FHWA-NC-EIS-99-01-F

FAYETTEVILLE OUTER LOOP CORRIDOR STUDY

Cumberland, Hoke, and Robeson Counties, North Carolina
From I-95 South of Fayetteville to US 401 (Ramsey Street)

PROJECT NUMBERS:
Federal Aid No.: DPR-0100(001) and DPR-0100(002)
NCDOT Project No.: 8.2441301 and 8.T441302
T.I.P. I.D. No.: U-2519 and X-0002

ADMINISTRATIVE ACTION
CONDENSED FINAL ENVIRONMENTAL IMPACT STATEMENT
FINAL SECTION 4(f) EVALUATION

Submitted Pursuant to 42 USC 4332(2)(c) and 49 USC 303
U.S. Department of Transportation
Federal Highway Administration
and
North Carolina Department of Transportation

Cooperating Agencies:
U.S. Fish and Wildlife Service
Department of the Army, Corps of Engineers
U.S. Army

15 Aug 05
Date of Approval

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

8/17/05
Date of Approval

for John F. Sullivan, III, P.E., Division Administrator
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This Condensed Final Environmental Impact Study (EIS) evaluates the engineering aspects and social, economic, and environmental impacts associated with the alternatives for a transportation corridor to the south, west, and north of the Fayetteville metropolitan area. A Draft EIS, approved March 17, 1999, evaluated thirteen build alternatives with respect to social and economic impacts, environmental impacts, and cost. A reevaluation of the Draft EIS stating that it is adequate and a Supplemental Draft EIS is not required was approved on February 3, 2005.

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DOCUMENTATION PREPARED BY **H. W. LOCHNER, INC.**

Michelle W. Fishburne

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Project Manager

FOR THE **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**

Derrick G. Weaver, P.E.
Consultant Engineering Unit

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Project Development Engineer

PROJECT COMMITMENTS

FAYETTEVILLE OUTER LOOP
Cumberland, Hoke, and Robeson Counties
Federal Aid No.: DPR-0100(001) and DPR-0100(002)
State Project No. 8.2441301
TIP No.: U-2519 and X-0002 B & C

In addition to the standard Nationwide Permit #33 and #23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Protection of Surface Waters, NCDOT's Guidelines for Best Management Practices for Bridge Demolition and Removal, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

COMMITMENTS DEVELOPED THROUGH PROJECT DEVELOPMENT AND DESIGN

All commitments developed during the project development and design phase have been incorporated into the design and were standard commitments. Current status, changes, or additions to the project commitments as shown in the Draft Environmental Impact Statement for the project are printed in *italic* font.

PDEA/Roadway Design/Hydraulics

Impacts to watershed areas and the water quality of all receiving waters will be minimized by strict adherence to NCDOT"s "Best Management Practices for Protection of Surface Waters," March 1997. Additionally, every effort will be made to minimize natural water body impacts during final design. The proposed Fayetteville Outer Loop would cross Little Cross Creek and Cross Creek above Bonnie Doone Lake and Rose Lake. Although these waters are part of the Fayetteville public drinking water supply, the proposed outer loop would not be located within the critical watershed area of either creek. The proposed outer loop would be located approximately 3.5 miles upstream of the critical watershed areas. During the design phase of the study, hazardous spill basins will be considered to prevent stream contamination from spill runoff.

This commitment was implemented during design.

PROJECT COMMITMENTS

PDEA/Roadway Design

Areas containing protected species will be avoided if possible during the design phase of the project. Section 7 consultation with the US Fish and Wildlife Service will be completed prior to signing the Final Environmental Impact Statement for circulation. Additionally, habitat fragmentation mitigation will be further evaluated during the design phase of the study.
Field surveys for all federally listed endangered species known to inhabit Cumberland, Hoke, and Robeson counties were performed. Measures to minimize impacts to the protected species were incorporated into the preliminary designs and coordinated with the Merger Team.

A Biological Assessment (BA) was prepared to assess impacts to federally listed plant species and a butterfly. In addition, a separate BA was prepared for impacts to the red-cockaded woodpecker. The Section 7 consultation was completed April 28, 2005.

PDEA/Right of Way

NCDOT will work with the members of the North Carolina Sandhills Conservation Partnership (NCSCP), with a reasonable effort, to acquire one piece of property in accordance with NCDOT and FHWA policies and procedures for property acquisition, the area identified as the Northern Corridor (see Figure 3 on page 31 of the Biological Opinion [April 28, 2005]). The identified property will contain approximately 75 acres of habitat that does or can support a southern yellow pine-dominated overstory and can be reasonably managed to create/maintain foraging habitat for the red-cockaded woodpecker.

This commitment will be implemented prior to construction.

PDEA

NCDOT will coordinate with Fort Bragg and the US Fish and Wildlife Service to establish and implement the best strategy for minimizing direct impacts of tree clearing and highway construction to red-cockaded woodpecker (RCW) Cluster FB 65, its resident RCW group and residual foraging and nesting habitat.

A strategy for minimizing direct impacts to RCW Cluster FB 65 will be developed at least one year prior to construction.

PDEA/Structure Design/Roadway Design/Division 6

Wetland avoidance is considered during all phases of the project. If wetlands cannot be avoided, every effort will be made to minimize the impacts through the location and design of the roadway

facility within the selected corridor. Mitigation of unavoidable wetland impacts will be coordinated through the appropriate state and federal agencies.

This commitment was implemented during design.

PDEA/Roadway Design

Sound barriers corresponding to the preferred alternative will be investigated in more detail in the design study phase of the project.

This commitment was implemented during design.

Hydraulics

For floodway encroachments, the North Carolina Department of Transportation will coordinate with the community and with the Federal Emergency Management Agency during the design phase of the project. Adherence to the North Carolina Department of Transportation's "Stream Crossing Guidelines for Anadromous Fish Passage" would allow movement of anadromous fish.

North Carolina Department of Transportation will comply with a moratorium for anadromous fish of "no in-water work" from February 15 to June 30 on Rockfish Creek.

This commitment will be implemented during construction.

Geotechnical Design

When the final proposed centerline is established and right of way determined, a hazardous materials site assessment will be performed to the degree necessary to determine levels of contamination at any potential hazardous materials sites along the preferred alternate. The assessment will be made prior to right of way acquisition. Resolution of problems associated with contamination will be coordinated with appropriate agencies.

This commitment will be implemented prior to Right of Way.

Roadside Environmental/Roadway Design

Measures to minimize visual impacts will be taken into consideration during design of the roadway. Overall, visual impacts may be mitigated through a variety of actions such as alignment modifications during design, landscaping, screening, embankments, and selective clearing of natural materials.

The commitment was implemented during design.

PROJECT COMMITMENTS

PDEA

If a build alternate is selected as the Preferred Alternative, a detailed archaeological survey of the preferred corridor will be conducted. This survey will be coordinated with the State Historic Preservation Office.

In coordination with the State Historic Preservation Office (HPO), detailed archaeological studies of the preferred corridor were conducted from 2001 to 2004. The specific findings of the initial survey are documented in "Dimensions of Fall Line Site Function: Surveying and Testing the West Fayetteville North Carolina Outer Loop," Technical Report #992 by New South Associates (2002). In coordination with the HPO and the Fort Bragg Cultural Resources Program (FBCRP), three additional intensive archaeological surveys were prepared for expanded coverage of the Preferred Alternative. The specific findings of these surveys are documented in three separate addenda: 1) "Cultural Resources Survey of 284 Acres South of Cliffdale Road, West Fayetteville Outer Loop, Cumberland and Hoke Counties, North Carolina," 2) "Cultural Resources Survey of 534 Acres North of Cliffdale Road, West Fayetteville Outer Loop, Cumberland County, North Carolina," and 3) "Cultural Resources Survey of 31 Additional Land Parcels of the Proposed West Fayetteville Outer Loop, Cumberland and Robeson Counties, North Carolina," all of which will be integrated into one appendix to be attached to the original 2002 survey report by New South Associates. A summary of the findings and impacts can be found in Section 6 of this document.

*These reports conclude that the Preferred Alternative will impact ten archaeological sites within the area of potential effects, eight of which are considered eligible for the National Register of Historic Places (31CD64, 31CD65, 31CD871, 31CD874, 31CD882, 31CD962, 31CD965, and 31RB485). The remaining two sites are cemeteries (31CD967/967** and 31CD976**). Therefore, the NCDOT will prepare a Memorandum of Agreement for the recovery or relocation efforts on these ten sites and will implement a satisfactory data recovery program. A Memorandum of Agreement regarding the implementation of mitigation efforts for all ten archaeological sites was signed in March 2005. One cemetery (31CD976**) will need to be relocated per applicable State statutes (i.e. NC GS 65 or NC GS 70.3) after consultation with the Office of State Archaeology. The prehistoric archaeological component of 31CD967/967** will not be impacted by the proposed project, but its historic cemetery component requires a GPR survey in order*

*to determine the locations of unmarked burials that may or may not be impacted by the proposed project. If burials associated with 31CD967/967** are to be impacted by the proposed project, then such burials will be relocated per applicable State statutes (i.e. NC GS 65 or NC GS 70.3) after consultation with the Office of State Archaeology. Since Sites 31CD64, 31CD65, and 31CD871, all of which will be affected by the subject project, are located within the Fort Bragg Military Reservation, the NCDOT will develop mitigation plans in consultation with both the HPO and the Fort Bragg Cultural Resources Program.*

Roadside Environmental/Division 6

Borrow and solid waste operations would be managed through the North Carolina Department of Transportation's, "Best Management Practices for Protection of Surface Waters," March 1997. Additionally, any solid waste generated during construction would be temporary and would either be hauled away to landfills or disposed of on-site by controlled burning, in compliance with all local, state, and federal regulations.

This commitment will be implemented during construction of the project.

PDEA/Roadway Design/Roadside Environmental

A retaining wall and vegetative screening will be provided adjacent to the Keithville Rental Units to avoid right-of-way acquisition and minimize visual impacts. These will be located at the northwest corner of the property adjacent to the Bragg Boulevard/Fayetteville Outer Loop interchange (quadrant D).

This commitment was implemented during design.

PDEA/Roadway Design

To minimize harm to the Shaw-Gillis Historic District, Raeford Road will be closed and landscaping will be provided adjacent to the roadway. In addition, access to the property from US 401 will be maintained, and the exterior of the Shaw-Gillis house will be painted following construction.

This commitment was negotiated during design and will be implemented during construction.

PROJECT COMMITMENTS

PDEA/Roadway Design/Right of Way

NCDOT will provide funds or construct and replace Fort Bragg's perimeter fence impacted by the proposed project. NCDOT will coordinate with Fort Bragg to provide perimeter roads and tank trails along the proposed project. The criteria and construction of visual screening to eliminate the line of sight to facilities located along the project will be coordinated with Fort Bragg. NCDOT will provide resources and/or construct new Access Check Point facilities in coordination with Fort Bragg at Reilly Road, Canopy Road, and Bragg Boulevard. The design of the Yadkin Road overpass will be coordinated with Fort Bragg to incorporate the new roadway grade into the Access Check Point facilities. Smith Lake Access Road off Murchison Road will be closed and relocated off Honeycutt Road in coordination with Fort Bragg. The new access will incorporate the current facilities and minimize harm to existing pine trees.

These commitments were addressed during design and will be negotiated as part of the Right of Way settlement with Fort Bragg.

PDEA/Roadway Design/Hydraulics

NCDOT will provide a bridge or box culvert at the existing wetland at the rear of Pine Forest High School to allow for a pedestrian crossing in coordination with a proposed Cumberland County greenway.

The commitment was implemented during design.

PDEA

Several systematic surveys of all potentially-suitable habitats for American chaffseed, Michaux's sumac, pondberry, rough-leaved loosestrife, and the Saint Francis' Satyr butterfly were conducted by biologists from May 2001 through August 2004. No individuals of any of the species were observed during the surveys. A re-survey will be conducted one year prior to construction, during the appropriate survey window, within the project limits to determine if any members of these species are present.

This commitment will be implemented during construction of the project.

PROJECT COMMITMENTS

Roadway Design

A capacity analysis for an updated design year using 2030 traffic volumes will be prepared and utilized in the design of the Final Plans.

This commitment will be implemented prior to the completion of Final Plans.

INTRODUCTION

This document is a Condensed Final Environmental Impact Statement (FEIS) and Final Section 4(f) Statement for the Fayetteville Outer Loop study. The study area included portions of Cumberland, Hoke, and Robeson Counties, North Carolina. The proposed action is identified as the Fayetteville Outer Loop and consists of constructing a new multi-lane freeway[1] around a portion of the City of Fayetteville in Cumberland and Robeson Counties, North Carolina. The North Carolina Department of Transportation's (NCDOT) Transportation Improvement Program (TIP) identifies the project as TIP U-2519, which includes Sections AA, AB, BA, BB, CA, CB, DA and TIP X-0002 Sections B and C.

The project begins in Robeson County at an interchange with I-95, continues north through Cumberland County, turns eastward along the southern boundary of the Fort Bragg Military Reservation, and ends just west of Ramsey Street (US 401). Although the original study included Hoke County, the proposed facility does not cross that county. The proposed facility is approximately 27 miles in length and would be a four-lane divided freeway with full access control. Grade separations or interchanges would be constructed at selected public crossroads. Design elements include a minimum right of way width of 350 feet, a depressed median width of either 70 feet or 46 feet, and a collector/distributor roadway system between the All American Freeway (SR 1007) and Bragg Boulevard (NC 24). It is anticipated that the proposed project will be divided into six separate construction projects with right of way acquisition for the entire project continuing over four years.

This FEIS and the Final Section 4(f) Evaluation, included in Section 7 of this document, are prepared in accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 CFR 1500-1508), as well as the Federal Highway Administration's (FHWA) Environmental Impact and Related Procedures (23 CFR 771) and Technical Advisory T6640.8A. The FEIS has been prepared in accordance with CEQ regulation 40 CFR 1503.4(c), which provides a methodology for preparing a "condensed" FEIS.

[1] A freeway designed to interstate standards in anticipation of being designated as an interstate in the future.

Condensed FEIS

With the "condensed" format, a summary of information in the DEIS is presented and the DEIS is incorporated by reference. The Condensed FEIS includes comments received on the DEIS and responses, a discussion on the selection of the Preferred Alternative, and an analysis of the specific impacts of the Preferred Alternative. The Condensed FEIS consists of three parts:

1) The following Condensed FEIS,
2) The Reevaluation of the DEIS, as approved in February 2005, and
3) The DEIS, as published in March 1999.

The FEIS contains the following elements:

- A summary of information contained in the DEIS
- Errata sheets, which make necessary corrections to the DEIS
- Selection of the Preferred Alternative
- Description of the Preferred Alternative and impacts
- Responses to agency and public comments on the DEIS
- Final Section 4(f) Statement

The DEIS issued in March 1999 will only be reissued to individuals or agencies specifically requesting a copy.

Fayetteville Outer Loop and the Merger Process

The procedures for the NEPA/404 Merger Process were implemented into the project studies for the Fayetteville Outer Loop in April 1999 by NCDOT. This process combines requirements for the National Environmental Policy Act and Section 404 of the Clean Water Act and was developed beginning in 1992.

In a May 1, 1992 agreement, the US Department of Transportation, the Office of the Assistant of the Army (Civil Works), and the US Environmental Protection Agency (EPA), developed policy that (a) would improve interagency coordination and (b) would integrate NEPA and Section 404 procedures. On May 14, 1997, the Wilmington District of the US Army Corps of Engineers (USACE), the North Carolina Division of the Federal Highway Administration (FHWA), and the North Carolina Department of Transportation (NCDOT) signed an Interagency Agreement that provided procedures to integrate NEPA and Section 404 for transportation projects in North Carolina.

In 1997, NCDOT, FHWA, and USACE agreed that "these procedures apply to all projects needing Federal Highway Administration action under the National Environmental Policy Act and a US Army Corps of Engineers Individual Permit under Section 404 of the Clean Water Act. These procedures are limited to those projects determined by Federal Highway Administration and North Carolina Department of Transportation to be processed with an Environmental Impact Statement to comply with NEPA, and/or those projects that require an Individual Section 404 Permit."

The NEPA/Section 404 Merger Process is based on concurrence from Project Team Members at four milestones (concurrence points) during project studies. For the Fayetteville Outer Loop, the Project Team includes representatives from federal, state, and local agencies, including FHWA, USACE, EPA, US Fish and Wildlife Service, (USFWS), North Carolina Department of Environment and Natural Resources - Division of Water Quality (NCDWQ), North Carolina Wildlife Resources Commission (NCWRC), North Carolina State Historic Preservation Office (SHPO), Fayetteville Area Metropolitan Planning Organization (FAMPO), and NCDOT. The four points for concurrence are (1) project purpose and need, (2) alternatives selected for detailed study, (3) least environmentally damaging practicable alternative (LEDPA), and (4) avoidance and minimization.

The NEPA/404 Merger Process was amended in 2001 and is referred to as the "Merger 01 Process." The amended procedures for the Merger 01 Process were implemented in March 2003 and incorporated into the Fayetteville Outer Loop project. The Concurrence Points amendments in the Merger 01 Process include the addition of Concurrence Point 2A and the separation of Concurrence Point 4 into three items: A, B, and C. Concurrence Point 2A includes coordinating the bridge locations, lengths, and cost with the Merger Team, and the three items for Concurrence Point 4 (A, B, and C) include the Avoidance and Minimization, a Hydraulic Design Review, and a Permit Drawing Review, respectively.

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Appendix F – Newsletters
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ATTACHMENTS

Attachment A – Fayetteville Outer Loop Corridor Study Draft Environmental Impact Statement/Draft Section 4(f) Evaluation, March 17, 1999

Attachment B – Fayetteville Outer Loop Corridor Study Reevaluation of the Draft Environmental Impact Statement, February 3, 2005

TABLES

EXHIBITS

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Section 2: Errata and Updates to the DEIS

Section 3: Comments and Coordination

Section 4: Proposed Action and Selection of the Preferred Alternative

Section 5: Preferred Alternative

Section 6: Impacts of the Preferred Alternative

Section 7: Final Section 4(f) Statement

SECTION 1
SUMMARY OF THE DEIS

This section provides a summary of the information presented in the 1999 Draft Environmental Impact Statement (DEIS) for the Fayetteville Outer Loop. Updates to this draft are provided in the following sections of this FEIS. A reevaluation of the DEIS stating that it is adequate, as there have not been substantial changes in the project area that would have affected the selection of the Preferred Alternative, and that "a Supplemental EIS is not required" was approved on February 3, 2005.

1.1 PURPOSE AND NEED

The purpose of the project is to provide an additional transportation corridor on the south, west, and north sides of Fayetteville. Extending from I-95 south of Fayetteville to just west of Ramsey Street (US 401) north of Fayetteville, the Outer Loop along with the X-0002 project and I-95 would complete a circumferential transportation facility around the city. The X-0002 project is a continuation of the Outer Loop eastward from Ramsey Street (US 401) to I-95 at the existing US 13 interchange. The project location and study area are shown on Exhibits 1-1 and 1-2, respectively.

The need for a circumferential facility around Fayetteville is based on a combination of factors including transportation demands, social demands, and military considerations. The project is needed to:

- Provide an additional transportation corridor (circumferential facility) on the south, west, and north sides of the Fayetteville Metropolitan Area to serve regional transportation demands.
- Combine with I-95 and Transportation Improvement Project (TIP) X-0002D to complete the outer transportation loop and connect existing radial transportation facilities that extend from Fayetteville and Hope Mills with a circumferential facility.
- Reduce the volume of traffic on portions of the local street network and connect the major radial routes in the southern, western, and northern portions of Fayetteville.
- Provide direct military and civilian access to I-95 both south and north (when connected with the X-0002 D project) of Fayetteville and another much needed crossing of the Cape Fear River.
- Serve the Fort Bragg Military Reservation and Pope Air Force Base with a direct connection to I-95 both south and north of Fayetteville.

- Complete a Congressionally-approved National Highway System (NHS)-Other Principal Arterial Route [I-95 to South Raeford Road (US 401)] and a NHS-Strategic Highway Corridor Network (STRAHNET) Route [South Raeford Road (US 401) to I-95].

The points were confirmed by the Merger Team on July 13, 2000 (see Section 2.2.3 and Appendix A.

