raymond and I went to Havelock with Jim Buck of NCDOT Planning and Environmental to meet with Bob Mattocks, NCDOT Board Member, Rick Shirley, Division 2 Engineer and Don Morton, State Highway Design Engineer to present the status of the subject project to the Havelock Chamber of Commerce. Mr. Mattocks introduced the NCDOT and TGS Staff and I spoke approximately 20 minutes concerning the studies to date. We provided copies of the map and summary table that were part of the 12/19/95 Steering Committee Meeting handout. I described the two bypass corridors under consideration that were shown on the displayed corridor hearing map. I also explained that an additional corridor between the two may be considered after a foraging analysis is conducted by NCDOT for the isolated RCW colony. My talk was followed by a brief question and answer period. I ended by asking all attending that were interested in being added to our mailing list to sign in on the sheets provided.

The attendees were appreciative of our efforts and generally seemed to support the bypass corridor 1 due to the associated cost and relocation impacts. After the meeting, I provided the 12/19/95 Steering Committee Meeting Handout to representatives from two local newspapers.

On the way to Havelock, we stopped and obtained a copy of the new draft Craven County Land Use Plan from Don Baumgardner in New Bern. We also visited the project site where we observed logging operations near Sunset Drive. On the way back, we visited Stewart Daniels in New Bern to obtain additional information on the former County landfill near the western terminus. He explained that the maps and agreements for this old landfill had been apparently lost in a recent move. He also indicated that he had spoken with a State DEM Solid Waste official that indicated some records may be available in Raleigh. I will investigate this further to attempt to obtain a map of the site.

cc: Jim Buck

US 70 - Proposed Havelock Bypass
NCDOT TIP Project R-1015

Issue No. 2 *March, 1997*

PROJECT DESCRIPTION

The North Carolina Department of Transportation (NCDOT) proposes to improve US 70 in the vicinity of Havelock in Craven County.

The improvement of US 70 is included in the NCDOT 1997 - 2003 Transportation Improvement Program as TIP Project R-1015. The project begins along US 70, west of Havelock and extends eastward approximately 10 miles to the Craven-Carteret County line. The project is scheduled for right of way acquisition in 1998 and construction in 1999.

PROJECT NEED

A traffic study and capacity analyses of US 70 in the Havelock vicinity confirms the need for this project. Many of the signalized intersections along US 70 (through Havelock) will not accommodate the future traffic at an acceptable level of service.

ENVIRONMENTAL IMPACT STUDY

A planning and environmental study began in the Spring of 1992 to determine the needed improvements. Preliminary alternatives included improving the existing roadway and several bypass alternatives on new location. All alternatives were evaluated based on engineering, environmental and socio-economic factors. Engineering factors included costs, roadway safety, traffic growth and maintenance of existing traffic service. Principal environmental factors included potential impacts to red cockaded woodpecker colonies and wetland areas. The socio-economic factors included anticipated impacts to existing homes and businesses.

SECOND CITIZENS WORKSHOP

On Monday, March 17, 1997, an informal "drop in" workshop will be held at the Havelock High School at 101 Webb Boulevard, from 5:00 to 8:00 p.m. Engineers from the project study team will answer questions and receive comments about the project. Maps showing the study area, environmental areas of concern, and reasonable and feasible bypass corridors will be displayed.

TOLL FREE INFO-LINE

To obtain information and offer comments concerning this project, call:

1-800-736-7144

Existing Roadway

Widening existing US 70 was evaluated to determine potential impacts to adjacent properties. Improving the existing roadway would affect most properties along US 70 in Havelock and would require the relocation of an estimated 59 businesses and 51 residences. In addition, 44 businesses may have to be relocated due to the lack of parking. The estimated construction and right of way cost for improving existing US 70 are:

CONSTRUCTION	$ 77,500,000
RIGHT OF WAY	47,825,000
TOTAL	**$125,325,000**

Bypass Corridors

The study area for the Havelock Bypass is approximately 10 miles in length and 1.5 miles in width. Several new location bypass corridors were developed in this study area. A large portion of these bypass corridors will impact Croatan National Forest lands.

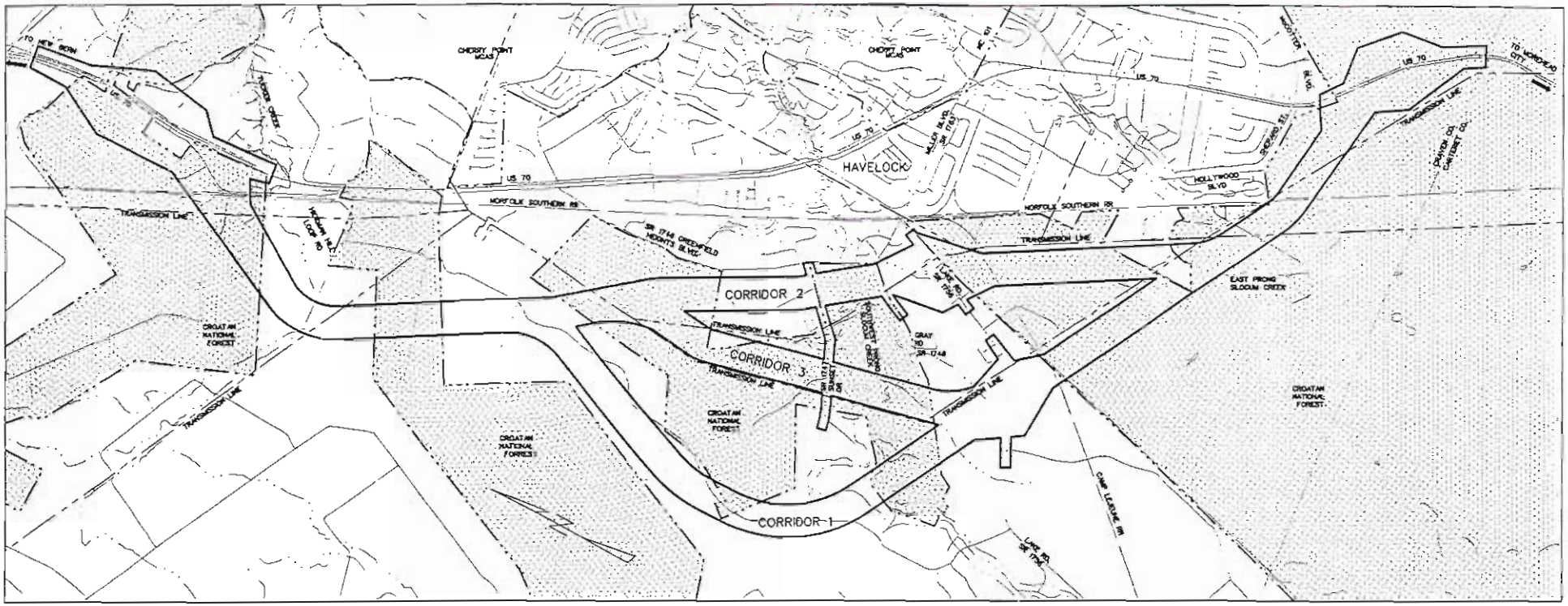
The NCDOT and the US Forest Service (USFS) at the Croatan National Forest, developed mapping to identify potential natural resource impacts. This mapping includes: 1) plant community patterns; 2) soils; 3) wetlands; 4) water resources; and 5) priority natural areas and habitat for proposed endangered, threatened, or sensitive species listed by the USFS. Using this mapping, corridors were developed to minimize impacts to the Forest.

Reasonable and Feasible Alternatives

Based on the results of the preliminary evaluations of engineering, environmental and socio-economic factors, three reasonable and feasible corridors were selected for further evaluation. Two of these corridors were initially presented at the first citizens workshop, and a third was added after evaluating the first two. The estimated construction and right of way cost of a US 70 bypass within each of these corridors are:

Corridor	Total Cost
1	**$80,590,000**
2	**$85,133,500**
3	**$78,138,000**

These corridors are shown on the following page.



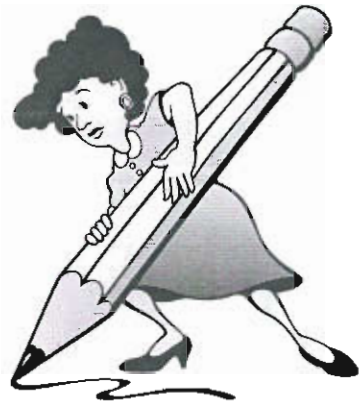
0 1000 3000 5000
GRAPHIC SCALE IN FEET

500 0 500 1000
GRAPHIC SCALE IN METERS

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

US 70, HAVELOCK BYPASS
CRAVEN COUNTY, NC

REASONABLE & FEASIBLE CORRIDORS



PROJECT MAILING LIST

ıdd your name to the mailing list, by contacting:

Havelock Bypass
TGS Engineers
Suite 203
1215 Jones Franklin Road
Raleigh, NC 27606

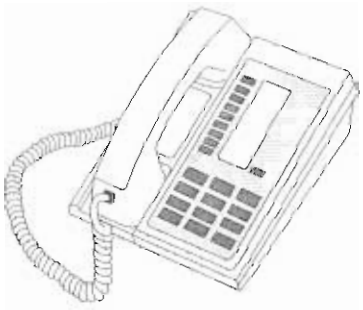
INFORMATION AND COMMENTS

For more information about this project, or to express any comments or concerns, write to either TGS Engineers or the NCDOT at the addresses below. Please refer to Project R-1015 when writing about the proposed project. All comments and questions will be addressed as soon as possible.

H. Franklin Vick, P.E.
Planning and Environmental
Branch
N. C. Department of Transportation
P. O. Box 25201
Raleigh, NC 27611
1-919-733-3141

or

J. K. Burleson, P.E.
TGS Engineers
Suite 203
1215 Jones Franklin Road
Raleigh, NC 27606
1-800-736-7144



TOLL FREE PROJECT INFO-LINE

1-800-736-7144

Havelock Bypass Newsletter
% TGS Engineers
Suite 203
1215 Jones Franklin Road
Raleigh, NC 27606

1215 Jones Franklin Road
Suite 203, North Building
Raleigh, North Carolina 27606
Phone 919 851 7144
Fax 919 850 0557

145 West Parker Road (28655)
Post Office Drawer 1359
Morganton, North Carolina 28680-1359
Phone 704 437 4681
Fax 704 433 9146

TGS ENGINEERS

MEMO TO: File

FROM: J. K. Burleson

DATE: March 18, 1997

REFERENCE: US 70, Proposed Havelock Bypass, Craven County, NC TIP No. R-1015, State Project No. 8.T170701, Federal-Aid Project No. R-56-4(34), TGS No. 89406

On Monday, March 17, 1997, a local officials meeting and a second citizens informational workshop was held concerning the subject project. These meetings were held at the Havelock High School. The principal reason for these meetings was to present the third corridor. The public had not seen the third corridor which is the preferred alignment for the project because it was developed after the first public meetings for the project. Several handouts that were distributed during these meetings are attached.