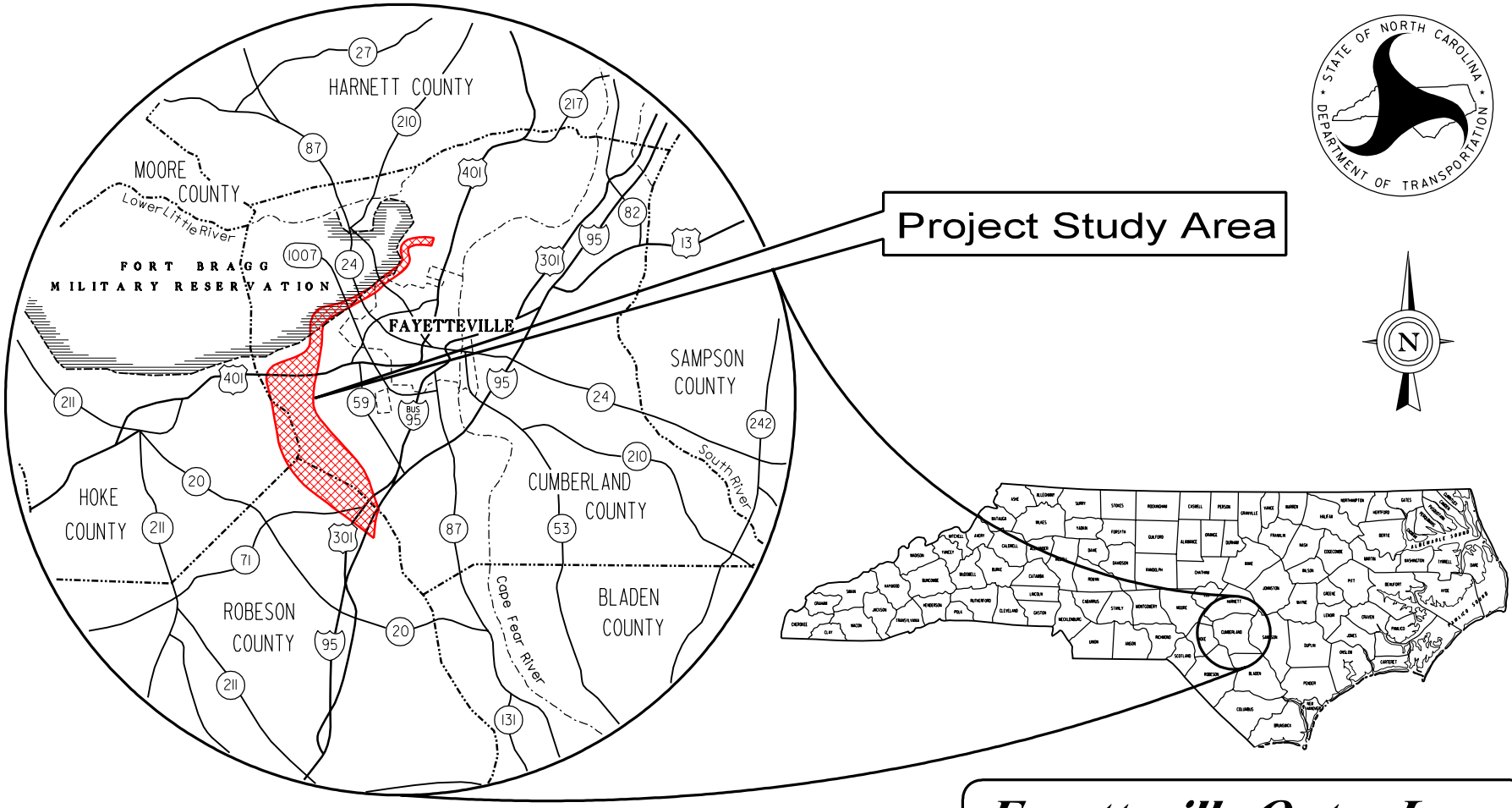
1.2 ALTERNATIVES

At the initiation of the project, five alternatives were established for development and consideration, including the No-Build Alternative, a Transportation Systems Management (TSM) Alternative, a Mass Transit Alternative, an Improve Existing Facilities Alternative, and a Build Alternative. The Build Alternative consists of a new freeway to complete an outer circumferential facility around Fayetteville.

Through the course of study, three of the five alternatives were eliminated because they did not meet the purpose of and need for the project. Alternatives eliminated from further consideration include the Mass Transit Alternative, the Transportation Systems Management Alternative, and the Improve Existing Facilities Alternative. The No-Build Alternative and the Build Alternative were evaluated in the DEIS. In the No-Build Alternative, the proposed project would not be implemented and no major improvements would be made to existing roads, except those that were previously planned or programmed in the TIP. The Build Alternative included a four-lane divided freeway with full access control and grade separations or interchanges at selected crossroads. The DEIS evaluated a number of build alternates to assess the type of facility and its potential locations.

Preliminary Build Alternates

Preliminary Corridors A, B, C, D, E, and F were developed based on previous studies in the project area, citizen comments, and field investigations for this project. Corridors B, C, D, E, and F had the same southern terminus along I-95 in Robeson County, and all corridors (including Corridor A) shared the same alignment from Cliffdale Road (SR 1400) to the northern terminus at Ramsey Street (US 401). Corridor A began further north on I-95, between the Peach Farm Road (NC 59) and Snowhill Road (SR 2219) interchanges. Corridor A was eliminated as a result of inadequate interchange spacing along I-95, wetland impacts along the Little Rockfish Creek floodplain, and numerous relocations.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

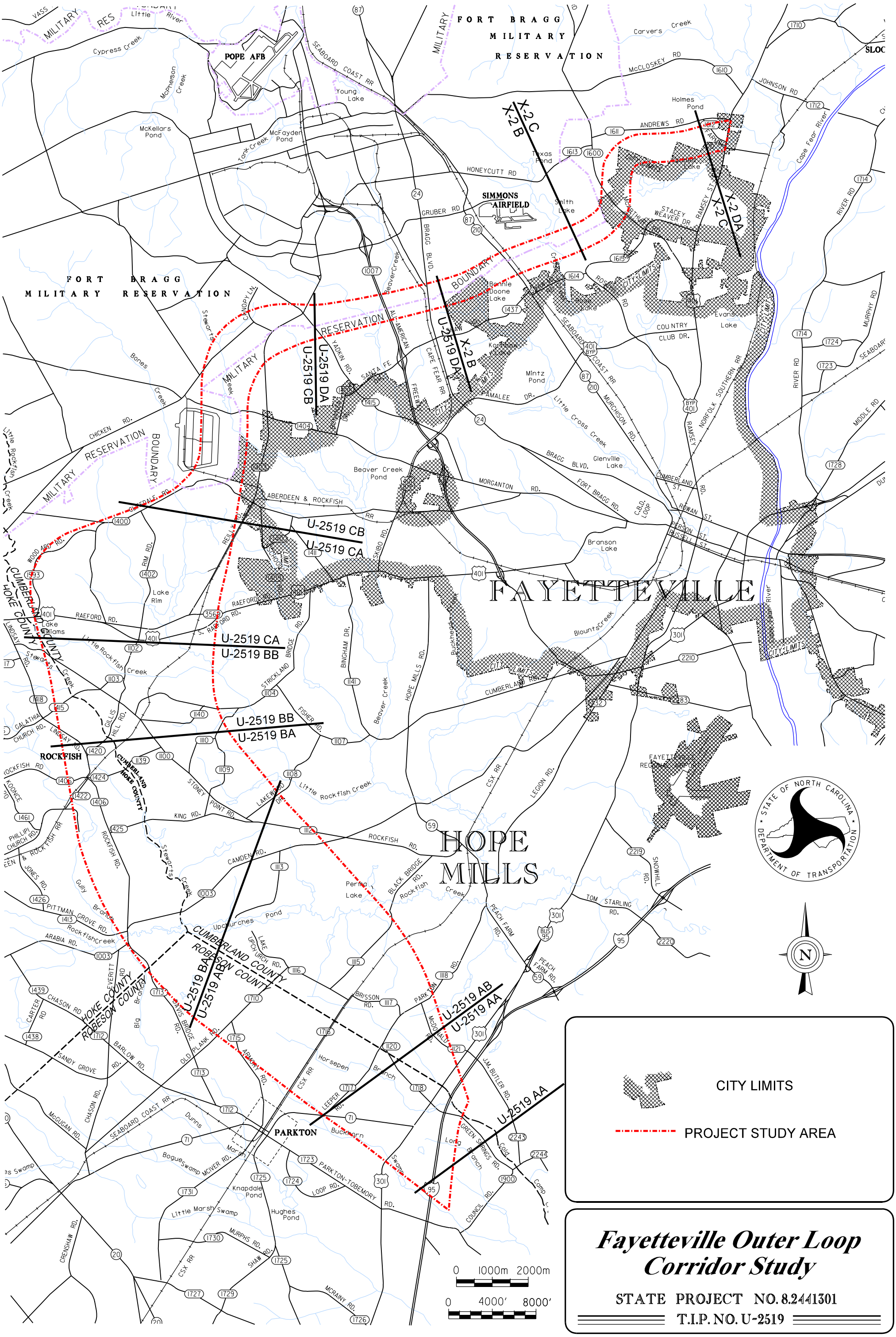
Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

Project Location

Exhibit 1-1


FORT BRAGG MILITARY RESERVATION
POPE AFB
SIMMONS AIRFIELD
FAYETTEVILLE
HOPE MILLS
PARKTON
ROCKFISH
U-2519 CA
U-2519 CB
U-2519 DA
U-2519 BA
U-2519 BB
U-2519 AA
U-2519 AB
X-2 C
X-2 B
X-2 DA
CITY LIMITS
BOUNDARY
CUMBERLAND COUNTY
HOKE COUNTY
ROBESON COUNTY
Little River
Cypress Creek
McPherson Creek
McKellars Pond
McFayden Pond
Tank Creek
Young Lake
Carvers Creek
Holmes Pond
Texas Pond
Smith Lake
Bonnie Doone Lake
Rose Lake
Evans Lake
Mintz Pond
Kornbow Lake
Glenville Lake
Beaver Creek Pond
Lake Rim
Lake Williams
Branson Lake
Cape Fear River
Bones Creek
Stewarts Creek
Little Rockfish Creek
Beaver Creek
Blounts Creek
Buckhead Creek
Little Cross Creek
Horsepen Branch
Long Branch
Upchurches Pond
Perfing Lake
Knapdale Pond
Hughes Pond
Little Marsh Swamp
Marsh Swamp
Dunns Swamp
Buckhorn Swamp
McMILLAN RD.
STACEY WEAVER DR.
RAMSEY ST.
ANDREWS RD.
McCLOSKEY RD.
JOHNSON RD.
HONEYCUTT RD.
GRUBER RD.
BRAGG BLVD.
RIVER RD.
MURPHY RD.
MIDDLE RD.
COUNTRY CLUB DR.
SEABOARD COAST RR
NORFOLK SOUTHERN RR
CAPE FEAR RR
CSX RR
MURCHISON RD.
MORGANTON RD.
FORT BRAGG RD.
CUMBERLAND RD.
ROWAN ST.
PERSON ST.
RUSSELL ST.
C.B.D. LOOP
SKIBO RD.
ABERDEEN & ROCKFISH RR
RAEFORD RD.
S. RAEFORD RD.
ROCKFISH RD.
CAMDEN RD.
KING RD.
STONEY POINT RD.
LAKEWOOD DR.
YADKIN RD.
SANTA FE TRL
FREEWAY DR.
PAMALEE DR.
CHICKEN RD.
GLENDALE RD.
WOOD ABD RD.
RIM RD.
REILLY RD.
SCHOOL LIMITS
CANOPY LN.
STRICKLAND BRIDGE RD.
FISHER RD.
GILLIS HILL RD.
LINDSAY RD.
GALATHIA CHURCH RD.
PHILLIPI CHURCH RD.
JONES RD.
PITTMAN GROVE RD.
ARABIA RD.
CARTER RD
CHASON RD.
SANDY GROVE RD.
BARLOW RD.
OLD PLANK RD.
DAVIS BRIDGE RD.
BINGHAM DR.
HOPE MILLS RD.
ARMORY RD.
LEEPER RD.
McDONALD RD.
PARK TON RD.
BRISSON RD.
LAKE UPCHURCH RD.
BLACK BRIDGE RD.
PEACH FARM RD.
TOM STARLING RD.
SNOWHILL RD.
JM. BUTLER RD.
GREEN SPRINGS RD.
COUNCIL RD.
LOOP RD.
PARKTON-TOBEMORY RD.
CRENSHAW RD.
MURPHS RD.
SHAW RD.
MCRAINY RD.
LEGION RD.
CUMBERLAND RD.
FAYETTEVILLE REGIONAL AIRPORT
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
0 1000m 2000m
0 4000' 8000'
N
CITY LIMITS
PROJECT STUDY AREA
Fayetteville Outer Loop Corridor Study
STATE PROJECT NO. 8.2441301
T.I.P. NO. U-2519
Project Study Area
Exhibit 1-2

In addition, two alternates (OG1 and OG2) were established for study and evaluation that would avoid Fort Bragg's environmentally-sensitive "Green Belt" area, which provides habitat for the federally endangered red-cockaded woodpecker. The alternates were eliminated from detailed study because of impacts to residences and community facilities; impacts to the Bonnie Doone/ Kornbow Lake Registered Heritage Area; and because they could not accommodate the projected travel demand at an acceptable level of service.

Build Alternates for Detailed Study

Thirteen alternates (B, C, D, E, F, G, H, I, J, K, L, M, and N) were examined in detail in the DEIS. Exhibit 1-3 shows these alternates. Alternates B, C, D, and F were identified as preliminary corridors, and Alternates E and G through N were developed from combinations of segments comprising Corridors B, C, D, and F. These alternates followed numerous routes between I-95 in Robeson County and Cliffdale Road (SR 1400) in Cumberland County but had the same southern terminus on I-95 in Robeson County and followed a single route from Cliffdale Road (SR 1400) to the project terminus west of Ramsey Street (US 401). The DEIS did not identify a Preferred Alternative.

In this document, supplemental analysis of the Improve Existing Facilities Alternative, which occurred following the publication of the DEIS, is discussed in Section 2 and Appendix B. The above referenced alternates for detailed study were confirmed by the Merger Team on July 31, 2000 (see Section 2.2.3 and Appendix A).

1.3 AFFECTED ENVIRONMENT

The DEIS provided a description of the existing social, economic, and natural environment of the area affected by the proposed alternates. The descriptions were general in nature and addressed the entire project area rather than providing a separate description of the area as it relates to each build alternate.

Social and Economic Environment

The project area is located mostly in Cumberland County, with small portions in Robeson and Hoke Counties and within the Fayetteville city limits. The project area is composed of a mix of military, residential, commercial, industrial, and agricultural land uses, with concentrated military and residential uses in the northern portion of the project area and less dense, agricultural uses in

the southern part of the project area. Commercial and industrial land uses are primarily along major roadways.

The DEIS included a summary of the area's population based on 1990 census data, which indicated that Cumberland and Hoke Counties had undergone substantial growth and were expected to continue to grow at a rapid rate. Robeson County experienced a slower rate of growth and likewise was expected to grow at a slower rate. Median household incomes were slightly less than the state average and unemployment rates for the area exceeded the state average.

Changes since the DEIS in the social environment of the study area for the proposed project, including updated 2000 census data, were discussed in a Reevaluation of the DEIS, which was approved on February 3, 2005 (see Attachment B).

Cultural Resources

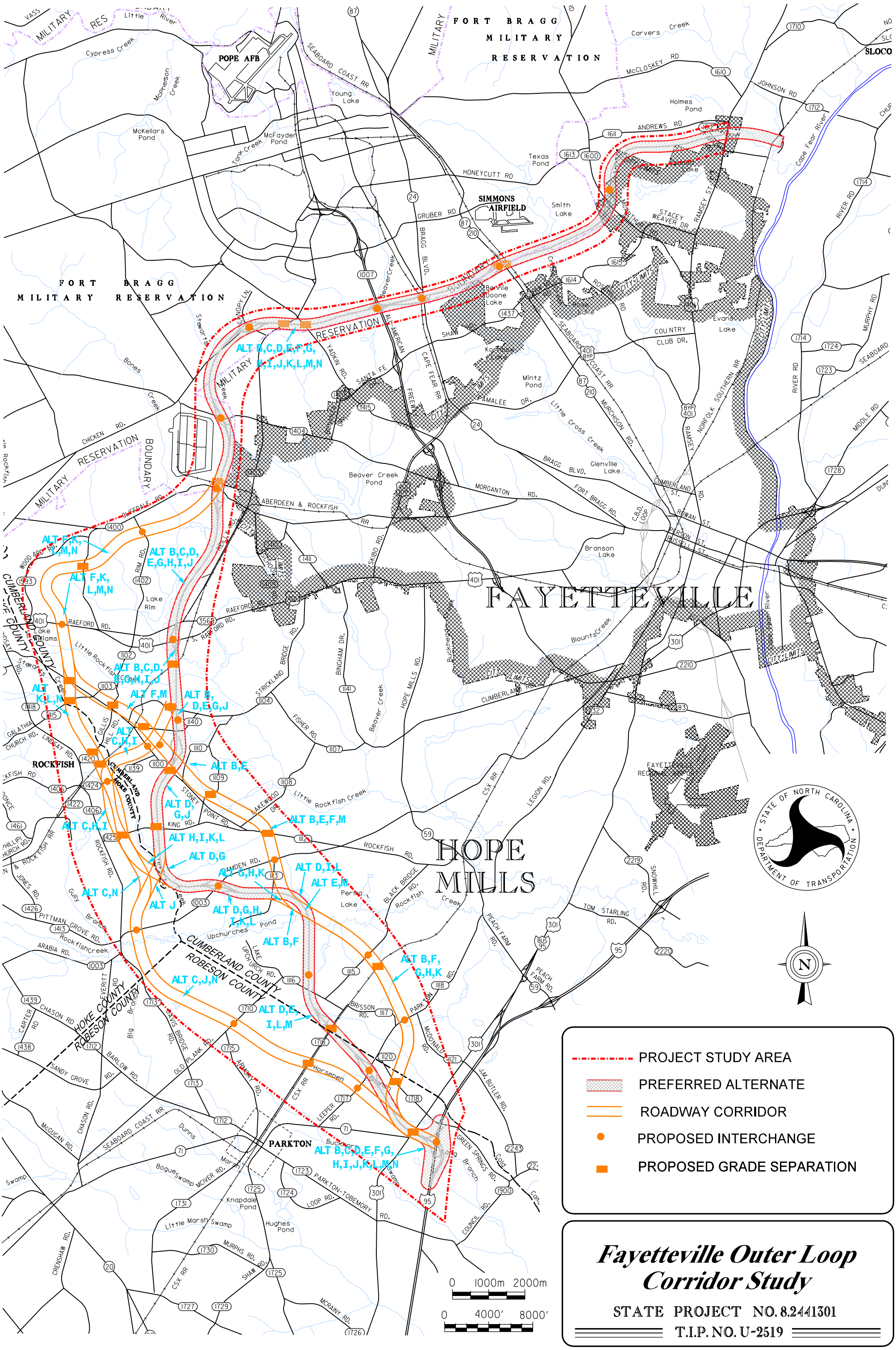
A survey to assess the potential for archaeological resources was conducted in the project area based on review of historic maps and a windshield survey. The survey indicated that archaeological sites will be located within the corridor at a rate of one site per 11 to 22 acres. No known archaeological sites in the project area were eligible for the National Register of Historic Places.

An architectural survey for structures on or eligible for nomination to the National Register was also conducted in the project area. Six properties in the project area were determined eligible for the National Register, including the Shaw-Gillis Historic District, the Keithville Rental Units, the Buena Vista House, William John Gillis House No. 1, Wood's Store, and the McInnis House. Impacts to these properties were evaluated in the Draft Section 4(f) Statement in the DEIS.

Since the DEIS, archaeological field surveys have been conducted for the Preferred Alternative corridor. The results of these surveys are included in Section 6.3.1 of this FEIS.

Natural Environment

The project lies within the Sandhills and Inner Coastal Plain regions of North Carolina's Coastal Plain physiographic province and within the Cape Fear and Lumber River basins. The northern and western portions of the project area are located in the Sandhills region, characterized by porous white sands and incised stream valleys that create a gentle rolling terrain. The southern


FORT BRAGG MILITARY RESERVATION
POPE AFB
SIMMONS AIRFIELD
FAYETTEVILLE
HOPE MILLS
PARKTON
ROCKFISH
SLOCO
ALT B,C,D,E,F,G,H,I,J,K,L,M,N
ALT F,K,L,M,N
ALT B,C,D,E,G,H,I,J
ALT F,M
ALT B,D,E,G,J
ALT K,L,N
ALT C,H,I
ALT B,E
ALT D,G,J
ALT B,E,F,M
ALT H,I,K,L
ALT D,G
ALT G,H,K
ALT D,I,L
ALT E,M
ALT J
ALT D,G,H,I,K,L
ALT B,F
ALT C,N
ALT C,J,N
ALT D,E,I,L,M
ALT B,F,G,H,K
ALT B,C,D,E,F,G,H,I,J,K,L,M,N
PROJECT STUDY AREA
PREFERRED ALTERNATE
ROADWAY CORRIDOR
PROPOSED INTERCHANGE
PROPOSED GRADE SEPARATION
0 1000m 2000m
0 4000' 8000'
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Fayetteville Outer Loop Corridor Study
STATE PROJECT NO. 8.2441301
T.I.P. NO. U-2519
Build Alternates
Exhibit 1-3

portion of the project area is located in the Inner Coastal Plain region and is characterized by nearly level terrain interrupted by Carolina bays and pocosins.