The following officials assisted in the presentations and answered questions regarding the project.

Bob Mattocks	NCDOT Board Member
Neil Lassiter	NCDOT Division 2
Ed Latham	NCDOT Division 2
Dwayne Alligood	NCDOT Division 2
Jim Buck	NCDOT Planning and Environmental Branch
Lee Cobb	NCDOT Planning and Environmental Branch
Jimmy Norris	NCDOT Roadway Design
Virginia Mabry	NCDOT Roadway Design
Marc Clifford	NCDOT Roadway Design
Lou Raymond	TGS Engineers
Ken Burleson	TGS Engineers

The following is a summary account of the proceedings at these meetings:

The public officials meeting was conducted from 4:00 pm to 5:00 pm in the cafeteria of the Havelock High School. In addition to the above project personnel, approximately 26 officials attended this presentation. A list of attendees is also attached.

This meeting began with Bob Mattocks welcoming those attending and explaining some of the project history that preceded this meeting. He introduced Jim Buck who also spoke of the

background of the project. Jim noted that a large portion of the lands in all of the bypass corridors are in the Croatan National Forest. He recognized the Forest Service cooperation and assistance in providing much of the project natural resource data. He explained the determination of Corridor 3 as the preferred corridor and the wetland impact mitigation efforts that have been undertaken for the area projects. He then turned the presentation over to me to further describe the project studies.

After the introductions, I described the project studies and alignment modifications since the first citizens workshop. I explained that improvements to the existing alignment had been eliminated from further consideration due to the substantial resulting impacts. I pointed out that the three reasonable and feasible corridors presented were generally 1000 feet wide and that the actual footprint of the facility would only take approximately one third of this width. I also noted that for all of the corridors, interchanges were planned at both ends of the project and at Lake Road. I explained that grade separations were planned at the other State Road crossings as well as the railroad crossings.

The extensive wetland involvement and the presence of the threatened and endangered red-cockaded woodpecker colony were noted as the principal environmental factors considered in the development of the reasonable and feasible corridors that were shown. The Regulatory agency officials desire for the corridors to parallel the existing power line rights of way was also noted.

I noted that Corridor 3 had been developed to avoid the large number of relocations required by Corridor 2 without impacting as much of the Croatan National Forest as Corridor 1. I further described the RCW study and the amount of Croatan National Forest acres taken and fragmented by each corridor. The number of relocations and cost estimates for each corridor were also noted. I explained that although Corridor 3 was preferred, it had not been chosen and could not be chosen until after the Draft EIS has been completed and the public has an opportunity to comment.

After this brief presentation, I opened the meeting for questions and comments. The City of Havelock explained that they have endorsed the preferred Corridor 3 to expedite the project. I asked for a copy of their resolution for the EIS.

Other comments from the officials involved the project schedule. The current schedule calls for R/W to begin in 1999 and construction in 2000. Mr. Mattocks indicated that the project was a NCDOT priority and that he knew of no plans to delay the schedule.

Several attendees noted and endorsed another proposed project that would provide access into Havelock near Cunningham Boulevard from the bypass interchange at Lake Road. Mr. Mattocks also acknowledged this project as a need currently being considered by NCDOT.

The public officials meeting ended at approximately 5:00 pm when numerous citizens began arriving for the citizens workshop. A large number of interested citizens arrived early and project officials began to discuss the various concerns of the attendees with them individually.

The following are the principal citizen concerns that were noted by the project officials.

- Most of the interested citizens desired to determine where their homes would be in relation to the various corridors. The functional designs were made available to emphasize that the corridors shown were substantially wider than the anticipated right of way.

- Many attendees that live near the northern project terminus were concerned about being within the corridor as indicated in the newsletter. After looking at the proposed functional plans most were satisfied with the proposed design. However, project officials explained that the functional plans shown are very preliminary and subject to change. I suggested to each one I spoke with that lives close to the proposed alignment to keep their eyes open for changes in the design.

- Most attendees favored the Corridor 1 and the preferred Corridor 3 alignments over Corridor 2 since they would impact less residences.

- Most attendees slightly favored Corridor 1 over the preferred Corridor 3 alignment since it would be further from their homes and allow more area for future development.

- Several attendees expressed a desire to be included on the project mailing list and provided their address information to project officials.

- Several attendees expressed concerns that a bypass of only Havelock would not improve US 70 as a whole between New Bern and Morehead City due to the continuing development along existing US 70 between Havelock and these areas.

- One attendee that indicated that she owned the shooting range along Lake Road, expressed concerns about the damages and dangers from the Corridor 1 and 3 alignments bringing people closer to their facility.

The citizens workshop meeting ended at 8:00 pm. A total of 73 attendees signed in at this meeting. However, the actual attendance was estimated to be approximately 100.

PROPOSED US 70 BYPASS

The proposed US 70 Havelock Bypass is being planned as a four-lane divided facility with full access control and grade-separated interchanges. Full access interchanges are planned at SR 1756 (Lake Road) and at existing US 70 on both ends of the bypass. Grade separations with no access will be provided at all other state routes (such as SR 1747 - Sunset Drive) and railroad crossings.

At this stage of the highway planning process, the corridors presented are approximately three times the actual width of the right of way that will be required for the route. A functional centerline has been determined for planning purposes, but the actual centerline may shift up to several hundred feet to one side or the other within the corridor shown, depending on particular design factors or the need to minimize impacts. The actual centerline and construction limits will not be established until after a corridor for the route has been chosen and preliminary design within the chosen corridor is completed. At that time, a second public hearing, the design hearing, will be held before approving the actual centerline.

Of the three reasonable and feasible corridors presented, Corridor 3 is the preferred corridor for the route. However, a final corridor selection will not be made until after the corridor public hearing.

Table 1

US 70, CRAVEN COUNTY – SUMMARY OF IMPACTS

	EXISTING ROUTE	BYPASS		
	FREEWAY	ALT. # 1 (OUTSIDE)	ALT. # 2 (INSIDE)	ALT. # 3 (COMBINED)
LENGTH (in miles)	9.0	10.5	9.2	10.0
COSTS				
Construction	$ 77,500,000	$76,200,000	$74,300,000	$73,400,000
Right-of-Way & Utility Relocation	$ 47,825,000	$4,390,500	$10,883,500	$4,738,000
TOTAL (R/W + Construction)	$125,325,000	$80,590,500	$85,133,500	$78,138,000
RELOCATIONS				
– Residences	> 51	15	72	19
– Churches [# Affected Employees]	0	0	1 [2]	0
– Businesses [# Affected Employees]	> 59 [323]	1 [1]	2 [2]	1 [1]
TOTAL	110	16	75	20
HIGHWAY CAPACITY				
Design Year 2017 Level of Service				
Eastbound (EB)	B	B	B	B
Westbound (WB)	B	B	B	B
PHYSICAL ENVIRONMENT				
Croatan National Forest (Acres in R/W)	22	174	246	246
Fragmented Croatan Forest (Acres)	0	1687	566	1070
Eligible National Register Properties	1	0	0	0
Public Parks and Recreation Areas	1	0	0	0
Air Quality				
– One Hour CO Concentrations (ppm)				
1997	5.0	2.2	2.2	2.2
2017	5.4	2.2	2.2	2.2
Noise Impacted Locations				
– Residences	40	11	11	11
– Businesses	4	0	0	0
Potentially Contaminated Sites	20	1	1	1
Major Stream Crossings	4	3	3	3
100-Year Floodplain (Acres in R/W)	0.8	5	4	7
NATURAL RESOURCES (in Acres)				
Farmlands by Soils (in R/W)	13	93	113	86
Wetlands (in R/W)				
Privately Owned	1	37	25	30
Croatan National Forest	5	124	143	126
TOTAL	6	161	168	156

US 70 - Proposed Havelock Bypass
NCDOT TIP Project R-1015

May, 1998

PROJECT DESCRIPTION

The North Carolina Department of Transportation proposes to improve US 70 in the vicinity of Havelock in Craven County. The improvement of US 70 is included in the NCDOT 1998 - 2004 Transportation Improvement Program as TIP Project R-1015. The project begins along US 70, west of Havelock and extends eastward approximately 10 miles to the Craven-Carteret County line. The project is scheduled for right-of-way acquisition to begin in 1999 and construction in 2001.

ENVIRONMENTAL IMPACT STUDY

A planning and environmental study began in the Spring of 1992. Preliminary alternatives included improving the existing roadway and several bypass alternatives on new location. All alternatives were evaluated based on engineering, environmental and socio-economic factors. Engineering factors included costs, roadway safety, traffic growth and maintenance of existing traffic service. Principal environmental factors included potential impacts to red cockaded woodpecker colonies and wetland areas. The socio-economic factors included anticipated impacts to existing homes and businesses.

CORRIDORS

Several preliminary bypass corridors were developed in the study area. A large portion of these bypass corridors will impact Croatan National Forest lands. Based on the results of the preliminary evaluations of engineering, environmental and socio-economic factors, three reasonable and feasible bypass corridors were selected for further evaluation.

CORRIDOR PUBLIC HEARING

When: Tuesday, May 26, 1998 7:00 pm

Where: Havelock High School
101 Webb Boulevard

For Further Information . . .

Call: Mr. Todd Dudley
US 70 Havelock Bypass
(919)250-4092

or

Write: Mr. Todd Dudley
Citizens Participation Unit
NCDOT
P. O. Box 25201
Raleigh, NC 27611

NCDOT will provide auxiliary aids and services for disabled persons who wish to participate in the Public Hearing. To receive special services, contact Todd Dudley at (919) 250-4092 to give adequate notice prior to the date of the Public Hearing.