Much of the project area south of Cliffdale Road (SR 1400) and east of McArthur Road (SR 1600), off the Fort Bragg Military Reservation, has been cleared for urban and agricultural land uses. The natural communities in the project area that do remain have been altered through logging practices, agricultural practices such as ditching, and suppression of the natural fire cycle. These communities were classified according to vegetation composition, soils, and hydrology. Natural communities in the project area can be described as mesic pine forest, pine/scrub oak sandhill, xeric sandhill scrub, streamhead pocosin, coastal plain semi-permanent impoundment, and coastal plain small stream swamp. Wetlands and streams in the project area were also determined.

1.4 ENVIRONMENTAL CONSEQUENCES

Probable beneficial and adverse social, economic, and environmental effects that would result from implementation of the proposed action and measures to mitigate adverse impacts were discussed in the DEIS. Details of the specific impacts associated with the 13 build alternates and the No Build Alternative are included in Section IV of the DEIS. Table 1-1, a reproduction of Table S-1 from the DEIS, includes a comparative summary of the impacts for each of the build alternates.

Land Use and Social Impacts

The proposed project is consistent with the 2010 Land Use Plan for Cumberland County, and because the county has adopted land use controls that include the Outer Loop, the proposed facility would not alter land use patterns established by local authorities. None of the alternates considered would impact schools or libraries within the project area; however, up to three churches could be impacted. The alternates avoid impacts to communities as much as possible.

Relocation Impacts

Residential, business, and non-profit organization relocations would occur along the project for all alternates. Relocation estimates were based on the conceptual right of way plans for the project and on-site field investigations. Table 1-1 includes a summary of relocation impacts.

Relocation impacts were updated for the Preferred Alternative and are included in Section 6.1 of this FEIS and Appendix C.

Air Quality Impacts

For each of the 13 alternates, the roadway segment having the potential for generating the highest carbon monoxide (CO) concentration was identified. For all alternates, this segment is located between the All American Freeway (SR 1007) and Bragg Boulevard (NC 24). Since the conceptual right of way and traffic are identical for all alternates along this segment, only one analysis at one receptor site was required. Air quality projections were calculated for the projected year of project completion (2005), interim years after project completion (2010 and 2015) and the design year (2020). The 1-hour and 8-hour CO concentrations for the year 2020 are not expected to exceed 2.8 and 1.7 parts per million (including background concentrations), respectively; therefore, the project is not anticipated to create any adverse effects on the air quality of this attainment area.

Updated air quality impacts for the design year 2025 are discussed in Section 6.4 of this FEIS.

Noise

Noise levels for the alternate corridors were predicted for all potentially noise sensitive receptor sites using worst case noise conditions for design year 2020 peak hour traffic volumes. A summary of noise impacted properties is included in Table 1-1. A Final Design Noise Study was completed for design year 2025. The results of this study are included in Section 6.5 of this FEIS.

Natural Resources

The conceptual right of way for each of the build alternates contains approximately 1,700 acres of land; however, some alternates would impact more forested and wetland area than others resulting in greater impacts to terrestrial ecosystems and faunal communities. Alternate K would have the greatest impact to forested areas while Alternate C would impact the least amount of forested area.

A combination of wetland delineations (Cliffdale Road [SR 1400] to Ramsey Street [US 401]) and wetland determinations (I-95 to Cliffdale Road [SR 1400]) was used to identify wetlands within the project study area. The number of wetlands affected by the project varied depending

Table 1-1: Comparative Summary of Alternate Impacts*

Category	Units	Alternate												
		B	C	D	E	F	G	H	I	J	K	L	M	N
Corridor Length	miles	26.9	28.4	27.8	26.6	29.6)	28.1	28.9	28.6	27.9	30.2	30.0	29.3	29.7
Residential Relocations	total	224	310	255	234	241	242	253	266	301	269	282	251	326
	minority	40	64	49	43	47	45	52	56	57	56	60	50	68
Business Relocations	total	5	5	5	5	5	5	5	5	5	6	6	5	6
	minority	1	1	1	1	1	1	1	1	1	1	1	1	1
Non-Profit Relocations	total	3	3	4	3	3	4	4	4	3	4	4	3	3
Right of Way	parcels	519	540	612	532	574	602	532	542	630	632	642	587	640
Right of Way	acres	1629	1734	1665	1606	1785	1687	1745	1723	1679	1817	1795	1761	1806
Potential Hazardous Mat. Sites	each	20	19	19	20	24	19	19	19	19	23	23	24	23
Wetlands	acres	177.1	147.9	146.7	159.5	195.2	164.0	170.7	153.5	145.0	185.3	168.0	177.6	162.4
Stream Impacts	Linear feet	28,285	28,705	26,455	27,775	29,115	26,965	26,815	26,305	29,205	30,825	30,315	28,605	32,715
Farmland	acres	163.0	455.3	219.8	219.8	163.0	163.0	163.0	219.8	455.3	163.0	219.8	219.8	455.3
Noise (Without Sound Barriers)	impacted properties	399	323	354	390	459	364	346	336	336	404	395	451	334
Sound Barriers	feasible barriers	6	6	6	6	7	6	6	6	6	7	7	7	7
Noise (With Sound Barriers)	impacted properties	116	101	112	107	175	121	122	113	103	166	158	167	98
Air Quality 1-Hour	carbon monoxide (ppm)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Air Quality 8-Hour	carbon monoxide (ppm)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Utilities	number of crossings	35	29	32	33	39	34	33	31	30	36	34	38	32
Wetland/Stream Mitigation Cost	dollars	15,573,000	14,276,000	13,656,000	14,600,000	16,648,000	14,614,000	14,898,000	13,945,000	14,262,000	16,601,000	15,643,000	15,677,000	15,974,000
Right of Way Cost	dollars	52,675,000	52,450,000	54,300,000	53,075,000	62,650,000	54,025,000	52,600,000	52,875,000	54,475,000	62,625,000	62,900,000	63,050,000	62,475,000
Construction Cost	dollars	282,220,000	283,743,000	293,082,000	283,670,000	300,090,000	289,932,000	294,310,000	297,460,000	280,501,000	300,183,000	303,333,000	301,540,000	289,616,000
Total Cost	dollars	350,468,000	350,469,000	361,038,000	351,345,000	379,388,000	358,571,000	361,808,000	364,280,000	349,238,000	379,409,000	381,876,000	380,267,000	368,065,000

* Reproduction of Table S-1 from the DEIS (page S-5)

on the alternate. Alternate F impacted the greatest number of wetlands, and Alternate J impacted the least number of wetlands. A summary of wetland impacts is included in Table 1-1

Since the DEIS, wetlands within the Preferred Alternative corridor have been fully delineated. In addition, impacts to wetlands have been minimized through working with the Merger Team. As a result, total impacts within the Preferred Alternative corridor were reduced to 63.4 acres. Similarly, delineations were completed for all streams within the preferred corridor, which impacts a total of 12,833 linear feet of streams. Additional discussion of these impacts is included in Section 6.7 of the FEIS.

Rare and Protected Species

Complete surveys for all federally protected species listed in Cumberland, Hoke, and Robeson Counties were conducted along all Build Alternates for the project. The results of these surveys were incorporated into a Biological Assessment, submitted in 1998, with Biological Conclusions as follows:

- American chaffseed (*Schwalbea americana*) – No Effect
- Michaux's sumac (*Rhus mitchauxii*) – No Effect
- Pondberry (*Lindera melissifolia*) – No Effect
- Rough-leaved loosestrife (*Lysimachia asperulaefolia*) – No Effect
- Small whorled pogonia (*Isotria medeoloides*) – No Effect
- Red-cockaded woodpecker (*Picoides borealis*) – May Effect
- Saint Francis' Satyr butterfly (*Neonympha mitchelli francisci*) – No Effect
- American alligator (*Alligator mississippiensis*) – No Effect

Surveys were conducted for the same federally protected species in 2004 for the Preferred Alternative corridor, with the exception of small whorled pogonia which was removed from the protected species list for this area. Two Biological Assessments were submitted to USFWS: one included Biological Conclusions for all plant species, the butterfly, and the alligator; the other included only the red-cockaded woodpecker. USFWS rendered a concurrence of No Effect for American chaffseed, Michaux's sumac, pondberry, rough-leaved loosestrife, Saint Francis' satyr, and American alligator in March 2005. In April 2005, USFWS issued a Biological Opinion of "May Effect, Likely to Adversely Effect" for impacts to the red-cockaded woodpecker. Impacts to federally protected species are further discussed in Section 6.6 of the FEIS, and the Biological Opinions are included in Appendix D.

Cultural Resources

A Phase I archaeological survey for the project revealed a number of sites recommended for additional work (see Table 1-1). A complete Phase II archeological survey was completed for the Preferred Alternative corridor between 2001 and 2004. The results of this work are discussed in Section 6.3.1 of the FEIS. A Memorandum of Agreement regarding the implementation of mitigation efforts for impacted archaeological sites can be found in Appendix E of this FEIS.

Additionally, a Phase II study of architectural resources was conducted, and it was determined that the alternates would impact only one of six identified historic properties – the Shaw Gillis Historic District. Additional impacts and efforts to minimize impacts to architectural resources are also discussed in Section 6.3.2 of the FEIS and in the Final Section 4(f) Evaluation in Section 7. Determination of effect forms for impacts to architectural resources can be found in Appendix E.

Hazardous Materials

An assessment of potential contamination sites was conducted for the thirteen build alternates. Sites were assigned a degree of risk: No, Low, Medium, or High. Table 1-1 contains a summary of hazardous material sites that would be impacted by each alternate.

Secondary and Cumulative Impacts

Secondary and cumulative impacts associated with the proposed Outer Loop include changes in land use, economic vitality, population density, and the environment. The potential for secondary and cumulative impacts would be least with the No-Build Alternative. Urban development is currently planned for Cumberland and Hoke Counties. Therefore, Alternates C, J, and N would have the greatest potential for land use changes because of their length and number of interchanges in rural Robeson County.

In 2004, an Indirect and Cumulative Impact Analysis was prepared for the proposed project. A summary of this analysis is included in Section 6.10 of the FEIS.

1.5 SECTION 4(F) EVALUATION

An evaluation of the project area was conducted for properties determined to be qualified for Section 4(f) evaluation. Two Section 4(f) properties were impacted by the alternates under

consideration. Alternates B, C, D, E, G, H, I, and J would impact the National Register eligible Shaw-Gillis Historic District, and Alternates B, F, G, H, and K would impact a US Fish and Wildlife Service conservation easement with Section 4(f) protection. The Draft Section 4(f) Evaluation describes the properties, potential impacts to the properties, efforts to avoid and minimize impacts to the properties, and coordination efforts.

The Final Section 4(f) Evaluation has been incorporated into this FEIS and is included as Section 7. The Final Section 4(f) Evaluation was revised to include specific impacts related to the Preferred Alternative (Alternate D).

1.6 LIST OF PREPARERS

The DEIS was prepared by the North Carolina Department of Transportation and the Federal Highway Administration with assistance from HW Lochner, Inc.; Mattson, Alexander & Associates; and New South Associates, Inc. An updated list of personnel used in preparing the FEIS can be found in Section 2.2.2.

1.7 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE STATEMENT ARE SENT

The DEIS was sent to the following federal, state, and local agencies:

Federal Agencies

Army Corps of Engineers (Wilmington District)

Department of Interior – Fish and Wildlife Service (Raleigh)

Department of Agriculture

Environmental Protection Agency (Region IV) – Environmental Review Branch

Department of Housing and Urban Development (Greensboro Area Office)

Department of Interior – US Geological Survey (Raleigh Office)

Department of Interior – Keeper of the National Register

Federal Emergency Management Agency

US Army – Fort Bragg Commanding Officer

US Air Force – Pope Air Force Base Commanding Officer

State Agencies

Department of Administration – State Clearinghouse

Department of Cultural Resources – Division of Archives and History

Department of Environment and Natural Resources

Department of Public Instruction – Division of School Planning

Department of Human Resources

Wildlife Resources Commission

Local Offices

City of Fayetteville – Mayor

Cumberland County Commissioners

Hoke County Commissioners

Robeson County Commissioners

Town of Hope Mills – Mayor

Town of Spring Lake – Mayor

Town of Rockfish – Mayor

Town of Parkton – Mayor

City of Fayetteville Public Library

Cumberland County Library

Robeson County Bookmobile

Hoke County Library

Robeson County Library

1.8 COMMENTS AND COORDINATION

The DEIS described agency coordination and public involvement through the circulation of the DEIS in 1999, which included early coordination and agency scoping beginning in 1993; informational workshops; newsletters; and interagency review meetings. Documentation related to this coordination was included in Appendix D of the DEIS.

Coordination with both regulatory agencies and the public has continued since the DEIS. Since the DEIS, five newsletters have been distributed to the project mailing list to update the corridor study process and progress, as well as announce opportunities for public input. These newsletters are included in Appendix F of the FEIS. In addition, the Corridor Public Hearing was held in

1999 (see Appendix G for a transcript of the hearing), and a series of Citizens Informational Workshops and small group meetings were conducted in 2004 to provide the public an opportunity to comment on the preliminary design (see Appendix H for a summary of comments received). Coordination with regulatory agencies was achieved through the Merger Process and Merger Team Meetings to establish concurrence at project milestones, including selection of the preferred alternative, identification of bridge locations, and avoidance and minimization measures. Additional details related to coordination efforts are included in Section 3 of this FEIS.

1.9 APPENDICES

1.9.1 APPENDIX A: RELOCATION REPORT

Relocation reports were prepared for preliminary alternates in 1996 and 1998. Appendix C of this FEIS contains an updated relocation report for the Preferred Alternative (Alternate D).

1.9.2 APPENDIX B: FARMLAND CONVERSION IMPACT RATING (FORM AD 1006)

The appendix contains US Department of Agriculture Farmland Conversion Impact Rating forms for the project area prepared in 1997.

1.9.3 APPENDIX C: BIOLOGICAL ASSESSMENT

A Biological Assessment for impacts to federally protected species in the project area was prepared in 1998. The Biological Conclusions were as follows:

- American chaffseed (*Schwalbea americana*) – No Effect
- Michaux's sumac (*Rhus mitchauxii*) – No Effect
- Pondberry (*Lindera melissifolia*) – No Effect
- Rough-leaf loosestrife (*Lysimachia asperulaefolia*) – No Effect
- Small whorled pogonia (*Isotria medeoloides*) – No Effect
- Saint Francis' satyr (*Neonympha mitchelli francisci*) – No Effect
- American alligator (*Alligator mississippiensis*) – No Effect
- Red-cockaded woodpecker (*Picoides borealis*) – May Effect

Biological Assessments were prepared in 2004 for impacts to federally protected species in the Preferred Alternative corridor and in areas where indirect and cumulative impacts of the proposed project are possible. In March 2005, US Fish and Wildlife Service (USFWS) concurred with the conclusions of "No Effect" for all species with the exception of the red-cockaded woodpecker.

They issued a determination of "May Effect, Likely to Adversely Effect" in their Biological Opinion for impacts on red-cockaded woodpecker from the Preferred Alternative in April 2005 (see Appendix D of this FEIS).

1.9.4 APPENDIX D: AGENCY COMMENTS AND COORDINATION

This appendix included agency comments and correspondence related to the project. Exhibits include eligibility determinations from the State Historic Preservation Officer, scoping comments received at the study's initiation in 1992-1993, formal consultation with USFWS, and avoidance and minimization coordination. Agency and public comments received on the DEIS, along with responses, are included in Section 3 of this FEIS.

1.9.5 APPENDIX E: STEERING COMMITTEE AND INTERAGENCY MEETING MINUTES

A Steering Committee including representatives from FHWA; NCDOT; Hoke, Robeson, and Cumberland Counties; the City of Fayetteville, and Fort Bragg was established in 1993. The Committee met periodically throughout 1993 and again in 1996 to discuss the proposed project and provide guidance throughout the project development process. A group of representatives from various state and federal regulatory agencies met with the Steering Committee on several occasions to evaluate preliminary project corridors and identify environmental issues in the project area. The minutes of these meetings were included in the DEIS.

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SECTION 2
ERRATA AND UPDATES TO THE DEIS

The Draft Environmental Impact Statement (DEIS) was approved in March 1999 (see Attachment A). There have not been any major developments or changes in the project area affecting the proposed action or the information provided in the DEIS.

Since 1999, two events have occurred that affected the project planning process. These developments are not project-specific but were implemented into the decision-making process related to this project. These developments are the application of the NEPA/Section 404 Merger Process to this project and the implementation of security measures by Fort Bragg following the September 11, 2001 terrorist attacks.

This section contains minor corrections, clarifications, and updates to the March 17, 1999 DEIS in accordance with 40 CFR 1503.4c. To provide background information in the development of the project since 1999, a description of the Merger Process is also included in this section. The coordination of the security measures with Fort Bragg are discussed in Section 5.2.4 of this FEIS.

2.1 CORRECTIONS TO THE DEIS

Based on comments received on the DEIS, the following corrections have been made to the DEIS:

2.1.1 Alternatives, A.3. Improve Existing Facilities Alternative (DEIS page II-4)

The following are added to the list of NCDOT TIP projects:

- TIP U-2912: the extension of Owen Drive from I-95 Business to NC 87.
- TIP U-2809: the widening of Legion Road from Camden Road to Owen Drive.

2.1.2 Affected Environment, D.2.g. Conservation Easements (DEIS page III-34)

The DEIS states: “The conservation easement is located within a tract of land belonging to the United States Department of Agriculture (USDA), Farmers Home Administration and contains a home site which is excluded from the conservation easement.”

Based on US Department of Interior comments on the DEIS, the conservation easement is located within a tract of land belonging to a private citizen. The easement is managed by the Roanoke River National Wildlife Refuge in Windsor, North Carolina.

2.1.3 Environmental Consequences, N.3. Wetland Mitigation (DEIS page IV-97)

The DEIS states that "Mitigation for wetland impacts in the Beaver Creek system could be in the form of enhancement of Beaver Creek. Currently Beaver Creek near the project area is impounded. Portions of the creek are choked with aquatic vegetation such as Arrow Arum (*Peltandra virginica*), Pickerel Weed (*Pontedaria cordata*), and Golden Club (*Orontium aquaticum*) helping to accelerate eutrophication of the system. Retarding the spread of this floating aquatic vegetation may improve the wetland system."

Based on comments received from the Environmental Protection Agency (EPA), this paragraph should be deleted.

2.1.4 Comments and Coordination, D. Steering Committee (DEIS page VIII-4) & Appendix E

In Section VIII of the DEIS, it states that the first Steering Committee meeting was held on January 19, 1993. The DEIS Appendix E cover sheet lists the meeting as occurring on January 16, 1993.

The first Steering Committee meeting was held on January 19, 1993. The Appendix E cover sheet of the DEIS should read "Exhibit E-1 Steering Committee Meeting, January 19, 1993."

2.2 UPDATES TO THE DEIS

Updated information is now available for some topics discussed in the DEIS. This updated information was identified and reviewed in the Reevaluation of the DEIS.

2.2.1 DEIS Reevaluation

A Reevaluation of the DEIS was prepared and approved in February 2005 (see Attachment B). The Reevaluation discussed the following updated information for the project area:

- Current TIP and project schedule

- Census data
- Land use plans and new long range transportation plan
- Design criteria
- Traffic volumes for Design Year 2025
- Implemented Fort Bragg security restrictions
- Requested closure of Bragg Boulevard
- Protected species list

The Reevaluation determined that this updated information did not affect the adequacy of the draft document or the selection of the preferred alternative.

2.2.2 List of Preparers

Additional preparers since the DEIS include the following:

Federal Highway Administration

Emily Lawton, PE Operations Engineer	BS degree in civil engineering with 11 years experience in transportation. Engineer responsible for the administration of the Federal-Aid Highway Program for North Carolina.
Jake Riggsbee, PE Area Engineer	BS degree in civil engineering with 20 years experience in transportation. Area Engineer responsible for the administration of the Federal-Aid Highway Program for Cumberland County.

North Carolina Department of Transportation

Michael Penney, PE	BS in civil engineering with 21 years experience in transportation planning and design.
Roger Thomas, PE	BS in civil engineering with 15 years experience in roadway design.
Derrick Weaver, PE	BS in civil engineering with 12 years experience in transportation planning.
Matt Haney	BS in natural resources with 5 years experience in natural resource investigations, wetland and stream delineations, and permitting.

Mary Pope Furr	MA in historic architecture with 8 years experience in historic architectural studies.
Matt Wilkerson	BA in anthropology with 15 years experience in archaeological studies.

H.W. Lochner, Inc.

Michelle W. Fishburne, PE Project Manager	BS degree in civil engineering with 16 years experience in transportation planning and document preparation.
Tim Bassette Environmental Scientist	MS in environmental science and BA in biology with 6 years experience in natural resource investigations/ environmental permitting and 4 years experience in environmental chemistry.
Brian Eason, PE Project Manager/Design Unit	BS degree in civil engineering with 15 years experience in roadway design.
Christina Shumate Environmental Planner	MEM degree in environmental management with 5 years experience in environmental planning and NEPA documentation.
Chris Werner, EI Transportation Engineer	BS degree in civil engineering with 5 years experience in environmental planning and roadway design.

J.H. Carter, III & Associates, Inc.

Dr. J.H. Carter, III	Ph.D. in zoology with 40 years experience in monitoring and management of red-cockaded woodpeckers, Section 7 consultation, permitting and mitigation.
Janice Goodson	BS in wildlife and fisheries science and AA in horticulture with 15 years experience in protected species surveys for flora and fauna and preparation of Biological and Environmental Assessments.
Tracy Rush	BS in botany and MS in forest resources with 12 years experience in protected plant surveys and Biological Assessment preparation.

2.2.3 Fayetteville Outer Loop - Concurrence Points 1 and 2

Since the Fayetteville Outer Loop was incorporated into the Merger Process immediately following the circulation of the DEIS, coordination with the Merger Team was initiated during the DEIS review process. The Purpose and Need (Concurrence Point 1) and Alternatives Selected for Detailed Study (Concurrence Point 2) were reviewed with the Merger Team in conjunction with evaluating their comments on the DEIS.

As part of their review of the DEIS, the USACE requested further consideration be given to improving the feasibility of the existing facilities (Improve Existing Facilities Alternative). The DEIS stated: "Based on the potential improvements associated with this alternative, this alternative would not be feasible to improve the roadway system to the extent required to adequately handle the projected travel demand." Social, economic, and environmental impacts will result from the need to widen two-lane roads and apply other roadway improvements, especially in the Towns of Parkton and Rockfish.

The Improve Existing Facilities Alternative was modified slightly from what was reported in the DEIS in order to address agency comments. Additional information, studies, and exhibits were provided to USACE in March 2000 (see Appendix B for a copy of information provided).

Following a field review on February 17, 2000 and the supplemental information submitted in March 2000, it was determined that the Improve Existing Facilities Alternative is not a reasonable and feasible transportation alternative for the following reasons:

- Demand exceeds reasonable system capacity;
- Increased development with loss of access control;
- Inefficient traffic operations and movements;
- Concurrent use of major arterials;
- Incompatible with adopted land use plans; and
- Undesirable access for military deployment requirements.

Following their review, the Merger Team concurred with the elimination of the Upgrade Existing Alternative and concurred with the Alternatives Selected for Detailed Study. The Merger Team signed the concurrence for Purpose and Need (Concurrence Point 1) and the Alternatives Selected for Detail Study (Concurrence Point 2) as presented in the DEIS in July 2000.

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SECTION 3
COMMENTS AND COORDINATION

To ensure open communication and encourage agency and public input, the North Carolina Department of Transportation (NCDOT) provided an early notification package to state and federal agencies and other interested parties defining the project as well as anticipated issues and impacts. NCDOT also implemented the scoping process as required by the Council of Environmental Quality Guidelines in order to expedite the project development processes, eliminate unnecessary work, and provide an issue identification/problem solving effort. In an effort to resolve issues identified, NCDOT conducted an extensive interagency coordination and consultation effort and public involvement program. The public involvement program was developed and is being carried out as an integral part of this project. The purpose of this program is to establish and maintain communication with the project and its potential impacts. This section of the document details NCDOT's program to identify, address, and resolve project-related issues.

3.1 AGENCY COMMENTS RECEIVED ON THE DEIS AND RESPONSES

3.1.1 Distribution of the DEIS

The DEIS was circulated for agency comment in the summer of 1999. A copy of the document was sent to the following agencies:

Federal Agencies

U.S. Army Corps of Engineers (Wilmington District)

U.S. Department of Agriculture

U.S. Environmental Protection Agency (Region IV-Environmental Review Branch)

U.S. Department of Housing and Urban Development (Greensboro Area Office)

U.S. Fish and Wildlife Service (Raleigh)

U.S. Department of Interior – U.S. Geological Survey (Raleigh Office)

U.S. Department of Interior – Keeper of the National Register

Federal Emergency Management Agency

U.S. Army – Fort Bragg Commanding Officer

U.S. Air Force – Pope Air Force Base Commanding Officer

State Agencies

North Carolina Department of Administration – State Clearinghouse

North Carolina Department of Cultural Resources

North Carolina Department of Environment and Natural Resources

North Carolina Department of Public Instruction – Division of School Planning

North Carolina Department of Human Resources

North Carolina Wildlife Resources Commission

Local Officials

Fayetteville Area Metropolitan Planning Organization

City of Fayetteville – Mayor

Cumberland County Commissioners

Hoke County Commissioners

Robeson County Commissioners

Town of Hope Mills – Mayor

Town of Spring Lake – Mayor

Town of Rockfish – Mayor

Town of Parkton – Mayor

City of Fayetteville Public Library

Cumberland County Library

Robeson County Bookmobile

Hoke County Library

Robeson County Library

3.1.2 Comments Received on the DEIS

Comments were received from the US Army Corps of Engineers, Environmental Protection Agency, US Fish and Wildlife Service, US Department of Interior, Fort Bragg Military Reservation, North Carolina Department of Environment and Natural Resources, North Carolina Division of Water Quality, North Carolina Department of Cultural Resources, North Carolina Wildlife Resources Commission, North Carolina Division of Parks and Recreation, North

Carolina Division of Forest Resources, and Mr. Marsh Smith. A copy of comments received is included in Appendix I.

3.1.3 Responses to Comments

Below are substantive comments received on the DEIS, along with a response detailing how the comment has been addressed.

United States Army Corps of Engineers, Planning Services Section (June 13, 2000)

Comment (1): "Page I-1, Project Purpose and Need. By letter dated January 19, 1999, we concurred with the purpose and need and the alternatives to be carried forward in the DEIS for the project provided that the DEIS includes an analysis of the Upgrade Existing Facilities Alternative. The DEIS analysis of the Upgrade Existing Facilities Alternative is not adequate. However, this analysis was supplemented by NCDOT in its letter dated March 1, 2000. We concur with NCDOT's supplemental analysis of the Upgrade Existing Facilities Alternative and its recommendations to eliminate this alternative from further analysis. The final EIS (FEIS) should include the supplemental analysis of the Upgrade Existing Facilities Alternative."

Response: The additional information and studies prepared for the Improve Existing Facilities Alternative are included in Appendix B.

Comment (2): "Page I-1, Project Purpose and Need. It is stated that Fort Bragg officials have 'indicated a need' to link the military reservation to I-95 South and that the project would provide an additional transportation route for approximately 25,000 soldiers and civilians that commute to Fort Bragg daily. According to NCDOT in its letter of September 1, 1998, this information was taken from General Luck's letter dated March 12, 1993. This letter should be referenced in the FEIS and a copy included in the Appendix. In addition, the FEIS should include an updated letter from Fort Bragg indicating its support for this project."

Response: The letter from General Luck is included in Appendix J.

Comment (3): "Page I-22, Future Capacity on Local Roadways. The DEIS states that all roads in the Fayetteville Urban Area could not be analyzed for future capacity but that in many cases, the level of service of area roads would improve one letter grade with the

Fayetteville Outer Loop in place. The FEIS should explain why all roads in the Fayetteville Urban Area could not be analyzed for future capacity."

Response: The traffic models used to analyze the future conditions are developed to a macro level roadway network and do not include "all roads" only major facilities. These major facilities were the roads analyzed in all design year 2020 analyses.

Comment (4): "Page II-4, Improve Existing Facilities Alternative. All TIP projects in the vicinity of the proposed project should be listed in the FEIS. In response to our comments on the Preliminary DEIS, the DEIS includes TIP U-2810 but does not include U-2809, proposed widening/improvements of Legion Road from Camden Road to Owen Drive. All TIP projects in the project area should be shown on Exhibit I-5 and II-6 of the FEIS."

Response: This has been added to errata information for the DEIS in Section 2.1.1 of this FEIS.

Comment (5): "Page II-39, Capacity Analysis and Level of Service. The DEIS provides projected traffic capacity data for the DEIS alternatives to year 2020. However, this information is not provided for Alternate CJ on Exhibit II-7. The FEIS should include this information on Exhibit II-7 for Alternate CJ."

Response: Projected traffic capacity data for Alternate CJ is presented in the DEIS in Exhibit II-7 (2 of 3). Alternate CJ is depicted in the upper portion of the exhibit, while Alternate N is depicted in the lower portion.

Comment (6): "Page II-8, Design Criteria and Typical Sections. The reduction of median widths is an important component of minimization of wetland impacts. NCDOT should consider a maximum width of 46 feet for medians along each wetland site. Project segments where this cannot be achieved should be specified and reasons should be provided for any proposed median wider than 46 feet."

Response: Median widths were reduced to 46 feet to minimize impacts to wetlands, streams, and red-cockaded woodpecker habitat, where feasible. Restrictions, including high traffic volumes and potential future development, prevented this reduction in some areas. The NEPA/Section 404 Project Team concurred with efforts to avoid and minimize impacts to natural systems in March 2004 (see documentation in Appendix A).

Comment (7): "Page IV-26, Air Quality Impacts. The DEIS states that carbon monoxide projections were assessed against the National Ambient Air Quality Standards to determine to extent of impact the proposed project would have on air quality in the project area but does not indicate the findings. The results of this determination should be provided in the FEIS. Additionally, NCDOT's letter of September 1, 1998, states that Fayetteville is an air quality attainment area and a Clean Air Act conformity determination is not required. The FEIS should also provide this information."
Response: The Air Quality Analysis was updated using the 2025 traffic volumes for the project. No impacts to air quality are anticipated with this project.

Comment (8): "Page IV-76, Wetland Impacts. Wetland impacts provided in Table IV-14 are based on the "proposed project conceptual right-of-way." Our earlier comments on the preliminary DEIS requested clarification how these impacts were determined. Although this was clarified in your letter of September 1, 1999, this clarification should be provided in the FEIS."
Response: Clarification regarding the calculation of wetland impacts is included in Section 6 of this report.

Comment (9): "Page IV-82, Delineated Wetlands. The FEIS should state when the Corps of Engineer's verified NCDOT's wetland delineations. Please be advised that 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 our determination."
Response: A Jurisdictional Verification for wetlands and streams was received in October 2004.

Comment (10): "Page IV-94, Table IV-16. Total wetland impacts in this table are misleading due to combining "Determined" wetland impacts with "Delineated" wetland impacts. The comparison of total wetland impacts for each of the DEIS alternatives are based on different methodologies. Selection of the least environmentally damaging practical alternative (LEDPA) must be based on comparable wetland impacts data."
Response: The selection of the LEDPA was made based on comparable impacts associated with each alternative. Wetland impacts for all (delineated) wetlands are presented in Section 6 of this report, and in the Jurisdictional Waters Report submitted in November 2004.

Comment (11): "Page IV-96, Wetland Mitigation. As stated in our comments on the Preliminary DEIS, an acceptable mitigation plan is one that provides for the full replacement of wetland functions impacted by the project. This project has the potential to impact a significant amount of Coastal Plain Small Stream Swamp and Streamhead Pocoson wetland communities. The use of borrow pits or culverts to impound water upstream of the project as a method of compensatory mitigation is unacceptable. In addition, based on the information provided to date, it is unlikely that either the Dowd Dairy Farm mitigation site or the Barra Farm Mitigation site will provide acceptable riparian wetland mitigation needed to offset project wetland impacts. It is recommended that NCDOT continue its search for a riparian wetland mitigation site located in the same river basin that will provide acceptable and full replacement of wetland functions impacted by this project. In summary, we are concerned that the magnitude and type of wetland impacts of the proposed project and the inability of NCDOT to find appropriate mitigation may have the potential to delay our permit decision on this proposed project."

Response: Based upon the agreements stipulated in the "Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation and the U.S. Army Corps of Engineers, Wilmington District" (MOA), it is understood that the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP), will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for NCDOT projects that are listed in Exhibit 1 of the subject MOA during the EEP transition period which ends on June 30, 2005.

Since the subject project is listed in Exhibit 1, the necessary compensatory mitigation to offset unavoidable impacts to waters that are jurisdictional under the federal Clean Water Act will be provided by the EEP. The offsetting mitigation will derive from an inventory of assets already in existence within the same 8-digit cataloguing unit. The Department has avoided and minimized impacts to jurisdictional resources to the greatest extent possible. The remaining unavoidable impacts will be offset by compensatory mitigation provided by the EEP program.

United States Environmental Protection Agency (September 7, 1999)

Comment (1): "Comparison of average daily traffic data for 1997 with the project design year (2020) no-build average daily traffic data shows many roads carrying two to three times present traffic. Fort Bragg, presently with 40,000 personnel stationed there and Pope AFB, are clearly the "economic engines" for the area but there are no statements about increases in base personnel or operations. The document provides no basis for the projections either relative to military or civilian industrial expansion. If facilitating military troop and materials movements are primary purposes of the project, the best documentation of this would be the massive build-up and deployment for the Gulf War in 1990-91. Data from that experience would define the mix and level of use of road, rail and air for military operations in the Fayetteville area."

Response: NCDOT has coordinated with Fort Bragg and local planning staffs to determine appropriate growth rates for the project area. Based on their input, these growth rates were adjusted and are represented in the 2025 traffic projects, which encompass both military and civilian growth in the project area. NCDOT cannot plan for heightened security threats related to Fort Bragg with this facility.

Comment (2): "It is stated that the proposed facility is being planned to a minimum Level of Service (LOS) D. This appears to be rather marginal service and it leads to the question whether a further expansion of the proposed 4-lane facility within the planning period is envisioned? EPA recalls that an LOS C has been the minimum for other freeways."

Response: NCDOT, in balancing capacity needs and fiscal and environmental responsibilities, has chosen to strive for LOS D on this project. This LOS is consistent with FHWA's requirements for interstate freeway facilities.

Comment (3): "If it is assumed the X-2 portion of this project will proceed to construction, then the desired expressway connection to I-95 for Fort Bragg will nearly be accomplished. That project provides a new crossing of the Cape Fear River and terminates at US 401. To complete this expressway connection to I-95, it is appropriate to consider improvements to roads already entering the military reservation for connection to the western terminus of X-2."

Response: The US Department of the Army requested connections from Fort Bragg to I-95 both north and south of the City of Fayetteville to allow for quick movement

during times of national emergency. The Improve Existing Facilities Alternative was reviewed by the Merger Team in 2000. The Merger Team concurred that upgrading the existing roads is not consistent with the Purpose and Need of the project.

Comment (4): "It is shown in Table I-2 that the outer loop would improve only 8 of 32 existing roadway segments analyzed. Meaningful improvements in congestion relief, therefore, would result to 25% of the present roadways even assuming that some of those roadways would be expanded to 4-lanes by the design year. The cost-effectiveness of the project at some point may come into question."

Response: Comment noted. Additional studies for the Improve Existing Facilities Alternative were conducted and coordinated with the NEPA/Section 404 Merger Team. Based on these studies, this alternative was eliminated.

Comment (5): "EPA finds it interesting that TIP No. U-2912 (Owen Drive) has been omitted from the list of roadway improvements for the project area on page II-5. This project involves completion of a multi-lane corridor from Fort Bragg to I-95. We recognize that recent permitting attempts have met with objections from the resource agencies. However, if the project is still proposed in some form, it should be included in the list of projects on Page II-5, and considered in the Improve Existing Facilities Alternative. It appears that improvements to Owen Drive and Wilkes Road and connection to NC 87 would accomplish the Army's desired access to I-95, but without full control of access on all segments."

Response: This project has been included in errata information for the DEIS, contained in Section 2.1 of this FEIS.

Comment (6): "EPA agrees with the suggestion that provision of park/ride facilities would have a positive effect on future transit options. As the state's fourth most populous county, this will be increasingly important. Therefore, park/ride facilities need to be included into the Roadway Design Criteria, Table II-1, and should be a part of each build alternative at least to the extent that designs are drafted to accommodate later addition."

Response: Land use control, land use elements, and transit routes and facilities are a local government jurisdiction issue that are driven by community needs. NCDOT will forward this comment to local planners and transit providers in the hope they will

accommodate park/ride facilities into future land use and development decisions. However, NCDOT cannot dictate that such facilities must be constructed.

Comment (7): "There has been extensive interagency coordination regarding the potential impact of the project on the red-cockaded woodpecker (RCW). Most of this coordination has been about the portion of the project between All-American Blvd. and the connection to the X-2 project at US 401. Other segments to the southwest contain identified colonies, too. The establishment of the Green Belt restoration area within and along the Fort Bragg Reservation boundary is a component of an Endangered Species Management Plan (ESMP) resulting from earlier expansions to base operations. It was for this reason that two outer loop corridor alternatives (OG1 and OG2) were defined to avoid the Green Belt RCW restoration area. While this document evaluated these options, the two Green Belt avoidance corridors have been dropped from further consideration. It is EPA's opinion that the Green Belt should be held inviolate and that a concerted effort is still necessary either to make one of these OG alternatives suitable or continue to search for additional alternatives for this portion of the project area or another freeway connection for Fort Bragg."

Response: The OG1 and OG2 Fort Bragg avoidance alternates were dismissed because of socioeconomic impacts, including a substantial number of residential relocations, impacts to community facilities and community cohesion, and insufficient operational efficiency. In addition, no feasible alternates exist north of the Green Belt because this area of the military reservation is highly developed. Further evaluation of the Improve Existing Facilities Alternative was undertaken following the DEIS; however, these studies confirmed the infeasibility of that alternative. Federal and state regulatory agencies concurred on the alternatives carried further for detailed study and alternatives dismissed from further evaluation in July 2000.

Comment (8): "It is important to note that improvements to existing roads are planned to result in a loop route within the project study area. While this would not have control of access, it would provide similar function to the outer loop but at reduced travel efficiencies."

Response: The comment is noted. See response to Comment (5).

Comment (9): "Natural areas and wildlife conservation areas are identified for the study area. A notable omission from this inventory is the Green Belt that has been designated for RCW habitat restoration on Fort Bragg Reservation. Certainly, this area should have equal standing for habitat conservation as do the natural areas and conservation areas located on Figure III-6. In Chapter IV-5, which locates the RCW clusters, does not define the geographic limits of the Green Belt. Has RCW "critical habitat" been defined within the project area?"

Response: A detailed study concerning the current status of the Green Belt, RCW populations, and RCW foraging habitat within the Green Belt, was performed following the DEIS and is described in the Biological Assessment submitted to USFWS in September 2004. A summary of the findings can be found in Section 6 of this FEIS.

Comment (10): "In Chapter I where the project's purpose and need are identified, it is stated that 5 future suburban activity centers will develop along the outer loop corridor and 5 existing centers will continue to develop. These are all at proposed interchanges. EPA believes that these future centers will result because of the highway project and the present centers may ultimately be larger because of an outer loop. The environmental impacts from this induced development all along the proposed corridor have not been addressed satisfactorily."

Response: Induced development impacts of the Outer Loop are discussed in detail in the *Fayetteville Outer Loop Indirect and Cumulative Impact Analysis (2004)*. A summary of these impacts can be found in Section 6 of this FEIS.

Comment (11): "At present, this project has a "may affect" biological opinion relative to the RCW. On page IV-1 land use compatibility is discussed. It is stated that placement of the outer loop within the Green Belt is consistent with the ESMP for the base. While the highway may be compatible with the mission of the base, intuitively it is inconsistent with the RCW recovery plan. It is not clear whether this is consistent with the requirements of the Endangered Species Act."