The estimated construction and right of way cost of a US 70 bypass within each of these corridors are:

Corridor	Total Cost
1	$80,590,000
2	$85,133,500
3	$78,138,000

Corridor Public Hearing

On Tnesday, May 26, 1998, a Corridor Public Hearing will be held at 7:00 p.m. in the Havelock High School at 101 Webb Boulevard to answer questions and receive comments about the project. A map showing the study area and the reasonable and feasible bypass corridors will be displayed. The corridor hearing map and Environmental Assessment are available for review before the hearing at the Havelock Town Hall at 1 Hatteras Avenue.

PREFERRED ALTERNATIVE SELECTED

An Environmental Assessment was approved in January 1998 recommending Corridor 3 as the preferred alternative. Corridor 3 proved to have the least amount of impacts to the human and natural environments. It is also the most constructable and cost effective alternative. Corridor 3 is supported by the government review agencies, public officials, Steering Committee, and the majority of the citizens.

Corridor 3 will require a minimum of 230 feet of right-of-way. Approximately forty-three residences, two businesses, and one cemetery will be relocated. Corridor 3 will require the taking of approximately 156 acres of wetlands. This preferred alternative will be presented along with the two other feasible and reasonable corridors at the Corridor Public Hearing.

1215 Jones Franklin Road
Suite 203 North Building
Raleigh, North Carolina 27606
Phone 919 851 7144
Fax 919 859 0557

145 West Parker Road (28655)
Post Office Drawer 1359
Morganton, North Carolina 28680-1359
Phone 704 437 4681
Fax 704 433 9146

TGS ENGINEERS

MEMO TO: File

FROM: Ken Burleson

SUBJECT: US 70, Proposed Havelock Bypass, Craven County, NC TIP No. R-1015, State Project No. 8.T170701, Federal-Aid Project No. R-56-4(34)

DATE: May 29, 1998

On Tuesday May 26, a corridor public hearing was conducted for the subject project at the Havelock High School. Todd Dudley conducted the hearing and the public officials meeting prior to the hearing. Earl and I attended with Ron Elmore along with Jimmy Norris and Mark Clifford from Roadway. The Board Member, Bob Mattocks attended with Neil Lassiter the Division Engineer. Nancy Stallings and Lee Lane also attended.

Todd arranged the public officials meeting at Mr. Mattocks request. At this meeting, I did not recognize any County or Marine Base officials. Mostly City staff and elected officials attended requesting schedule information and the status of another currently unprogrammed project to extend Cunningham Boulevard to the Lake Road interchange so additional traffic would not use Lake Road and Miller Boulevard to and from the Bypass. All endorsed the 3rd corridor for the Bypass.

The presented schedule divided the project into four phases as follows: Section A, the north end, to R/W in June 99 and let in May 2000, Section B, the middle section, to R/W in December 99 and let in October 2000, Section C, the southern end R/W in August 99 and let in May 2001 and Section D, the paving let in October 2000.

I counted approximately 100 attendees at the hearing. I recall only one speaker opposing the project but he wanted Corridor 1 or 3, if the project is built. Most endorsed the preferred Corridor 3 and many requested the project be accelerated. A few questioned the northern terminus and requested extending the project northwestward beyond the Carolina Pines entrance. Corridor 2 received no support at either meeting.

1215 Jones Franklin Road
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Morganton, North Carolina 28680-1359
Phone 704 437 4681
Fax 704 433 9145

TGS ENGINEERS

MEMO TO: File

FROM: J. K. Burleson

SUBJECT: US 70, Proposed Havelock Bypass, Craven County, NC TIP No. R-1015, State Project No. 8.T170701, Federal-Aid Project No. R-56-4(34)

DATE: July 22, 1998

A corridor public hearing was held for the subject project on May 26, 1998 and on July 20, 1998 a post hearing meeting was conducted in the NCDOT Roadway Design Conference Room. The following attended the post hearing meeting to determine the selected corridor for the project:

Marc Clifford	Roadway	250-4016
Nya Boayue	Roadway	250-4016
Debbie Barbour	Roadway	250-4016
Todd Dudley	Citizen Participation	250-4092
Philip Culpepper	Traffic Control	250-4159
Gail Grimes	P&E	733-7844 ex 265
John Wadsworth	FHWA	856-4350 ex 108
Dicky Harmon	ESI	833-0034
Jan Gay	ESI	833-0034
Bob Collins	City of Havelock	444-6410
Gary Faulkner	Traffic Engineering	250-4151
Brian Mayhew	Traffic Engineering	250-4151
Ray McIntyre	Program Development	733-2039
Don Sellers	Right-of-Way	733-7694
Debbie Barbour	Roadway Design	250-4016
John Alford	Roadway Design	250-4016
Jimmy Norris	Roadway Design	250-4016
Ken Burleson	TGS Engineers	851-7144
E. B. Latham	Division 2, Construction	830-3490
Ron Elmore	P&E	733-7844
Betty Yancey	Right of Way	733-7694
Ron Thigpen	Traffic Control	250-4151

Marc Clifford began the meeting by having the attendees introduce themselves. After the introductions, Marc reviewed the principal features on the hearing map and identified the preferred Corridor 3 as presented at the corridor hearing. He noted very little opposition to Corridor 3 and identified the principal issues noted at the hearing for discussion.

1. The first issue discussed was the City of Havelock's concerns relating to the proposed Lake Road interchange. The City desires an extension of Cunningham Boulevard to the proposed bypass in the vicinity of the proposed Lake Road interchange to accommodate the additional traffic generated by the interchange. The City does not desire Lake Road and Miller Boulevard to be widened to accommodate this traffic.

   Since the proposed extension of Cunningham Boulevard is a separate non-programmed project, the only decision regarding the bypass project is whether to construct the Lake Road interchange. The local thoroughfare plan included in the Environmental Assessment shows a proposed Cunningham Blvd. extension intersecting Lake Road near the proposed bypass interchange. If constructed, the proposed Lake Road interchange could serve the proposed Cunningham extension, but an additional future interchange would not be allowed in close proximity. To avoid delays, it was determined to continue with the development of the Lake Road interchange while the destiny of the proposed Cunningham extension project is determined.

2. The second issue was a request by several attendees to extend the project further to the northwest beyond the entrances to the Carolina Pines subdivision. Those making this request felt a signal would be installed at Carolina Pines and such an extension would route the bypass around another signal. Most of those interested this extension resided in this area.

   Mr. Latham pointed out the numerous intersections with potential for future signalization along existing US 70 between New Bern and the proposed project. No good location to terminate an extension is apparent without additional studies further delaying the project. Therefore, the project will be developed with the existing terminus as presented to the public at the hearing and previous citizens' workshops.

3. The third principal issue discussed was what would happen to the fragmented Forest Service lands that NCDOT would obtain in exchange for the mitigation site being provided to the Forest Service. Mr. Sellars indicated the non-wetland areas would likely be first made available as exchange for properties needed for project right of way and the remainder would be sold after project completion. The wetland areas would likely remain in public ownership to ensure preservation.

The preferred Corridor 3 was selected for design and it was determined that a current NCDOT policy to bridge all high quality riverine wetlands would be followed. Contracts to delineate wetlands and perform archaeological studies along this preferred corridor will be developed while the corridor recommendation is provided to the Corps of Engineers for public review and comment.

Some discussion and several questions regarding the project schedule indicated some confusion as to which schedule the project will follow. The NCDOT Roadway Design and Planning personnel will confer with the Program Development Branch to determine the schedule as soon as determinations are completed.

Todd Dudley indicated that he will respond to the City of Havelock's questions regarding both the proposed Cunningham Boulevard extension, and the land exchange issues.

APPENDIX D

Relocation and Right of Way Reports

MSP 1/15/2009
R-1015

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [X] CORRIDOR [ ] DESIGN **Revised 1-14-09**

PROJECT:	34360.1.1	COUNTY	Craven	Alternate 1 of 3 Alternate	
I.D. NO.:	R-1015	F.A. PROJECT	N/A		
DESCRIPTION OF PROJECT:	US 70 Havelock Bypass in Craven County				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	5	8	13	0
Businesses	1	0	1	0
Farms	0	0	0	0
Non-Profit	1	0	1	0

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	0	8	5

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	0	150-250	0
40-70M	0	250-400	0	40-70M	5	250-400	4
70-100M	2	400-600	8	70-100M	21	400-600	28
100 UP	3	600 UP	0	100 UP	290	600 UP	88
TOTAL	5		8		316		110

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
	X	1. Will special relocation services be necessary?
	X	2. Will schools or churches be affect by displacement?
X		3. Will business services still be available after project?
X		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	X	5. Will relocation cause a housing shortage?
X		6. Source for available housing (list).
	X	7. Will additional housing programs be needed?
X		8. Should Last Resort Housing be considered?
	X	9. Are there large, disabled, elderly, etc. families?
	X	10. Will public housing be needed for project?
X		11. Is public housing available?
X		12. Is it felt there will be adequate DSS housing housing available during relocation period?
	X	13. Will there be a problem of housing within financial means?
X		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 24

REMARKS (Respond by Number)

All residential displacees are counted as families.
3. There will be ample supply of similar type businesses not Affected by the project.
4. 1) Liberty Motel-sm-2 employees 2) Craven Co. Transfer Station-sm-3 emplo.- nonprofit
6. & 14 Realtors, MLS, Newspapers, Etc.
8. As mandated by law
11. Twin Rivers Opportunities- HUD
12. Or built if neccessary

Michael Long	12-23-08	Am Simpson	1-14-09
Right of way Agent	Date	Relocation Coordinator	Date

MSP 1/15/2009
R-1015

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [X] CORRIDOR [ ] DESIGN **Revised 1-14-09**

PROJECT:	34360.1.1	COUNTY	Craven	Alternate 2 of 3 Alternate	
I.D. NO.:	R-1015	F.A. PROJECT	N/A		
DESCRIPTION OF PROJECT:	US 70 Havelock Bypass in Craven County				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	58	75	133	18
Businesses	3	0	3	0
Farms	0	0	0	0
Non-Profit	1	0	1	0

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	24	66	43

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	3	150-250	2	20-40M	0	150-250	0
40-70M	9	250-400	19	40-70M	5	250-400	4
70-100M	20	400-600	54	70-100M	21	400-600	28
100 UP	24	600 UP	0	100 UP	290	600 UP	88
TOTAL	58		75		316		110