Response: Coordination of the project with Fort Bragg and USFWS has continued though out the study of this project. A biological conclusion of "May Affect, Likely to Adversely Affect" was presented in the Biological Assessment (BA) submitted to the USFWS in September 2004. The USFWS has reviewed the BA prepared by NCDOT and issued a Biological Opinion concurring with this conclusion (see Appendix D).

Additional coordination will continue regarding the mitigation requirements and commitments between the agencies through the final design, right of way acquisition and signing of the final MOA.

Comment (12): "While the DEIS addresses environmental justice (EJ), it does so merely by disclosing the racial and low income percentages of each census tract traversed by the alternatives. It is important to define whether there is a disproportionate relocation impact, noise impact, and community bisection to minority and low income households compared to the county and state demographics. Doing this would help to determine if there are potential EJ issues. This is not possible with the present information."

Response: The project will not result in disproportionate impacts to minority or low income households compared to the county and state demographics (see Section 6.2 of this FEIS). Additional information is contained in the *Fayetteville Outer Loop Indirect and Cumulative Impact Analysis* (2004).

Comment (13): "The DEIS indicates that the alternatives would result in adverse noise impacts to 323 to 459 properties. After the allowable reasonable and feasible mitigation factor is applied, those properties that still would experience substantial impacts would decrease to 98 to 175 properties depending on the alternative. Mitigation would therefore be the responsibility of the owners of these properties. The final document should make this clear."

Response: A Design Noise Study has been completed for the Preferred Alternative. A summary of its findings is included in Section 6 of this FEIS.

Comment (14): "[It] is stated on page IV-37 that "…horizontal shifts in alignment are not reasonable or feasible from a planning and design standpoint" to minimize the noise impacts because the alignment has been selected to minimize costs and environmental impacts. This is troubling since it infers that the impacts to sensitive noise receptors or other impacts to natural resources cannot be lessened at this stage but will be considered only during final design."

Response: The proposed alignments fall within the design criteria for the roadway classification and along the boundaries of Fort Bragg and the Green Belt. The location of the Preferred Alternative incorporated the existing topography of the area, interchanges, existing roads, residences, businesses, and natural resources. Minor shifts in the vertical

and horizontal alignments were reviewed during preliminary design but were not considered sufficient to reduce the noise impacts.

Comment (15): "There are numerous wetland sites identified within the alternative corridors particularly south from Cliffdale Road. EPA is concerned about the acreage of wetland impacts for the different alternatives (over 140 acres for right-of-way for each alternative). According to the site descriptions in the EIS, most of the wetlands in jeopardy are medium to high-quality bottomland hardwood forest and streamhead pocosin. We understand that additional avoidance and minimization measures will be undertaken in the final design of the roadway, including establishment of narrow median widths and steep side slopes. EPA strongly recommends that the NCDOT also consider bridging of the larger and/or higher quality wetland systems in order to further minimize impacts."

Response: Wetland impacts have been minimized in the corridor of the Preferred Alternative during preliminary design. Wetland impacts for the Preferred Alternative are approximately 50 acres. To minimize impacts to jurisdictional waters, the final design for the project will incorporate longer spans on two of the proposed bridges and ten additional bridges to span over wetlands. In all, these bridges reduce the amount of impacts to wetlands and streams by 18 percent and 10.5 percent, respectively. Federal and state agencies concurred with the locations of these bridges on March 16, 2004.

Comment (16): "On page IV-97, the EIS states that Beaver Creek would be enhanced by the removal of vegetation such as Arrow arum, Pickerel weed, and Golden club, which help "to accelerate eutrophication of the system." The EIS goes on to state: "retarding the spread of this floating vegetation may improve the wetland system." EPA notes that all three species listed are rooted, not floating aquatic vegetation. In addition, these three aquatic plants are native, beneficial species which provide important habitat and food sources, along with water quality improvement from uptake of nutrients or other pollutants. It is likely that the vegetation has "choked" the creek in response to eutrophication, but these species do not contribute to eutrophication. Rather, they help to ameliorate it. EPA would not favor removal of this vegetation as "enhancement.""

Response: The comment is noted. This statement has been corrected in errata information for the DEIS in Section 2.1 of this FEIS.

Comment (17): "On Page IV-98 of the EIS, on-site mitigation is proposed which includes the installation of culverts to create ponding along the road. It is also suggested that these areas could be used for storm water treatment to meet requirements of an NPDES permit. However, wetland systems constructed for the treatment of wastewater or other water have the primary purpose of water treatment and are not waters of the U.S. Therefore, constructed wetland systems, including storm water retention and detention areas, should not be used as mitigation or mitigation banks. Otherwise, EPA Region 4 believes that these scenarios represent a net loss in the long term, based on a lack of regulatory control and overall impacts to aquatic resources.

Further, the vast majority of the wetlands to be impacted are either bottomland hardwoods or wet hardwood/pine forests. EPA believes that the proposed mitigation should include in-kind creation or restoration of similar wetland types, rather than open water ponds or herbaceous storm water systems."

Response: The mitigation for the project will be coordinated through the Merger Process and the NEPA/Section 404 Project Team prior to construction.

Comment (18): "Because as many as 14 interchanges are possible with some proximal to wetlands and surface waters, it is appropriate for each proposed interchange to be evaluated for the potential direct and secondary developmental impacts."

Response: The Section 404/NEPA Project Team (including a representative of DWQ) concurred with the "Impact Avoidance and Minimization Measures" proposed for Alternative D on March 16, 2004. Those issues were addressed under Concurrence Point 4A and will be further discussed in Concurrence Points 4B and 4C (Hydraulic Design). Development in the immediate area of each interchange will be limited by a required 1,000 feet of controlled access along secondary roads. Other development predictors, such as water and sewer service, are under the jurisdiction of the local government. Potential direct and secondary impacts were assessed in an interchange analysis in the *Fayetteville Outer Loop Indirect and Cumulative Impact Analysis*.

United States Fish and Wildlife Service—Roanoke River National Wildlife Refuge (August 13, 1999)

Comment: "According to the information received the property is owned by the U.S. Department of Agriculture. That is not correct. This property has been sold to Carl Hodges of Durham. My comments related to NCDOT's DEIS and potential impacts to a unit of the National Wildlife Refuge System were forwarded to our Raleigh, North Carolina field office for inclusion in the Service reply."

Response: This correction has been made in Section 7 of the FEIS.

United States Department of the Interior (August 9, 1999)

Comment (1): "We recommend continued cooperation and coordination with the State Historic Preservation Officer in order to prepare a Memorandum of Agreement (MOA) which should include measures to avoid and/or minimize harm to the Shaw-Gillis Historic District and other historic resources which may be affected by the proposed project, in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. A signed copy of the MOA should be included in the Final Section 4(f) Evaluation."

Response: A Memorandum of Agreement (MOA) between NCDOT and SHPO will be prepared and included in the Record of Decision for the project.

Comment (2): "The potential impacts of the proposed project on the Conservation Easement were discussed with the manager of the Roanoke River National Wildlife Refuge, Windsor, North Carolina, the administrator of the Easement. The U.S. Fish and Wildlife Service (FWS) advises that the refuge staff was not aware of the proposed plans for the Fayetteville Outer Loop project until June 16, 1999, and the FWS is concerned that they are not expeditiously informed of the plans with implications for a unit of the National Wildlife Refuge System. We believe that the North Carolina Department of Transportation (NCDOT) should rethink any alternative that locates the proposed road through the Conservation Easement which was secured to preserve and maintain the wetland and floodplain area, and to protect and enhance plant and animal habitat and populations. It would be difficult to achieve management goals if a road or interchange was built on all, or any part, of the easement. The FWS recommends Alternative D, E, I, L, M until it merges with Alternative B, F, G, H, K. This would avoid and preserve the

Conservation Easement for its intended purpose. In addition, Exhibit III-7 shows that less of the water resources in proximity to the easement would be disturbed if the road started with Alternative C, E, I, L, M and then merged with B, F, G, H, K."

Response: Alternate D, which was selected as the Preferred Alternative, does not impact the Conservation Easement. Alternate D was selected, in part, because it avoids the Conservation Easement.

Comment (3): "The DEIS is in error in stating, on pages V-21 and V-22, that the [conservation easement] property is owned by the Farmers Home Administration of the United States Department of Agriculture. The property has been sold to Mr. Carl Hodges of Durham, North Carolina. Both the Refuge Manager and Mr. Hodges request to be provided with any future correspondence concerning this project."

Response: This error is corrected throughout the FEIS and Final Section 4(f) Statement. In addition, the error is noted in errata information for the DEIS, contained in Section 2.1 of this FEIS.

Comment (4): "In a letter dated February 9, 1998, the FWS provided comments on the Preliminary DEIS for this project. At that time, concern was expressed that the Purpose and Need Section was too vague and limited the range of possible solutions to anticipated future population growth, and subsequent increased traffic volume, to the extent that the only conclusion would be that a new freeway is the answer. The FWS recommended that the DEIS omit any reference to benefits to be derived from a new freeway. While this has been done, the Purpose and Need Section now incorporates general references to congressionally approved highway systems and strategic highway corridors. In addition, the document cites a need to link Fort Bragg to I-95 both north and south of Fayetteville. However, the X-2 project will provide a short, direct, four-lane freeway between I-95 and US 401, just east of the base, and only a small segment of roadway would be necessary to complete a direct route from Fort Bragg to I-95. In addition, there are at least four existing I-95 interchanges that already provide short, direct, general access to the city. Thus it would seem unnecessary to build a second, much longer, connection to I-95 for military purposes. We suggest this purpose be omitted from the final EIS (FEIS)."

Response: Additional studies were conducted and coordinated with agencies for the Improve Existing Facilities Alternative through the Merger Process. Based on these

studies, the federal and state agencies on the Merger Team concurred on the Purpose and Need for the project in July 2000. The Purpose and Need remains to:

- Provide an additional transportation corridor on the southern, western, and northern sides of Fayetteville and, in combination with the X-0002 project and I-95, form a circumferential transportation facility around the city.
- Complete a Congressionally-approved proposed National Highway System – Other Principal Arterial route and a Congressionally-approved proposed National Highway System – Strategic Highway Corridor Network route.
- Reduce the volume of traffic on portions of the local street network and connect the major radial routes in the southern, western, and northern portions of Fayetteville.
- Provide direct access to I-95 south and north of Fayetteville, along with an additional crossing of the Cape Fear River.
- Provide the military with direct access to I-95 south of Fayetteville in the event of an emergency military deployment and an additional transportation route for soldiers and civilian workers who commute to and from Fort Bragg daily.

Comment (5): "If the military wishes to have a second outlet to I-95 south of Fayetteville then, as an alternative to the present proposal, consideration should be given to extending the All American Freeway along existing roads to I-95 at either the Snowhill Road or Peach Farm Road interchanges. This alternative would provide quicker, shorter access to I-95. It would still give access to south, southwest, and west areas of the city while connecting the west side of the city to out-lying areas further to the west and southwest via interchanges at selected and improved existing highways."

Response: Additional consideration was given to improving existing facilities as an alternative to new location construction. Supplemental information, studies, and exhibits (see Appendix B) were provided to agencies, and following a field review on February 17, 2000, it was determined that the Improve Existing Facilities Alternative is not a reasonable and feasible transportation alternative for the following reasons:

- Demand exceeds reasonable system capacity;
- Increased development with loss of access control;
- Inefficient traffic operations and movements;
- Concurrent use of major arterials;
- Incompatible with adopted land use plans; and
- Undesirable access for military deployment requirements.

Comment (6): "Previous correspondence indicated that the FWS did not feel that the Mass Transit Alternative was fully explored. While an expanded discussion of this alternative has been presented (pgs II-1 and II-4), it still does not, as the FWS suggested, provide a comparison of the benefits that would be derived from an expenditure on mass

transit of an amount equal to that which would be spent on any one of the proposed build alternatives. Table II-8 indicates that alternative costs range from $350-380 million."

Response: The northern portion of the Fayetteville Outer Loop, from South Raeford Road (US 401) to I-95 is a Congressionally-approved proposed NHS – Strategic Highway Corridor Network (STRAHNET) route needed to provide the Fort Bragg with direct access to I-95 in the event of an emergency military deployment. Mass transit does not adequately fulfill the military's needs and therefore does not meet the purpose and need of the project**.**

Comment (7): "Table I-1 presents traffic growth trends (as average annual daily traffic [AADT]) between 1987 and 1995 at 21 locations within the proposed construction corridors. The table also compares changes in Level of Service (LOS) over the 8-year period. The LOS is a concept that attempts to quantify, albeit subjectively, traffic flow characteristics and signalized intersection characteristics on a scale from A to F, with A being ideal and F worst case. In eleven cases, there was no change, i.e. the LOS stayed the same, either A or B. In one case the LOS went from A to C, in three cases the LOS went from B to C, in 3 cases the LOS went from C to D, and in one case the LOS went from C to E (the second worst traffic condition). This 8-year trend is not exactly overwhelming evidence of a compelling need for a new freeway to address current traffic flow conditions on existing roads. In addition, Table I-2 shows LOS predictions at 32 locations in the year 2020, comparing a "No Build" alternative with a "Build" alternative. Again, there is very little improvement of the build over the no-build. At several locations, the LOS is F (the worst case) with the no-build alternative, and the LOS stays F even with the build alternative. At another location the LOS goes from F to E which is virtually no improvement. If LOS in 2020 with a build alternative is compared to 1995 LOS's from Table I-1 at equivalent locations, the projected build LOS in 2020 is, in some cases worse, stays the same in others, or shows only marginal improvement over the time span. Again, this traffic data is not strong supporting evidence for the need for a new freeway."

Response: NCDOT determined that there is sufficient degradation in traffic operations to support the project. The project will improve intersection function throughout the project area by reducing traffic volume. Further, the improvement of traffic service along existing roads in the project area is one of several transportation needs in the area addressed by the project. See Response to Comment (4) above.

Comment (8): "Table S-1 shows the projected wetland and stream impacts for each of the 13 build alternatives. These range from 145 acres to 195 acres and from 26,455 linear feet to 32,715 linear feet respectively. While we believe that the document presents a thorough description of the wetland and stream impacts that can be expected from the implementation of a build alternative, these impacts, by any measure, are substantial. The discussion of mitigation on pages IV-96 and 97 is limited to discussing creation, enhancement, and restoration in general terms, (i.e. that which "might be", or "could be", or "may be" done). Before entertaining specific mitigation proposals there needs to be a much more thorough discussion, beyond the one paragraph on page IV-97, of avoidance and minimization steps that can be taken to alleviate as much impact as possible, regardless of the alternative chosen. Then a detailed mitigation plan for the selected alternative should be incorporated into the FEIS."

Response: Avoidance and minimization efforts for the Preferred Alternative were incorporated into the Preferred Alternative and coordinated with federal and state agencies. The impacts for wetlands and streams for the Preferred Alternative are approximately 11,000 feet of streams and approximately 50 acres of wetlands. A detailed mitigation plan will be developed during the final design and permitting phase of the project. Sections 4, 5, and 6 of this FEIS include descriptions of coordination with the Merger Team.

Comment (9): "We note the lengthy discussion of potential project-related impacts on the red-cockaded woodpecker (*Picoides borealis*) (RCW), which includes a synopsis of the extensive coordination that has taken place between the NCDOT, Federal Highway Administration, Fort Bragg, and the FWS. The FWS concurs with the biological determination of "May Effect" for this species, and reminds NCDOT of the need for initiating timely formal consultation on the RCW. The FWS continues to petition the NCDOT to look further at alternative corridors that lie south of, and outside of, the Green Belt that was established at Fort Bragg for the purpose of maintaining viable populations of the RCW."

Response: Coordination between the NCDOT, Federal Highway Administration, Fort Bragg, and the USFWS has taken place throughout the progression of this project. Since the July 1998 RCW Biological Assessment (BA) was submitted, NCDOT has redesigned the highway project to minimize impacts to the environment and incorporated

design modifications requested by Fort Bragg Military Reservation. A new RCW Biological Assessment was submitted to the USFWS on September 9, 2004, initiating formal consultation with the USFWS. A Biological Opinion was rendered by the USFWS on April 28, 2005.

The Preferred Alternative will affect a portion of the Green Belt. Avoidance alternatives for the Fort Bragg Green Belt were examined in the DEIS (Alternates OG1 and OG2); however, they were dismissed due to high residential relocation impacts (south of the Green Belt) and inability to find a suitable, non-militarized corridor (north of the Green Belt). In addition, further studies of the Improve Existing Facilities Alternative were undertaken, and the alternative was found to be infeasible.

United States Department of the Army, Fort Bragg, NC (July 19, 1999)

Comment (1): "What are the plans for relocation of the Fort Bragg pet cemetery? We note that mitigation for this cemetery is included; please coordinate with this office for an alternate site."

Response: The relocation of the pet cemetery will be included in right of way negotiations with Fort Bragg.

Comment (2): "We do not have plans for relocation of the ammunition bunkers that will be affected by US 13. Request that you include the relocation in your cost estimate."

Response: NCDOT has coordinated the relocation of the impacted ammunition bunkers with the appropriate Fort Bragg staff. Relocation and compensation for ammunition bunkers will be finalized during right of way negotiations with Fort Bragg.

Comment (3): "The lead agency's Section 7 consultation with the USFWS must be completed prior to the signing of the final EIS."

Response: A Biological Assessment was submitted to the USFWS in September 2004. Based on this BA and additional coordination with Fort Bragg and USFWS, the USFWS rendered an opinion of "May Effect, Likely to Adversely Effect" for RCW on April 28, 2005 and determinations of "No Effect" for all other protected species on March 28, 2005. A copy of the Biological Opinion is included in Appendix D.

Comment (4): "Request a post-project analysis of the impact on the future viability of active clusters 65, 208, and 267. The loss of pine basal area and pine stems >10-inch DBH is significant and may likely cause cluster abandonment. In addition, the future reactivation of clusters 63 and 205 is in jeopardy due either to deficient forage post-project or to fragmentation effects."

Response: Analyses of potential impacts to the RCW due to the proposed highway corridor are presented in Section VI of the RCW Biological Assessment submitted to USFWS on September 9, 2004. The assessment includes foraging habitat and demographic analyses of all RCW clusters/groups directly/indirectly impacted by the proposed project.

Comment (5): "Request a post-project analysis of the impact on the future viability of the Green Belt Corridor. Indirectly the Outer Loop will likely interfere with prescribed burning activities inside the Green Belt which in turn will hinder land managers' ability to adequately maintain and restore suitable and potential RCW habitat."

Response: Analyses of current potential impacts to RCW clusters located in the Greenbelt as well as impacts to the functionality of the Green Belt are included in Section VII A and B of the September 2004 RCW Biological Assessment.

Comment (6): "If not already done, recommend mitigation measures be developed to offset the adverse impacts to RCW clusters in, and adjacent to, the Green Belt Corridor."

Response: Compensation measures for direct impacts at the RCW cluster level and potential impacts to the demographics of the Sandhills East RCW population are proposed in Section IX of the September 2004 RCW Biological Assessment.

North Carolina Department of Environment and Natural Resources (September 28, 1999)

Comment (1): "The following permits may be needed:

Dredge and Fill Permit

Open burning must comply with 15 A NCAC 2D.1900

Sedimentation and Pollution Control Act for any land disturbing activity

401 Water Quality Certification"

Response: The comment is noted. NCDOT will coordinate the project through the remaining Concurrence Points 4B and 4C to obtain the appropriate permits prior to construction.

Comment (2): "Significant secondary impacts should be anticipated, i.e. wetland fill, stormwater impacts, and sewer line construction."

Response: Secondary impacts have been summarized in Section 6 of this report. A more detailed discussion of secondary and cumulative impacts related to this project can be found in the *Fayetteville Outer Loop Indirect and Cumulative Impact Analysis (2004).* It is anticipated that growth will come to the area with or without the construction of the Fayetteville Outer Loop. The location of water and sewer infrastructure is a local consideration in which NCDOT has no jurisdiction.

North Carolina Division of Water Quality (September 23, 1999)

Comment (1): "Review of the Purpose and Need discussion reveals a series of arguments, none of which individually represents a compelling argument for the construction of the project. The traffic analysis indicates that a need for the project probably does exist for the northern portion of the project. However, the need for the project at the southern portion of the project is less obvious."

Response: The facility will provide direct access to I-95 north and south of Fayetteville for the military. This was requested by Fort Bragg to provide an additional transportation route in the event of an emergency deployment and for soldiers and civilian workers who commute to and from Fort Bragg daily. In addition, the portion of the Outer Loop from I-95 south of Fayetteville to South Raeford Road (US 401) completes a Congressionally-approved proposed National Highway System – Other Principal Arterial Route. As discussed in Section 1 of the FEIS, the purpose and need was further coordinated with Federal and state regulatory agencies on the Merger Team, who concurred with the project's purpose and need on July 30, 2000. In addition, analysis of population growth trends for Cumberland and Hoke Counties from 1980 to 2000 show continued and increasing growth in the southern portion of the project area. While there may not be an immediate need for the facility in this area to improve traffic operation, these growth trends indicate a future need.

Comment (2): "The traffic data presented in the document fails to consider the X-2 project presently under construction. New traffic analyses need to be presented that show the effects of X-2 on the projected traffic patterns for this project."

Response: The design year 2020 traffic data was developed using a regional model for the transportation system in the Fayetteville Metropolitan Area. This model includes all projects that are currently in the Transportation Improvement Program (TIP). The X-2 project is included in the TIP and is included in the model used to develop the traffic projections for the project. The design year traffic projections were updated to the year 2025 and are included in the Reevaluation of the DEIS and discussed in Section 5 of this FEIS. The updated 2025 traffic incorporates all TIP projects in addition to the traffic flow patterns for the controlled security entrances at Fort Bragg.

Comment (3): "The document indicates that the project is needed to provide emergency access from Fort Bragg to I-95 for periods of national emergency. The DWQ agrees completely with the premise that Fort Bragg requires emergency access to I-95. However, the new X-2 project (presently under construction) will provide the required access. Moreover, the distance to I-95 using X-2 is much shorter than that provided by U-2519. If U-2519 is required for a second emergency access to I-95, then a detailed assessment and discussion on the reasons for the need should be included in the document."

Response: See response to Comment (1) above.

Comment (4): "On page I-7, the document indicates that a corridor for the project was previously selected and protected by the DOT. However, the DWQ was never involved in the selection of said corridor, and as such, is not bound to approve the selected corridor."

Response: A corridor was protected by NCDOT in 1991 to assist the Fayetteville Area Metropolitan Planning Organization. This corridor is shown as Alternate B in the DEIS and was evaluated in detail with all the alternatives for the project. After a thorough review of natural, cultural, and social resources, the Section 404/NEPA Project Team identified Alternate D as the "least environmentally damaging practicable alternative" on October 5, 2000 (see Section 4 and the documentation included in Appendix A of this FEIS). This alternate was approved as the Preferred Alternative by the Secretary of Transportation on November 3, 2000.

Comment (5): "Analysis of the growth patterns subsequent to the selection and protection of the corridor indicate that development has occurred along and immediately adjacent to the selected corridor. This seems very clear evidence that construction of this project will, and has already, resulted in significant secondary and cumulative impacts. The document needs to calculate the impacts that have resulted from the project since the protected corridor was placed on the map to date, as well as those anticipated in the future (NCDOT can assume full build out for the calculations of future conditions)."
Response: The City of Fayetteville, Hope Mills, Cumberland County, Hoke County, and Robeson County have continued to show steady growth and increases in development over the last 20 years, prior to the identification of the Protected Corridor. The project area is representative of this growing metropolitan area. Secondary impacts have been summarized in Section 6 of this report. A more detailed discussion of secondary and cumulative impacts related to this project can be found in the *Fayetteville Outer Loop Indirect and Cumulative Impact Analysis (2004)*.

Comment (6): "Removal of the Improve Existing Alternative is justified by citing the alternative's failure to meet the project's purpose and need. No other analysis is presented justifying the alternative's exclusion. The document argues that the project purpose is to construct a circumferential loop around Fayetteville. The document then states the Upgrade Existing Alternative does not meet the project Purpose and Need because it fails to provide for a circumferential loop. Given this criteria, the project's purpose and need statement necessitates a "new location" facility. Thus, the purpose and need statement should be changed to identify the project's purpose as to construct a new location facility and thereby avoid this otherwise circular argument."
Response: Following the circulation of the DEIS, a reevaluation of the Improve Existing Facilities Alternative was completed in response to agency comments. The alternative was modified slightly from what was reported in the DEIS to enhance the viability of the alternative. Additional information, studies, and exhibits (see Appendix B) were provided to agencies, and following a field review on February 17, 2000, it was determined that the Improve Existing Facilities Alternative is not a reasonable and feasible transportation alternative for the following reasons:

- Demand exceeds reasonable system capacity;
- Increased development with loss of access control;

- Inefficient traffic operations and movements;
- Concurrent use of major arterials;
- Incompatible with adopted land use plans; and
- Undesirable access for military deployment requirements.

Comment (7): "If DOT is unwilling to acknowledge that the project's purpose is to construct a new location facility, the document needs to consider other alternatives that combine use of existing facilities with new location segments to complete the project. Appropriate "Avoidance and Minimization" cannot truly occur unless the use of existing facilities, in whole or part, are considered in the alternative development and analysis state. Existing SR roads that could be used, in whole or part, to meet the project purpose include but are not necessarily limited to: 1) SR 1007 (All American Freeway), 2) SR 1007, 3) NC 59, and 4) SR 1403. Failure to assess the "Upgrade Existing Alternatives" as reasonable and feasible is in violation of both the NEPA and SEPA. Moreover, each alternative, prior to its exclusion must be assessed to the same level of detail as the others. An alternative must "stand or fall" based on its relative benefits and costs comparative to the other alternatives and their respective benefits and costs. Failure to proceed with this form of analysis is disingenuous as best, or a purposeful circumvention of the NEPA/SEPA, at worst."

Response: See response to Comment (6) above.

Comment (8): "Among the build alternatives, the DWQ is concerned that the DOT's preclusion of a corridor, and subsequent protection of said corridor, will preclude our ability to select among equal alternatives and, thereby, avoid and minimize impacts to natural resources in an appropriate manner."

Response: The protected corridor was included in project studies as Alternate B in the DEIS. A thorough evaluation of the natural, cultural, and social impacts of each alternate was conducted by the project team. Following the studies, the Federal and state agencies evaluated the alternatives and concurred with the selection of Alternate D (not the previously protected corridor) as the "least environmentally damaging practicable alternative" and Preferred Alternative.

Comment (9): "At present there has been no detailed wetland delineation or stream assessments for the area south of Cliffdale Road. Due to the very large quantity of

wetlands and streams being impacted with this project, more data about the nature of the resources being impacted in this area prior to the selection of a preferred alternative."

Response: Wetlands and streams associated with this project were delineated during 1995, 2001, 2003, and 2004. The majority of the delineations for the portion of the project south of Cliffdale Road were completed in 2001. The delineated features were verified by USACE during field verification meetings on August 28 and 29, 2001, December 16, 2003, and October 12 and 13, 2004.

Detailed information about the nature of the resources being impacted is cited in the Jurisdictional Waters Report (2004). A summary of impacts to jurisdictional waters and avoidance and minimization efforts are discussed in Section 6 of this FEIS.

Comment (10): "After the selection of the preferred alternative and prior to an issuance of the 401 Water Quality Certification, the NCDOT is respectfully reminded that they will need to demonstrate the avoidance and minimization of impacts to wetlands (and streams) to the maximum extent practical. Based on the impacts described in the document, wetland mitigation will be required for this project. Should the impacts to jurisdictional wetlands exceed 0.1 acres, mitigation may be required in accordance with NCDWQ Wetland Rules [15A NCAC 2H.0506 (b)(2)]."

Response: The Section 404/NEPA Project Team concurred with the "Avoidance and Minimization Measures" proposed for the Preferred Alternative on March 16, 2004 (see Appendix A for the Concurrence Form). Where wetland and stream impacts cannot be avoided and mitigation becomes a part of the project, NCDOT will make every effort to achieve "in-kind" mitigation and to fulfill the Federal Highway Administration "step-down" policy. This policy requires first consideration be given to mitigation within the highway right of way. The NCDOT will coordinate with the USACE, USFWS, NCDENR, and the NCWRC to develop a mutually agreeable mitigation plan prior to permit applications.

Comment (11): "In accordance with the NCDWQ Wetlands Rules [15A NCAC 2H.0506(b)(6)], mitigation will be required for impacts of greater than 150 linear feet to any single perennial stream. The mitigation plan should be designed to replace appropriate lost functions and values. In accordance with the NCDWQ Wetlands Rules

[15A NCAC 2H.0506(b)(3)], the Wetlands Restoration Program may be available for use as stream mitigation."

Response: See response to Comment (10). A detailed mitigation plan will be developed as part of the permit application process.

Comment (12): "Where streams must be crossed, the DWQ prefers bridges be used in lieu of culverts. However, we realize that economic considerations often require the use of culverts. Please be advised that culverts should be countersunk to allow unimpeded passage by fish and other aquatic organisms. Moreover, in areas where high quality wetlands or streams are impacted, a bridge may prove preferable. When applicable, DOT should not install the bridge bents in the creek, to the maximum extent practicable."

Response: Ten additional bridges and lengthening of two proposed bridges are proposed for minimizing impacts to jurisdictional waters. In all, these bridges will reduce the amount of impacts to wetlands and streams by 18 percent and 10.5 percent, respectively. Federal and state agencies concurred with the locations of these bridges on March 16, 2004. The bridge locations are discussed in Section 5 and documented on the Concurrence Point 4A form in Appendix A.

Comment (13): "Sediment and erosion control measures should not be placed in wetlands."

Response: The NCDOT "Best Management Practices for Protection of Surface Waters" will be implemented, as applicable. This will be addressed during the development of sediment and erosion control plans and implemented during construction to the best ability of NCDOT in coordination with existing standards and laws.

Comment (14): "Borrow/waste areas should avoid wetlands to the maximum extent practicable. Impacts to wetlands in borrow/waste areas could precipitate compensatory mitigation."

Response: No borrow/waste areas will be placed in wetland and/or stream systems per NCDOT "Best Management Practices for Protection of Surface Waters" and "Best Management Practices for Bridge Demolition and Removal". Contractors will be required to perform wetland and stream delineations for all potential borrow and waste sites.

Comment (15): "The 401 Water Quality Certification application will need to specifically address the proposed methods for stormwater management. More specifically, stormwater should not be permitted to discharge directly into the creek. Instead, stormwater should be designed to drain to a properly designed stormwater detention facility/apparatus."

Response: The NCDOT "Best Management Practices for Protection of Surface Waters" will be implemented, as applicable. All stormwater management methods will be detailed in the permit application.

Comment (16): "There should be a discussion on mitigation plans for unavoidable impacts. If mitigation is required, it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. While the NCDWQ realizes that this may not always be practical, it should be noted that for projects requiring mitigation, appropriate mitigation plans will be required in conjunction with the issuance of a 401 Water Quality Certification."

Response: A discussion of mitigation plans for unavoidable impacts is given in Section 6 of this report. The mitigation measures for the project will be also coordinated through the Merger Process as concurrence points 4B and 4C.

Comment (17): "For the proposed crossing located upstream of the water intakes for the city of Fayetteville, the DWQ requests that permanent hazardous spill catch basins be installed."

Response: Comment noted. This will be addressed during final design and construction.

Comment (18): "Please replace all references to DEM in the document with DWQ."

Response: All references to DEM in the document have been replaced with DWQ.

Comment (19): "Based on the information presented in the document, the magnitude of impacts to wetlands and streams will require an Individual Permit application to the Corps of Engineers and corresponding 401 Water Quality Certification. Please be advised that a 401 Water Quality Certification requires satisfactory protection of water quality to ensure that water quality standards are met and no wetland or stream uses are lost. Final permit authorization will require the submittal of a formal application by the NCDOT and

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

Response: The NCDOT will coordinate the review of wetland and stream issues during the 4B and 4C Concurrence meetings with the Merger Team. These meetings encompass the review of the final design plans with regards to hydraulic design, layout of proposed drainage, proposed stormwater best management practices, bridge and culvert design, and permit drawings. Typically NCDOT will apply for all USACE permits and 401 Water Quality Certification one year prior to project construction let.

North Carolina Department of Cultural Resources (July 14, 1999)

Comment: "We acknowledge the intention of the North Carolina Department of Transportation to conduct an intensive archaeological survey of the preferred alternative once it has been selected (page III-26). We look forward to further consultation and review of the survey results. Please keep us advised concerning selection of the preferred alternative."

Response: An intensive archaeological survey of the Preferred Alternative was conducted during 2002 and 2004 and is discussed in Section 6 of this FEIS. Concurrence with the archaeological surveys were received on April 12, 2005.

North Carolina Wildlife Resources Commission (July 13, 1999)

Comment: "[The DEIS] does not show avoidance and minimization of wetlands impacts, high quality natural areas, or endangered wildlife habitat."

Response: The corridor locations for the Build Alternative were located to avoid and minimize impacts to both the human and natural environment. Additional avoidance and minimization measures were coordinated with the agencies during the NEPA/Section 404 Merger Process and were incorporated into the preliminary designs for the Preferred Alternate. The Merger Process information is provided in Sections 2 and 6 of this FEIS. The Section 404/NEPA Project Team (including representatives of USACE, NCDWQ, and NC Wildlife Resources Commission) concurred with the "Impact Avoidance and

Minimization Measures" proposed for the Preferred Alternative on March 16, 2004 (see documentation included in Appendix A).

North Carolina Division of Parks and Recreation (July 6, 1999)

Comment (1): "Portions of two Registered Natural Heritage Areas, the Keith Natural Heritage Area and the Bonnie Doone Lake Natural Heritage Area, appear to be located within the project corridor, as shown in Exhibit III-6. In identifying the extent of impacts to these areas (p. IV-49), only the impacts to the Keith Natural Heritage Area are mentioned, however, despite the fact that Exhibit III-6 seems to show even greater potential impacts to the Bonnie Doone Lake Natural Heritage Area. We request that this be clarified."

Response: A portion of the Keith Natural Area is located within the project study corridor; however, it will not be directly impacted by the right of way of the proposed facility. Similarly, a portion of the Bonnie Doone Lake Natural Heritage Area is located within the project study corridor, but the Natural Heritage Area will not be impacted by the proposed right of way.

Comment (2): "We would also like to see a serious effort be made in designing the actual right-of-way limits to avoid these natural areas as much as possible. We would like to see a commitment be made by DOT in this regard."

Response: These natural areas will not be impacted by the right of way of the proposed facility as shown on the preliminary plans presented at the June 2004 Citizen's Informational Workshops.

North Carolina Division of Forest Resources (June 29, 1999)

Comment (1): "The amount of acres impacted by timber type or communities for the alternatives have been combined. Because of this it is impossible to evaluate the impact to forest resources the project will have. Because a detailed survey was not done we must base our support for an Alternative on the least number of forested acres impacted. This does not allow for impact evaluation based on timber value, unique or unusual habitat, or threatened ecosystems and ignores social impacts."

Response: Silviculture activities are limited to portions of the project area roughly between I-95 and Camden Road. Between Camden Road and Cliffdale Road, suburban land use predominates. The northern portion of the study area crosses the Fort Bragg Military Reservation. These forested areas are managed under the base's Green Belt Plan for red-cockaded woodpecker habitat.

Comment (2): "The environmental commitments and mitigation efforts discussed in the DEIS largely ignored the significant loss of forest resources. We feel that mitigation for this loss should include efforts to avoid high value timber stands and longleaf ecosystems during final alignment as well as provisions to utilize timber products removed during ROW clearing rather than be wasted by burning or other means of disposal."

Response: Timber rights will be determined as part of the right of way negotiations with individual property owners. If timber rights are conveyed to NCDOT, the construction contractor generally uses timber harvesting to offset clearing and grubbing costs associated with the project.

Marsh Smith (September 23, 1999)

Comment (1): "NCDOT must search for state-listed species that are not also on the federal lists as threatened or endangered, as these are the very type of impacts that need to be addressed under either NCEPA or NEPA."

Response: The NCDOT has met the requirements of the Endangered Species Act Sections 7 and 9 for this project. Below is a listing of federal species of concern and state-listed species, including the availability of habitat within the project study area:

Table 3-1: State Listed Species in Cumberland and Robeson Counties

Scientific Name	Common Name	State Status	Federal Status	Listed County	Habitat within Project Study Area
Condylura cristata pop 1	Star-nosed Mole - Coastal Plain Population	SC	-	Robeson	yes
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	T	FSC	Robeson	yes
Myotis austroriparius	Southeastern Myotis	SC	FSC	Robeson	yes
Aimophila aestivalis	Bachman's Sparrow	SC	FSC	Cumberland, Robeson	yes
Egretta caerulea	Little Blue Heron	SC	-	Cumberland, Robeson	yes
Egretta thula	Snowy Egret	SC	-	Robeson	yes
Lanius ludovicianus ludovicianus	Loggerhead Shrike	SC	-	Robeson	yes
Picoides borealis	Red-cockaded Woodpecker	E	E	Cumberland, Robeson	yes
Alligator mississippiensis	American Alligator	T	T(S/A)	Cumberland, Robeson	yes
Crotalus adamanteus	Eastern Diamondback Rattlesnake	E	-	Cumberland, Robeson	yes
Crotalus horridus	Timber Rattlesnake	SC	-	Cumberland, Robeson	yes
Heterodon simus	Southern Hognose Snake	SC	FSC	Cumberland, Robeson	yes
Micrurus fulvius	Eastern Coral Snake	E	-	Cumberland	yes
Pituophis melanoleucus melanoleucus	Northern Pinesnake	SC	FSC	Cumberland	yes
Sistrurus miliarius	Pigmy Rattlesnake	SC	-	Cumberland	yes
Ambystoma tigrinum	Eastern Tiger Salamander	T	-	Cumberland, Robeson	yes
Eurycea quadridigitata pop 1	Dwarf Salamander - Silver Morph	SC	-	Robeson	yes
Hemidactylium scutatum	Four-toed Salamander	SC	-	Cumberland	yes
Rana capito	Carolina Gopher Frog	T	FSC	Robeson	yes
Rana heckscheri	River Frog	SC	-	Cumberland, Robeson	yes
Cyprinella zanema pop 2	Santee Chub - Coastal Plain Population	SC	-	Cumberland, Robeson	yes
Etheostoma mariae	Pinewoods Darter	SC	FSC	Robeson	no
Noturus sp 1	Broadtail Madtom	SC	-	Cumberland, Robeson	yes
Semotilus lumbee	Sandhills Chub	SC	FSC	Cumberland	yes
Elliptio folliculata	Pod Lance	SC	-	Cumberland	yes
Elliptio marsupiobesa	Cape Fear Spike	SC	-	Cumberland, Robeson	yes
Elliptio roanokensis	Roanoke Slabshell	T	-	Cumberland	yes
Fusconaia masoni	Atlantic Pigtoe	E	FSC	Cumberland	yes
Lampsilis cariosa	Yellow Lampmussel	E	FSC	Cumberland	yes

Table 3-1: State Listed Species in Cumberland and Robeson Counties

Scientific Name	Common Name	State Status	Federal Status	Listed County	Habitat within Project Study Area
Amorpha georgiana var georgiana	Georgia Indigo-bush	E	FSC	Cumberland, Robeson	yes
Astragalus michauxii	Sandhills Milk-vetch	T	FSC	Cumberland, Robeson	yes
Carex exilis	Coastal Sedge	T	-	Cumberland	no
Chrysoma pauciflosculosa	Woody Goldenrod	E	-	Cumberland, Robeson	yes
Eupatorium resinosum	Resinous Boneset (=Pine Barrens Boneset)	T-SC	-	Cumberland	yes
Isotria medeoloides	Small Whorled Pogonia	E	T	Cumberland*	no
Lilium pyrophilum	Sandhills Lily	E-SC	-	Cumberland	yes
Lindera melissifolia	Southern Spicebush	E	E	Cumberland	yes
Lindera subcoriacea	Bog Spicebush	T	FSC	Cumberland, Robeson	yes
Lobelia boykinii	Boykin's Lobelia	T	FSC	Cumberland	no
Lysimachia asperulifolia	Rough-leaf Loosestrife	E	E	Cumberland	yes
Macbridea caroliniana	Carolina Bogmint	T	FSC	Robeson	yes
Muhlenbergia torreyana	Pinebarren Smokegrass	E	-	Cumberland, Robeson	no
Myriophyllum laxum	Loose Watermilfoil	T	FSC	Cumberland	no
Parnassia caroliniana	Carolina Grass-of-parnassus	E	-	Cumberland	yes
Platanthera integra	Yellow Fringeless Orchid	T	-	Robeson	no
Platanthera nivea	Snowy Orchid	T	-	Robeson	no
Pteroglossaspis ecristata	Spiked Medusa (=Eulophia)	E	FSC	Cumberland	yes
Pyxidanthera barbulata var brevifolia	Sandhills Pyxie-moss	E	FSC	Cumberland	yes
Rhexia aristosa	Awned Meadow-beauty	T	FSC	Cumberland, Robeson	yes
Rhus michauxii	Michaux's Sumac	E-SC	E	Cumberland, Robeson	yes
Rhynchospora macra	Southern White Beaksedge	E	-	Cumberland	no
Schwalbea americana	American Chaffseed	E	E	Cumberland	yes
Solidago pulchra	Carolina Goldenrod	E	-	Cumberland	yes
Stylisma pickeringii var pickeringii	Pickering's Dawnflower	E	FSC	Cumberland	yes
Utricularia olivacea	Dwarf Bladderwort	T	-	Cumberland	yes

* The United States Fish & Wildlife Service removed this species from its species list for Cumberland County. The species, however, remains on the North Carolina Natural Heritage Program's list of State listed species for Cumberland County.
State Status Codes: E (Endangered); T (Threatened); SC (Special Concern); C (Candidate)
Federal Status Codes: E (Endangered); T (Threatened); T S/A (Threatened due to Similarity of Appearance); FSC (Special Concern)

Comment (2): "NCDOT didn't do an EIS for the Highway Trust Fund Act, when it was before our Legislature in 1989, so it needs to do one now—better late than never."