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
	X	1. Will special relocation services be necessary?
	X	2. Will schools or churches be affect by displacement?
X		3. Will business services still be available after project?
X		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	X	5. Will relocation cause a housing shortage?
X		6. Source for available housing (list).
	X	7. Will additional housing programs be needed?
X		8. Should Last Resort Housing be considered?
	X	9. Are there large, disabled, elderly, etc. families?
	X	10. Will public housing be needed for project?
X		11. Is public housing available?
X		12. Is it felt there will be adequate DSS housing available during relocation period?
	X	13. Will there be a problem of housing within financial means?
X		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 24

REMARKS (Respond by Number)

All residential displacees are counted as families.
3. There will be ample supply of similar type businesses not Affected by the project.
4. 1) Salvage Yard-sm 3 emp.2)Hugh's Tow Service and Firewood-Sm-2 emp. 3) Liberty Motel-sm 2 emp. 4) Craven Co. Transfer Station-sm 3 emp.- nonprofit
6. & 14 Realtors, MLS, Newspapers, Etc.
8. As mandated by law
11. Twin Rivers Opportunities- HUD
12. Or built if neccessary

Michael Long	12-23-08	Am Simpson	1-14-09
Right of way Agent	Date	Relocation Coordinator	Date

RELOCATION REPORT

RECEIVED
MSP 1/15/2009
R-1015

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [X] CORRIDOR [ ] DESIGN **Revised 1-15-09**

PROJECT:	34360.1.1	COUNTY	Craven	Alternate	3	of	3	Alternate
I.D. NO.:	R-1015	F.A. PROJECT	N/A					
DESCRIPTION OF PROJECT:	US 70 Havelock Bypass in Craven County							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	5	11	16	0
Businesses	1	0	1	0
Farms	0	0	0	0
Non-Profit	1	0	1	0

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	3	5	8

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	0	150-250	0
40-70M	0	250-400	0	40-70M	5	250-400	4
70-100M	2	400-600	5	70-100M	21	400-600	28
100 UP	3	600 UP	6	100 UP	290	600 UP	88
TOTAL	5		11		316		110

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
	x	1. Will special relocation services be necessary?
	x	2. Will schools or churches be affect by displacement?
x		3. Will business services still be available after project?
x		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
	x	7. Will additional housing programs be needed?
x		8. Should Last Resort Housing be considered?
	x	9. Are there large, disabled, elderly, etc. families?
	x	10. Will public housing be needed for project?
x		11. Is public housing available?
x		12. Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13. Will there be a problem of housing within financial means?
x		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 24

REMARKS (respond by number)

All residential displacees are counted as families.
3. There will be ample supply of similar type businesses not Affected by the project.
4. .Liberty Motel-sm- 2 empl., Craven Co. Transfer Station-sm 3 empl.-nonprofit
6 & 14. Realtors , MLS, Newspapers, Etc.
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Michael Long	12-23-08	Am Simpson	1-15-09
Right of way Agent	Date	Relocation Coordinator	Date

APPENDIX E

Federal Register Publication of Notice of Intent

[4910-22]

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

ENVIRONMENTAL IMPACT STATEMENT: CRAVEN COUNTY, NORTH CAROLINA

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice of Intent.

SUMMARY: The FHWA is issuing this notice to advise the public that an environmental impact statement will be prepared for a proposed highway project in Craven County, North Carolina.

FOR FURTHER INFORMATION CONTACT: Roy C. Shelton, Operations Engineer, Federal Highway Administration, P. O. Box 26806, Raleigh, North Carolina 27611, Telephone: (919)856-4350.

SUPPLEMENTARY INFORMATION: The FHWA, in cooperation with the North Carolina Department of Transportation will prepare an environmental impact statement (EIS) on a proposal to improve U. S. Route 70 (US 70) in Craven County, North Carolina. The proposed improvement would involve the reconstruction or bypass of the existing US 70 through the town of Havelock, North Carolina for a distance of about 10 miles.

Improvements to the corridor are considered necessary to provide for the existing and projected traffic demand. Alternatives under consideration include (1) taking no action; (2) using alternate travel modes; (3) improving the existing highway; and (4) constructing a four-lane, limited access highway on new location. Incorporated into and studied with the various build alternatives will be design variations of grade and alignment.

Letters describing the proposed action and soliciting comments will be sent to appropriate Federal, State and local agencies, and to private organizations and citizens who have previously expressed or are known to have

interest in this proposal. Public workshops will be held in Havelock between April 1993 and August 1994. In addition, a public hearing will be held in August or September 1994. Public notice will be given of the time and place of the workshops and hearing. The draft EIS will be available for public and agency review and comment prior to the public hearing.

To ensure that the full range of issues related to this proposed action are addressed and all significant issues identified, comments, and suggestions are invited from all interested parties. Comments or questions concerning this proposed action and the EIS should be directed to FHWA at the address provided above.

(Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.)

Issued on: September 29, 1992

Nicholas L. Graf, P.E.
Division Administrator
Raleigh

Federal Highway Administration

Environmental Impact Statement; Craven County, NC

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice of intent.

SUMMARY: The FHWA is issuing this notice to advise the public that an environmental impact statement will be prepared for a proposed highway project in Craven County, North Carolina.