Response: The inclusion of future potential projects in the Trust Fund Act does not require an EIS. Each project in the Trust Fund will be reviewed on an individual basis by NCDOT and appropriate documentation will be prepared as needed.

Comment (3): "It is my understanding that the project will adversely affect numerous RCW colonies, this is unacceptable for a mere transportation project – especially an unneeded one that will exacerbate existing problems."

Response: The proposed project will have potential adverse impacts on the RCW. Implementation of the compensation measures as required by the US Fish and Wildlife Service will be addressed by NCDOT and will adequately compensate for these impacts.

Comment (4): "NCDOT should prepare an analysis of a "pedestrian friendly" four-lane for any communities bisected or by-passed by this project, as NCDOT did for Hwy 321 near Blowing Rock."

Response: The proposed project is a controlled access facility meeting interstate standards and not conducive to pedestrian traffic as with an urban type facility. Sidewalks along the roads crossed by the project have been included as appropriate and in coordination with the City of Fayetteville.

Comment (5): "Use accurate, and current, air pollution modeling to gauge the effects of this ill-advised road, and any modeling should be based on accurate traffic projection, including induced traffic, paying particular attention to the worst-case and not assuming the best case."

Response: The Air Quality Analysis for the project modeled locations that represented the worst case scenarios along the Preferred Alternative. Based on the analysis, the project will not exceed the current air quality standards.

Marsh Smith (August 17, 1999)

Comment (1): "The North Carolina Department of Transportation (NCDOT), the Federal Highway Administration (FHWA), and others often tout the economic benefits of highway construction, but an objective study of such projects' economic effects remains

undone in North Carolina. Studies in other states have indicated little, no, or even negative benefits. The EIS needs to include such an objective study."

Response: Economic development was not identified as a driving objective of the Fayetteville Outer Loop project. The project's goals are stipulated in the Purpose and Need section of the DEIS, and include providing a circumferential route around the City of Fayetteville and linking Fort Bragg with I-95 north and south of Fayetteville.

Comment (2): "The EIS must thoroughly and exhaustively address secondary impacts – something that EISs for other highway projects have not come close to doing. Particularly, the EIS must pay attention to the fact that, if substantial economic growth benefits are claimed, then secondary impacts – e.g., an increase in the "footprint" of suburban sprawl, more traffic, etc. – cannot be claimed to be too hard to predict for thorough EIS evaluation."

Response: The potential for secondary impacts associated with the project are addressed in the *Fayetteville Outer Loop Indirect and Cumulative Impact Analysis (2004*) and summarized in Section 6 of this FEIS.

Comment (3): "Evaluations of Average Daily Traffic (ADT) in the base year should be based on ADTs published by NCDOT for the county ADT map in the base year, when the data is available for the measurement points. In the past, highway expansion projects the EISs have used ADTs substantially higher those shown by NCDOT's county ADT maps (e.g., R-210, the US 1 bypass of Vass and Cameron)."

Response: The Average Daily Traffic projections for the project are from the published county ADT maps.

Comment (4): "Programmatic EISs need to be done for both the entire highway corridor and other highway projects in the region in addition to the presently proposed site specific EIS for this particular expansion project."

Response: NCDOT evaluates projects based on the Long Range Transportation Plan and available funding as needed and in coordination with local agencies and public input.

Comment (5): "At least, evaluate the entire loop, not just a part of it."

Response: Scoping and environmental documentation of both the X-0002 and U-2519 projects were pursuant to federal regulations. The section (X-0002 D) of the

Outer Loop from west of US 401 (Ramsey Street) to Interstate I-95 at the existing US 13 interchange was evaluated in a separate environmental document. The X-0002 D project-specific information was evaluated and determined to have independent utility and logical termini. The remaining sections of the Outer Loop (U-2519, X-0002B & C) from I-95 south of Fayetteville to west of US 401 (Ramsey Street) are the subject of this environmental document.

Comment (6): "Next, in any benefit/cost analysis the benefits should be derived from the same type of projected road construction design from which the cost is derived."
Response: Benefit/cost analysis was not used in evaluating the proposed project.

Comment (7): "In any safety analysis the projected accidents on the new road must be added to the projected accidents on the old road. Unless, of course, NCDOT plans to entirely eliminate the old road's use as a road. Further, the EIS should take into account that auto travel is inherently unsafe when compared to train and bus travel in any purported "safety analysis". If NCDOT really has safety concerns, it should seek to reduce the automobile and truck traffic."
Response: Comments noted.

Comment (8): "It is well known among unbiased traffic experts that each additional lane mile of highway generates additional traffic that would not otherwise be generated. Therefore, the analysis of the no-build alternative should assume substantially less traffic to handle than the build alternative due to this induced traffic growth effect of additional lane miles. And the analyses of the TSM (transportation systems management) and spot improvement alternatives should show more than the no-build but not as much as the proposed new 4-lane."
Response: The No-Build and TSM alternative were evaluated for the project and eliminated since they did not meet the Purpose and Need for the project.

Comment (9): "In addition to evaluating the no-build alternative, the EIS must evaluate the spot improvement alternative. The spot improvement alternative must include such things as turn out lanes for slow vehicles, redesign of intersections to improve sight distances, a car and van pool database, alternative transportation modes (including rail, buses, and bicycles), purchasing conservation easements in rural areas to reduce the

tendency of highways to attract commercial and residential growth (thus lessening their ability to handle through traffic), and any other devises, design practices, or programs to reduce traffic, in addition to those already mentioned."

Response: See response to Comment (8). In addition, the Improve Existing Facilities Alternative was re-evaluated based on agency comments following the publication of the DEIS and was found infeasible.

In general, setting the standards and laying out a plan for development through comprehensive plans, small area plans, and responsible subdivision and zoning ordinances is the responsibility of the local municipalities.

Comment (10): "Neither the spot improvement alternative nor the TSM alternative should be cursorily eliminated from consideration because of NCDOT's notion that state law requires a 4-lane. If state law requires a 4-lane, that doesn't obviate the requirement for an EIS as provided by both State (North Carolina Environmental Policy Act) and federal (National Environmental Policy Act) law."

Response: The TSM Alternative was eliminated from detailed studies since it did not meet the purpose and need for the project. The need for a four-lane facility was determined based on the purpose and need for the proposed type of roadway facility and the traffic demand projected to use the roadway.

Comment (11): "The EIS should address public transportation alternatives (separately and in conjunction with TSM and spot improvements alternatives), and such should include rail and bus. Such an evaluation should include using public school buses during off hours assist with public transportation needs. This should eliminate the over-used excuse that rural areas don't have sufficient population density to justify public transit's initial capital outlay. Recall that the least EIS agency need not have control over an alternative for the EIS to evaluate it."

Response: The TSM and Public Transit Alternatives were reviewed for the project and included in Section II of the DEIS. These Alternatives were eliminated since they did not meet the Purpose and Need for the project.

Comment (12): "Freight by rail as a viable alternative to the long distance trucks that increasingly clog our highways must be thoroughly examined as a "corridor wide"

alternative for this transportation corridor. This could best be done in a programmatic EIS."

Response: The need for freight by rail is not part of this project's Purpose and Need. Freight is currently carried into Fort Bragg along the rail lines and does not change the projected traffic needs in the project area.

Comment (13): "The EIS should thoroughly examine the consequences to the rail industry along the corridor occasioned by government subsidized truck competition in the form of a publicly funded expanded highway."

Response: Fort Bragg currently uses the rail lines to transfer materials; however, these uses are separate from this project's Purpose and Need. The study requested is not applicable or consistent with the Purpose and Need for this project.

Comment (14): "As already mentioned, secondary growth effects are substantial and real consequences from highway construction. In addition to examining those consequences along the entire corridor, those consequences must be examined in detail for the corridor and the region. To the extent that the expanded highway encourages suburbanization of these private land. This cost – to farming, forestry and recreational activities such as fishing, hiking, and hunting – must be factored into the project's total cost when analyzing benefits and costs. It should be noted that using rail based freight and transit alternatives will drastically reduce these potential impacts."

Response: See response to Comment (6).

Comment (15): "The EIS must analyze the effects on county and municipal net tax revenue in light of the probably induced growth impacts of the highway expansion. Many studies have documented that growth in areas outside of existing town centers tends to cause a county government to have to spend more in services than it realizes from increased property tax revenues. Studies have shown this to be true for counties, towns, and townships in South Carolina, Virginia, and a multitude of New England States. It will likely also prove true for this county. Therefore, the EIS needs to analyze the project's effect on net tax revenue for the county based on projected induced growth impacts, projected increases in property tax revenues, and projected increases in governmental service obligations."

Response: NCDOT has coordinated the project with local officials and the project is included on the Long Range Transportation Plans for the area. The installation of utilities by the counties and City of Fayetteville are at their discretion and based on each of the individual municipality's zoning and land use plans. Cumberland, Hoke, and Robeson Counties and the City of Fayetteville will assess growth trends in their respective municipalities and set tax rates to cover municipal services based on the needs of the community.

Comment (16): "I trust that this EIS will not misrepresent and local government's positions."
Response: Comment noted.

Comment (17): "Any watershed that lies within the area will likely be affected by induced growth from this highway expansion. Thorough analysis of the likely deleterious effects on the watershed and the costs thereof must be undertaken in the EIS."
Response: The project has been coordinated with the NCDWQ regarding the level of analysis needed in the Indirect and Cumulative Impact Analysis for this project.

Comment (18): "Don't select a 'preferred alternative' and then use the EIS to rationalize the choice - use the EIS as the decision making tool it's supposed to be."
Response: A study area for the project was identified based on the Project Purpose and Need. Several Alternatives, including the No-Build Alternative, were evaluated for the project. The DEIS documented the development of this project, study area resources, and alternative evaluations and was used to assist with the identification of the Preferred Alternative. The process for selecting the Preferred Alternative is summarized in Section 4 of this FEIS.

Comment (19): "Don't analyze this project separately from other segments of the loop, or from other projects tying into the loop."
Response: See Response to Comment (5).

3.2 PUBLIC INVOLVEMENT PROGRAM

The continued involvement of the citizens who may be affected by the study's outcome has been a vital part of the entire planning process for the Fayetteville Outer Loop Corridor Study. The public involvement program since the DEIS included Citizens Informational Workshops, the Corridor Public Hearing, Small Group Meetings, mailing list, newsletters, and project hotline.

3.2.1 Corridor Public Hearing

The Corridor Public Hearing was held on July 13, 1999 following the distribution and review of the Draft Environmental Impact Statement to receive comments from the public in a formal setting. Approximately 400 to 450 people attended, and numerous citizens asked questions and made comments. Comments were also received via mail following the hearing. Comments focused on which alternate corridor should be chosen and general property owner concerns. Seven people expressed their dislike of Alternate B; six people disliked Alternates C, J, and N; two people disliked Alternates F, K, L, M, and N; and one person disliked Alternates C, H, and I (see Appendix G for a transcript of comments received during the hearing). In addition, several citizens noted that they would prefer NCDOT to purchase all, rather than just a portion, of their property if necessary.

3.2.2 Third Citizens Informational Workshop

A series of public workshops were held in Fayetteville the week of June 14, 2004 to present preliminary design maps of the Preferred Alternative. Each workshop was an open house/drop in format. Citizens were greeted by a representative of the project team, who assisted in locating the citizen’s area of interest and directing them to the appropriate section of mapping within the workshop room. Citizens were asked to sign in and were provided with a handout describing the workshop and providing information on the project schedule and planning process, as well as project team contact information. Citizens were free to view mapping of the preliminary design and ask questions of project team members.

The first workshop was held at Seventy-First High School on June 14, 2004 from 4:00 p.m. to 8:00 p.m. Approximately 250 people attended and 16 written comments were placed in the comment box. Two workshops were held on June 15, 2004 at College Lakes Elementary School: the first from 10:00 a.m. to 1:00 p.m. and the second from 4:00 p.m. to 8:00 p.m. Approximately 175 people attended the morning session, and about 225 people attended the evening session. In

total, 27 written comments were deposited in the comment box. The final workshop was held at Jack Britt High School on June 17, 2004 from 4:00 p.m. to 8:00 p.m. Nearly 460 people attended the workshop and left ten written comments. In addition, comments were collected by project team members and recorded on a half-size set of plan sheets. Requests for individual map sheets, or portions of sheets, were taken at each workshop. Following the workshops, an additional eight written comments were received via mail. A summary of comments from the Citizens Informational Workshops may be found in Appendix H.

3.2.3 Design Public Hearing

A Design Public Hearing for the project will be held in the winter of 2006 following completion of the FEIS and Record of Decision.

3.2.4 Small Group Meetings

NCDOT representatives were available to meet with interested citizens' organizations, neighborhood associations, business groups, and civic groups to further discuss the project. Information on Small Group Meetings was included in project newsletters and Citizens Informational Workshop handouts.

At the June 2004 workshop three small group meetings were requested by communities impacted by the Preferred Alternative. A majority of the comments and questions from these residents focused on access provided for residents in the vicinity of Old Plank Road (SR 1710), Mill Creek Farms, and College Lakes. Feasible comments and access revisions resulting from these meetings will be incorporated in the final design plans for the Preferred Alternative. A summary of comments from the small group meetings may be found in Appendix H.

3.2.5 Mailing List

A mailing list was developed in order to distribute project information to interested persons. Any individual, public or private group, or government official expressing an interest in the project was placed on the mailing list. The mailing list contains approximately 2,850 names and addresses and continues to expand.

3.2.6 Newsletters

To date, eight project newsletters have been published and mailed to citizens, groups, and officials on the mailing list. Since the publication of the DEIS, Newsletters Nos. 4 thru 8 have been mailed (see Appendix F for copies of these newsletters). The newsletters provided information on the corridor study process and progress, as well as announced opportunities for public involvement. Newsletter No. 4 was distributed in June 1999 and announced the release of the DEIS and the upcoming Corridor Public Hearing. In December 1999, Newsletter No. 5 was mailed to summarize the results of the Corridor Public Hearing and describe further studies of the Upgrade Existing Facilities Alternative. Newsletter No. 6 described the selection of the Preferred Alternative in December 2000. Newsletter No. 7 was mailed in November 2002 and explained that the project was delayed due to changes in security at Fort Bragg following September 11, 2001. The most recent project newsletter, Newsletter No. 8, was distributed in May 2004 to provide a general project update and announce the June 2004 Citizen's Informational Workshops.

Two additional newsletters are planned for announcing the completion of the FEIS in fall 2005 and to advertise the Design Public Hearing in winter 2006.

3.2.7 Hotline

A toll-free project hotline (800/554-7849) is available for public comments, suggestions, or inquiries. The hotline service is available Monday through Friday during regular business hours. The hotline provides the public the ability to record a message if the call is placed after normal office hours. Study team members responded to phone call requests as quickly as possible. Approximately 400 hotline calls were received during the corridor study.

3.3 PUBLIC OFFICIALS MEETINGS

Three Public Officials Meetings were held for the project. These meetings were held for members of the federal, state, and local governments prior to the each Citizens Informational Workshop at the Seventy-First High School Cafeteria in Cumberland County. The meetings were held on February 25, 1993; July 27, 1993; and June 14, 2004. The purpose of the first meeting was to provide local officials with the opportunity to review the study process and project schedule as well as discuss issues of concern prior to developing preliminary corridors. The second meeting was to present the preliminary corridors and receive comments relative to their

location. At the third meeting, the preliminary design maps for the Preferred Alternative were presented.

3.4 COMBINED NEPA/404 PROCESS

The Fayetteville Outer Loop Corridor Study began prior to the agreements between NCDOT and the US Army Corps of Engineers set forth in the Combined NEPA/404 Process. However, in an effort to incorporate this project into this new process, NCDOT, in conjunction with FHWA, published a "Preliminary" Draft Environmental Impact Statement (PDEIS) for the project, which was circulated through the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and U.S. Department of the Army (Fort Bragg) in April 1997. In addition, a Purpose and Need Report was prepared for the project. Subsequently, the U.S. Army Corps of Engineers concurred with the project Purpose and Need; the U.S. Army Corps of Engineers' concurrence letter is located in Appendix A.

Following the publication of the DEIS, NCDOT and FHWA began to follow the guidelines in the Merger Process, which combines NEPA requirements and Section 404 of the Clean Water Act. A Merger Team was established that included the following agencies:

- Federal Highway Administration
- U.S. Army Corps of Engineers
- Environmental Protection Agency
- North Carolina Wildlife Resources Commission
- North Carolina Department of Environmental and Natural Resources, Division of Water Quality
- North Carolina Department of Cultural Resources
- North Carolina Department of Transportation
- Fayetteville Area Metropolitan Planning Organization

In addition, Fort Bragg served as a consulting party.

Based on coordination with the agencies prior to the circulation of the DEIS and additional information provided for the Upgrade Existing Facilities Alternative (see Appendix B), the Merger Team concurred with the Purpose and Need and alternatives selected for detail studies as presented in the DEIS. Concurrence Signature Forms for Concurrence Points 1 "Purpose and Need" and 2 "Alternatives to be Studied in Detail in the NEPA Document" were circulated for signature in July 2000.

A Merger Team Meeting for Concurrence Point 3 selection of "least environmentally damaging practicable alternative" was held on October 5, 2000. Build Alternate D was selected as the LEDPA. This selection was made based on impacts to wetlands and streams, Section 4(f) properties, and neighborhoods. Alternate D was chosen as the LEDPA because it:

- Avoids the wildlife refuge on the USFWS Conservation Easement located in the vicinity of Brisson Road (SR 1177) and Parkton Road (SR 1118),
- Avoids Stewarts Creek,
- Crosses Rockfish Creek east of Upchurches Pond to avoid the high quality wetlands located west of Upchurches Pond, and
- Impacts less wetlands and streams.

Alternate D was also preferred by the USACE, NCWRC, and the NCDWQ because it provides more opportunities to avoid and minimize impacts to streams and wetlands.

The Merger Process was amended in March 2001 and implemented as the Merger 01 Process in March 2003. To incorporate the project into the Merger 01 Process, Concurrence Points 2A "Bridge Locations and Alignment Review" and 4A "Avoidance and Minimization" were examined simultaneously. Due to the size of the project, the corridor was divided into two segments for analysis by the Merger Team. A Merger Team Meeting was held on December 17, 2003 to discuss proposed bridging locations and avoidance and minimization measures for the Preferred Alternative south of Cliffdale Road. Agency field meetings were held on February 9 and 12, 2004 to familiarize agency representatives with the preliminary design and natural systems and to get input on bridge locations. A second Merger Team Meeting was held on March 16, 2004 to discuss areas north of Cliffdale Road and comments from the previous Merger Team Meeting. The Merger Team verbally concurred on March 16, 2004 on both Concurrence Points. Signed Concurrence Forms are included in Appendix A.

3.5 RED-COCKADED WOODPECKER CONSULTATION

Extensive red-cockaded woodpecker consultation and coordination has taken place between NCDOT, Fort Bragg, USFWS, and FHWA. Informal consultation between these agencies was initiated in 1990 as a result of the X-0002 project and continues to this date through the X-0002/U-2519 project. Informal consultation includes Steering Committee and Interagency Meetings as well as correspondence between the agencies. In 1997, FHWA requested from the

USFWS that formal consultation for the project be initiated in accordance with Section 7 of the Endangered Species Act.