FOR FURTHER INFORMATION CONTACT: Roy C. Shelton, Operations Engineer, 310 New Bern Avenue, Suite 410, Raleigh, North Carolina 27601, Telephone: (919) 856-4350.

SUPPLEMENTARY INFORMATION: The FHWA, in cooperation with the North Carolina Department of Transportation (NCDOT), will prepare an environmental impact statement (EIS) on a proposal to improve U.S. Route 70 (U.S. 70) in Craven County, North Carolina. The proposed improvement would involve the reconstruction of existing U.S. 70 through the town of Havelock, North Carolina, or a bypass on new location for a distance of about 10 miles.

Improvements to the corridor are considered necessary for the existing and projected traffic demand. Alternatives under consideration include (1) No-build; (2) using alternative travel modes; (3) improving the existing highway; and (4) constructing a four-lane, limited access highway on new location.

Letters describing the proposed action and soliciting comments have been sent to appropriate Federal, State and local agencies. A series of public meetings and a public hearing will be held. Public notice will be given of the time and place of the meetings and hearing. The draft EIS will be available for public and agency review and comment prior to the hearing.

To ensure that the full range of issues related to this proposed action are addressed and all significant issues identified, comments and suggestions are invited from all interested parties. Comments or questions concerning this proposed action and the EIS should be directed to the FHWA at the address provide above.

(Catalog of Federal Domestic Assistance Program Number 23.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.)

Issued on: October 1, 1992.

Roy C. Shelton,

Operations Engineer, Raleigh, North Carolina.

[FR Doc. 92-24473 Filed 10-7-92; 8:45 am]

BILLING CODE 4910-22-M

Federal Aviation Administration

Intent To prepare an Environmental Document and To Conduct Scoping by Meeting for Establishing and Operating a Terminal Doppler Weather Radar (TDWR) to Serve the Port Columbus International Airport, Columbus, OH

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Correction to last paragraph regarding the scoping meeting date.

SUMMARY: This is to correct the date the scoping meeting which will be conducted at the Licking Height School, Summit Station, Ohio.

In the notice document 92-20406, page 38710, issue of Wednesday, August 26, 1992, second column, under "The FAA plans to conduct a scoping meeting on * * *", change the date to October 8, 1992.

Issued in Des Plaines, Illinois, on October 2, 1992.

Russell F. Williams,

Manager, Resource and Planning Branch, AGL-420, Airway Facilities Division, Great Lakes Region.

[FR Doc. 92-24502 Filed 10-07-92; 8:45 am]

BILLING CODE 4910-13-M

Intent To Rule on Application To Impose and Use a Passenger Facility Charge (PFC) at Pellston Regional Airport, Pellston, MI

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of intent to rule on application.

SUMMARY: The FAA proposes to rule and invites public comment on the application to impose and use a PFC at Pellston Regional Airport under the provisions of the Aviation Safety and Capacity Expansion Act of 1990 (Title IX of the Omnibus Budget Reconciliation Act of 1990) (Public Law 101-508) and part 158 of the Federal Aviation Regulations (14 CFR part 158).

DATES: Comments must be received on or before November 9, 1992.

ADDRESSES: Comments on this application may be mailed or delivered in triplicate to the FAA at the following address:

Federal Aviation Administration, Detroit Airports District Office, Willow Run Airport, East, 8820 Beck Road, Belleville, Michigan 48111.

In addition, one copy of any comments submitted to the FAA must be mailed or delivered to Mr. Raymond L. Thompson, Airport Manager, of the County of Emmet, Michigan, at the following address: Pellston Regional Airport, Pelston, Michigan 49769.

Air carriers and foreign air carriers may submit copies of written comments previously provided to the County of Emmet under § 158.23 of part 158.

FOR FURTHER INFORMATION CONTACT: Mr. Dean C. Nitz, Acting Manager, Detroit Airports District Office, Willow Run Airport, East, 8820 Beck Road, Belleville, Michigan 48111, (313) 487-7300. The application may be reviewed in person at this same location.

SUPPLEMENTARY INFORMATION: The FAA proposes to rule and invites public comment on the application to impose and use a PFC at Pellston Regional Airport under the provisions of the Aviation Safety and Capacity Expansion Act of 1990 (Title IX of the Omnibus Budget Reconciliation Act of 190) (Public Law 101-508) and part 158 of the Federal Aviation Regulations (14 CFR part 158).

On September 21, 1992, the FAA determined that the application to impose and use a PFC submitted by County of Emmet, Michigan was subsequently complete within the requirements of § 158.25 of part 158. The FAA will approve or disapprove the application, in whole or in part, no later than December 22, 1992.

The following is a brief overview of the application.

Level of the proposed PFC: $3.00.

Proposed charge effective date: October 1, 1992.

Proposed charge expiration date: December 31, 1997.

Total estimated PFC revenue: $440,875.

Brief description of proposed project(s):

Project To Impose and Use PFC

Construct aircraft ramp
Heated sand storage building
Rehabilitate Runway 14/32
Rehabilitate Taxiway G

Project Only To Impose a PFC

Blast pads for Runways 14 and 32, and paved shoulders for Runway 14/32
Acquire physically challenged passengers (PCP) equipment
Acquire snow removal equipment (broom)
Runway 5/23 lighting