Anticipating that future highway projects would have impacts to the RCW in the Sandhills area, NCDOT entered into a Memorandum of Understanding (MOU) with the USFWS and The Nature Conservancy (TNC) to mitigate for these impacts in advance of proposed highway projects in the Sandhills. In the MOU, NCDOT agreed to fund the purchase of, and acquire fee simple title to, the Calloway Tract, a 2,500-acre property in Hoke County, North Carolina. In 2001, NCDOT purchased the Calloway Tract and, in July 2002, conveyed the property to TNC while reserving a perpetual conservation easement on the tract. In addition, NCDOT provided a $600,000 endowment to TNC to help fund the management of the property for RCW habitat and other ecological values. At the time of acquisition, the Calloway Tract supported five active RCW clusters. It was anticipated that with habitat management, additional RCW clusters could be created. The property now serves as an RCW mitigation bank for NCDOT and secures mitigation credits for RCWs already present on the property as well as for additional RCW clusters that may be developed in the future.

Meetings were held on July 2, 2003 and February 24, 2004 to discuss impacts to the red-cockaded woodpecker and other federally-protected species. Representatives from NCDOT, USFWS, Fort Bragg, and USACE were present at both meetings. Field surveys for red-cockaded woodpeckers were completed during this time period. Section 7 consultation is ongoing and a Biological Assessment (BA) was submitted to USFWS in September, 2004. The BA included a Biological Conclusion of "May Affect, Likely to Adversely Affect." The USFWS concurred with this conclusion on April 28, 2005. As part of their Biological Opinion, the USFWS recommends that NCDOT work with members of the North Carolina Sandhills Conservation Partnership to acquire a previously identified property, which contains approximately 75 acres of habitat that can be managed to create/maintain foraging habitat for RCW. USFWS also recommends that NCDOT coordinate with Fort Bragg and USFWS to establish and implement the best strategy for minimizing direct impacts of tree clearing and highway construction to the cluster subject to "take."

SECTION 4
PROPOSED ACTION AND SELECTION OF THE PREFERRED ALTERNATIVE

Following the circulation of the DEIS, the July 1999 Corridor Public Hearing, and the close of the comment period, the Build Alternative, Alternate D, was selected as the Preferred Alternative for the proposed action. This section reviews the proposed action and provides the reasons for selecting Alternate D as the Preferred Alternative.

4.1 PROPOSED ACTION

The proposed action consists of a 27.8-mile controlled-access freeway facility through Robeson and Cumberland Counties north and west of Fayetteville. The freeway facility will provide a circumferential facility (Outer Loop) around the city, reduce the volume of traffic on portions of the local street network, and connect the major radial routes in the southern, western, and northern portions of Fayetteville. The Outer Loop will also provide direct access to I-95 south of Fayetteville. The need for Fayetteville Outer Loop was coordinated with regulatory agencies and the Merger Team during and following the development of the DEIS. The Merger Team concurred with the Purpose and Need as presented in the DEIS in July 2000.

Project schedule	
Final Environmental Document	Summer 2005
Record of Decision	Fall 2005
Design Public Hearing	Winter 2006
Right of way (US 401/Ramsey Street to All American Freeway)	Spring 2006
Construction (US 401/Ramsey Street to All American Freeway)	Spring 2008
Right of way (All American Freeway to Cliffdale Road)	2007
Construction (All American Freeway to Cliffdale Road)	2012
Right of way (Cliffdale Road to I-95)	Post Year
Construction (Cliffdale Road to I-95)	Post Year

The proposed action is identified in the 2006-2012 North Carolina Transportation Improvement Program (TIP) as U-2519, including Sections AA, AB, BA, BB, CA, CB, DA, and TIP X-0002, including Sections B and C. Table 4-1 contains a description of each of the project segments. The project begins in Robeson County at an interchange with I-95, continues north through Cumberland County, turns eastward along the southern boundary of the Fort Bragg Military Reservation, and ends at an interchange with Ramsey Street (US 401). The project location and the project study area are shown on Exhibits 1-1 and 1-2.

Table 4-1: Project Breakdown Descriptions	
U-2519 AA	I-95 to Parkton Road (SR 1118)
U-2519 AB	Parkton Road (SR 1118) to Camden Road (SR 1003)
U-2519 BA	Camden Road (SR 1003) to Strickland Bridge Road (SR 1104)
U-2519 BB	Strickland Bridge Road (SR 1104) to South Raeford Road (US 401)
U-2519 CA	US 401 to Cliffdale Road (SR 1400)
U-2519 CB	Cliffdale Road (SR 1400) to East of Yadkin Road (SR 1415)
U-2519 DA	East of Yadkin Road (SR 1415) to East of Bragg Boulevard (NC 24)
X-0002 B	East of Bragg Boulevard (NC 24) to East of Murchison Road (NC 87/210)
X-0002 C	East of Murchison Road (NC 87/210) to Ramsey Street (US 401)

In order to incorporate the results of the changes in Fort Bragg security and the Merger Process, the right of way acquisition and construction schedule for the project was delayed. The NCDOT TIP for the years 2006-2012 was also revised. Following the signing of this document, a Record of Decision will be prepared for the project. A Design Public Hearing will be held in the winter of 2006. Right-of-way acquisition for the proposed Outer Loop will begin May 2006 between US 401 (Ramsey Street) and All American Freeway (SR 1007). Construction on this portion of the proposed project will begin in the year 2008. Right of way acquisition and construction for the portion between All American Freeway (SR 1007) and Cliffdale Road will begin in 2007 and 2012, respectively. For project segments between Cliffdale Road and I-95 in Robeson County, right-of-way acquisition and construction will begin after 2012.

4.2 SELECTING THE PREFERRED ALTERNATIVE

Alternate D was selected as the Preferred Alternative for the proposed action based on comments received at the Corridor Public Hearing, comments on the DEIS, and agency coordination through the Merger Process (See Section 2.2.3). The following sections review details of the decision-making process and reasons for selecting Alternate D as the Preferred Alternative.

4.2.1 CORRIDOR PUBLIC HEARING

In June 1999 immediately following the publication of the DEIS, Newsletter No. 4 was mailed to notify the public about the circulation of the DEIS and invite them to attend a Corridor Public Hearing. The Corridor Public Hearing for the project was held on July 13, 1999, and the corridors for

all thirteen build alternates were shown at the hearing. Approximately 400-450 people attended the hearing. Comments received at the Public Hearing were recorded and a transcript prepared for use in selecting the Preferred Alternative (see Appendix G for a copy of this transcript). A Post-Hearing Meeting was held on September 27, 1999 to discuss comments received at the Corridor Public Hearing and impacts of the build alternates. Twenty-four comments were received; four included support for Alternate D. Additional information about the Corridor Public Hearing is included in Section 5 of this FEIS.

4.2.2 LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE

As discussed in Section 2.3, the Fayetteville Outer Loop was incorporated into the Merger Process following the approval of the DEIS. A series of meetings and field visits were held with the Merger Team in 2000 to determine the "least environmentally damaging practicable alternative" (LEDPA) from among the thirteen build alternates identified for detail study in the DEIS.

The first of these meetings was held on September 13, 2000 at the NCDOT Division 6 Office in Fayetteville, which also included a field visit. All thirteen alternates, shown on Exhibit 1-3, had the same southern terminus along I-95 south of the Cumberland/Robeson County line, and all shared the same alignment from approximately Cliffdale Road (SR 1400) to the northern terminus along Ramsey Street (US 401) through the Fort Bragg Military Reservation. Therefore, discussions at the meeting focused on differences in the southern portion of the roadway. Project team members determined that the Outer Loop should cross Rockfish Creek to the east or downstream of Upchurches Pond; avoid crossing Stewarts Creek; and minimize impacts to Bones Creek, Little Rockfish Creek, and Section 4(f) properties. At the meeting, the following decisions were made and alternates eliminated:

- Alternates B, F, G, H, and K were eliminated because they directly impact a USFWS conservation easement/wildlife refuge at Brisson Road (SR 1177) and Parkton Road (SR 1118).

Alternates C, D, E, I, J, L, M, and N remained. The meeting proceeded to the field where several areas were visited to assess stream and wetland quality and view the locations of proposed crossings. Locations reviewed in the field included:

- Two areas along Horsepen Branch,
- Rockfish Creek crossing upstream of Upchurches Pond,

- Rockfish Creek crossing downstream of Upchurches Pond,
- Stewarts Creek south of King Road (SR 1425),
- Stewarts Creek crossing at Gillis Hill Road (SR 1420),
- Little Rockfish Creek at Lake William,
- Bones Creek at South Raeford Road (US 401) crossing, and
- Tributary to Bones Creek and Lake Rim along Reilly Road (SR 1403).

After the field visit, the following alternates were eliminated:

- Alternates F, K, L, M, and N were eliminated based on overall impacts. Though these alternates avoid the Shaw-Gillis Historic District, they have greater impacts to other resources (such as relocations, hazardous material sites, and wetlands). These alternates are therefore not considered reasonable and prudent alternatives.

- Alternates C and J were eliminated because they cross Rockfish Creek to the west, upstream of Upchurches Pond. Regulatory and resource agencies determined that it is more desirable for the roadway to cross east, or downstream, of the dam for Upchurches Pond.

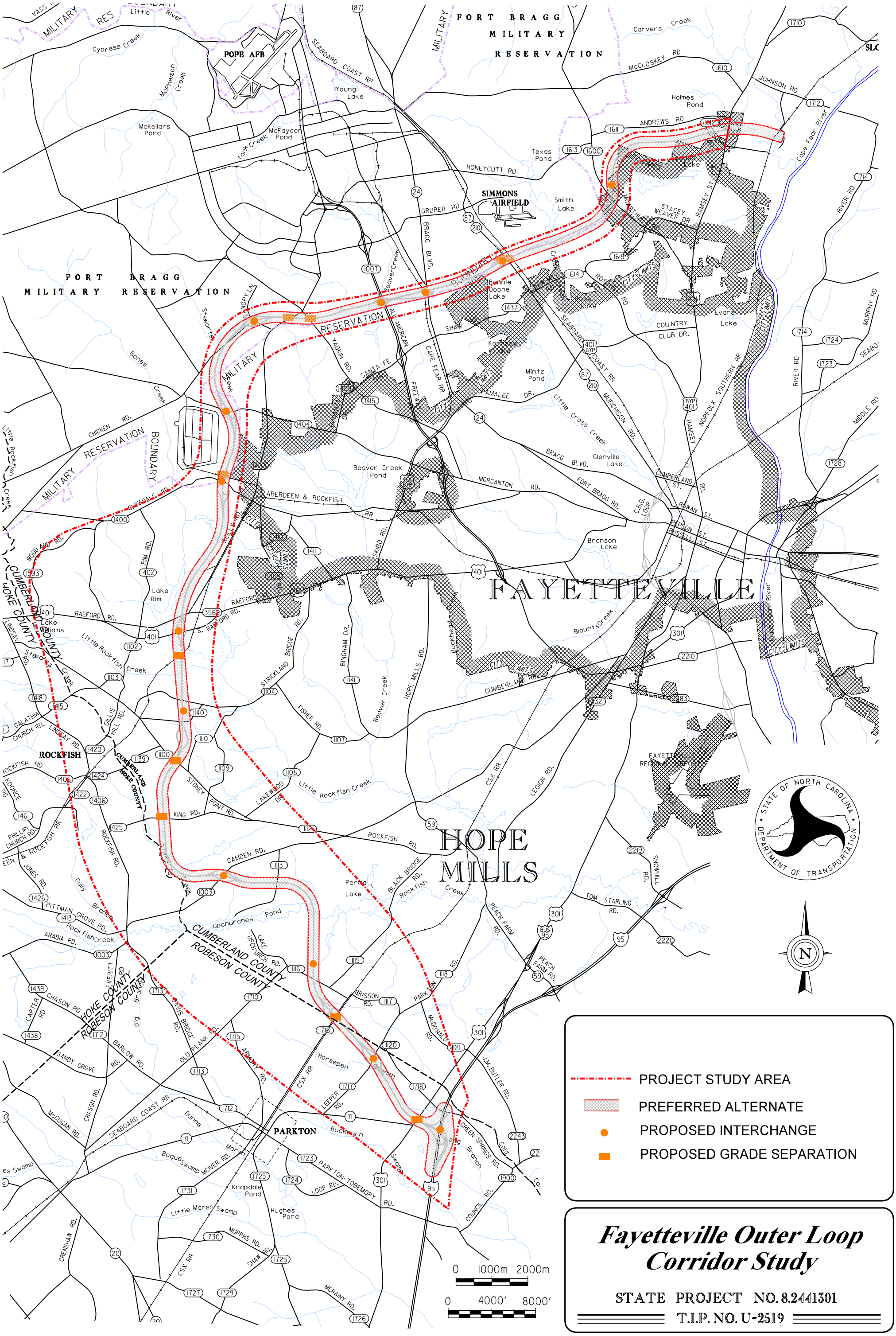
- Alternate I was eliminated because it contains two crossings of Stewarts Creek, and the other remaining alternates (Alternates D and E) do not cross Stewarts Creek.

A meeting was held on October 5, 2000 at the NCDOT Transportation Building in Raleigh to review Alternates D and E and select a LEDPA. Based on the comments received on the DEIS, at the Corridor Public Hearing, and during agency field visits and the overall impacts of each alternate, the Merger Team identified Build Alternate D as the LEDPA and signed Concurrence Point 3. Specifically Alternate D was selected because it:

- Avoids the wildlife refuge on the USFWS Conservation Easement located in the vicinity of Brisson Road (SR 1177) and Parkton Road (SR 1118),
- Avoids Stewarts Creek,
- Crosses Rockfish Creek east of Upchurches Pond to avoid the high-quality wetlands located west of Upchurches Pond,
- Impacts less wetlands and streams, and
- Provides more opportunities for avoidance and minimization of impacts.

4.3 PREFERRED ALTERNATIVE

Alternate D was officially adopted as the project's Preferred Alternative by the Secretary of Transportation on November 3, 2000. Newsletter No. 6 was mailed in December 2000 to notify the public that Alternate D was selected as the Preferred Alternative. A copy of the approval letter from the Secretary of Transportation is included in Appendix K. The Preferred Alternative is depicted on Exhibit 4-1.



Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

Preferred Alternate (Alternate D)

Exhibit 4-1

BACK OF EXHIBIT 4-1

SECTION 5
PREFERRED ALTERNATIVE

The corridor location for the Build Alternative identified in the DEIS as Alternate D is the Preferred Alternative for the Fayetteville Outer Loop. As stated in the DEIS, the preliminary design, Phase II cultural resource studies, design noise analysis, and wetland delineations were conducted following the selection of Alternate D as the Preferred Alternative.

The following sections describe the Preferred Alternative and discuss the design elements incorporated into the project through extensive coordination with Fort Bragg, the Merger Team, and the public.

5.1 DESCRIPTION OF THE PREFERRED ALTERNATIVE

The Preferred Alternative for the Fayetteville Outer Loop consists of a 27.8-mile controlled-access freeway facility through Robeson and Cumberland Counties north, west, and south of the City of Fayetteville. The Preferred Alternative, shown on Exhibit 4-1, extends from I-95 south of Fayetteville northwest approximately 15 miles, and turns east extending approximately 15 miles to just west of Ramsey Street (US 401) north of Fayetteville. The Preferred Alternative will connect to a section of another NCDOT project, TIP Project No. X-0002, section DA, just west of Ramsey Street (US 401). Section DA includes a single point diamond interchange at US 401. The portion of the X-0002 section DA project between the X-0002 C section and Ramsey Road (US 401), including the remainder of the interchange at Ramsey Street (US 401) will be constructed along with this project. The sections of X-0002 D from Ramsey Street (US 401) to I-95 north of Fayetteville are currently under construction.

The Preferred Alternative is located along the following routes:

- Starts at I-95 in Robeson County just south of the Cumberland/Robeson County line and Green Springs Road (SR 1718);
- Extends northwest to an interchange with Leeper Road (SR 1717), crosses the Cumberland/Robeson County line and the CSX Railroad, and continues to an interchange at Lake Upchurch Road;
- Passes east of Upchurches Pond, continues northwest to an interchange with Camden Road (SR 1003), and turns north crossing King Road (SR 1112) and Stoney Point Road (SR 1100);

- Continues north to an interchange just south of Strickland Bridge Road (SR 1140), Century Circle (SR 1104), and the Aberdeen and Rockfish Railroad;
- Continues north to an interchange with South Raeford Road (US 401) and extends north between Lake Rim and Reilly Road (SR 1403) to an interchange at Cliffdale Road (SR 1400);
- Extends north, then east along the Fort Bragg Military Reservation boundary to an interchange at Canopy Lane, and crosses Reilly Road (SR 1403) and Yadkin Road (SR 1415) prior to the All American Freeway (SR 1007) interchange;
- Continues east through interchanges with Bragg Boulevard (NC 24) and Murchison Road (NC 87/210) and extends south of Smith Lake to an interchange at McArthur Road (SR 1600);
- Turns northeast and parallels Andrews Road (SR 1611) and ends just west of an existing interchange at Ramsey Street (US 401).

5.2 PRELIMINARY DESIGN

Preliminary designs for the Preferred Alternative were prepared using current NCDOT/FHWA design criteria to locate the proposed four-lane roadway, bridges, interchange ramps, and service roads within the corridor. The corridor (1,000-foot) was selected to avoid and minimize impacts within the project area; and that goal was maintained during the development of the preliminary designs to further avoid and minimize impacts to the human and natural resources by shifting the designs within the corridor where possible.

5.2.1 Design Criteria and Capacity Analysis

The proposed four-lane median-divided freeway, along with associated bridges, interchange ramps, and service roads, were designed using NCDOT design standards and design guidelines developed by the American Association of State Highway Transportation Officials (AASHTO) for interstate facilities. NCDOT, in coordination with FHWA and AASHTO, is seeking the possibility of assigning a three-digit interstate shield to the Fayetteville Outer Loop. The design criteria are summarized in Table 5-1.

The typical roadway section for the Outer Loop will be a four-lane median-divided freeway with full access control. Two typical sections with a minimum right-of-way width of 350 feet were developed and are shown on Exhibit 5-1. The two typical sections are shown with four travel lanes divided by either a 70-foot or 46-foot wide depressed vegetated median.

A capacity analysis for the updated design year using 2025 traffic volumes was prepared to determine the adequacy of the preliminary designs for a four-lane divided roadway. The capacity analysis is documented in the *Design Year 2025 Capacity Analysis – Fayetteville Outer Loop*

Table 5-1: Roadway Design Criteria (Interstate Standards)

Factor	Area Used	Criteria
Functional Classification	Length of Project	Rural Freeway with full control of access
Terrain	Length of Project	Level
Design Speed	Freeway Ramp Loop	70 MPH 50 MPH desirable; 40 MPH minimal 30 MPH desirable; 25 MPH minimal
Right of Way Width	Length of Project	350 feet minimal
Maximum Horizontal Curvature	Freeway Ramp Loop	1640 feet minimum radius 760 feet desirable; 468 feet minimal 230 feet desirable; 150 feet minimal
Maximum Grade	Freeway Ramp & Loop	3% maximum 5% maximum
Number of Lanes	Freeway	4 Lanes
Lane Width	Freeway Ramp-One Lane Ramp-Two Lane Loop Ramp	12 feet 16 feet 24 feet Varies with design
Shoulder Width	Freeway	14 feet - 12 feet paved outside 12 feet - 4 feet paved inside
Median Width	Freeway	70 feet 46 feet on portions of Fort Bragg
Maximum Superelevation	Freeway Other	0.10 feet/feet 0.08 feet/feet
Stopping Sight Distance	Freeway	Current AASHTO Standards
Length of Vertical Curve	Freeway	Current AASHTO Standards
Cross Slopes (Normal Sect.)	Freeway	1/4”/foot (0.02)
Vertical Clearance	Freeway	16.5 feet minimum over Interstates and Arterials 15.0 feet minimum over Local and Collector Roads. 23.0 feet over Railroads

Source: AASHTO, A Policy on Geometric Design of Highways and Streets, 2001 and 2002 North Carolina Department of Transportation, Roadway Design Manual.

(2001 and 2003). It concluded that the Fayetteville Outer Loop will operate at an acceptable level of service (LOS D) through the year 2025.

A typical section includes a 70-foot median. However, a 46-foot median is proposed for much of the project on the Fort Bragg Military Reservation from west of All American Freeway (SR 1007) through Murchison Road (NC 87/210) to minimize right of way impacts. Both the 46-foot and 70-foot median widths will accommodate additional travel lanes in the future when warranted.

5.2.2 Design Coordination and Minimization of Impacts

Preliminary designs were coordinated with the Merger Team during two field reviews and two Merger Team Meetings held between December 2003 and March 2004. Through the collaborative efforts of the Merger Team, service roads, bridge locations, and additional minimization measures, such as shifting the roadway, adding retaining walls, providing landscaping, and identifying potential mitigation sites, were incorporated into the preliminary designs.

5.2.2.1 Bridge Locations and Minimization

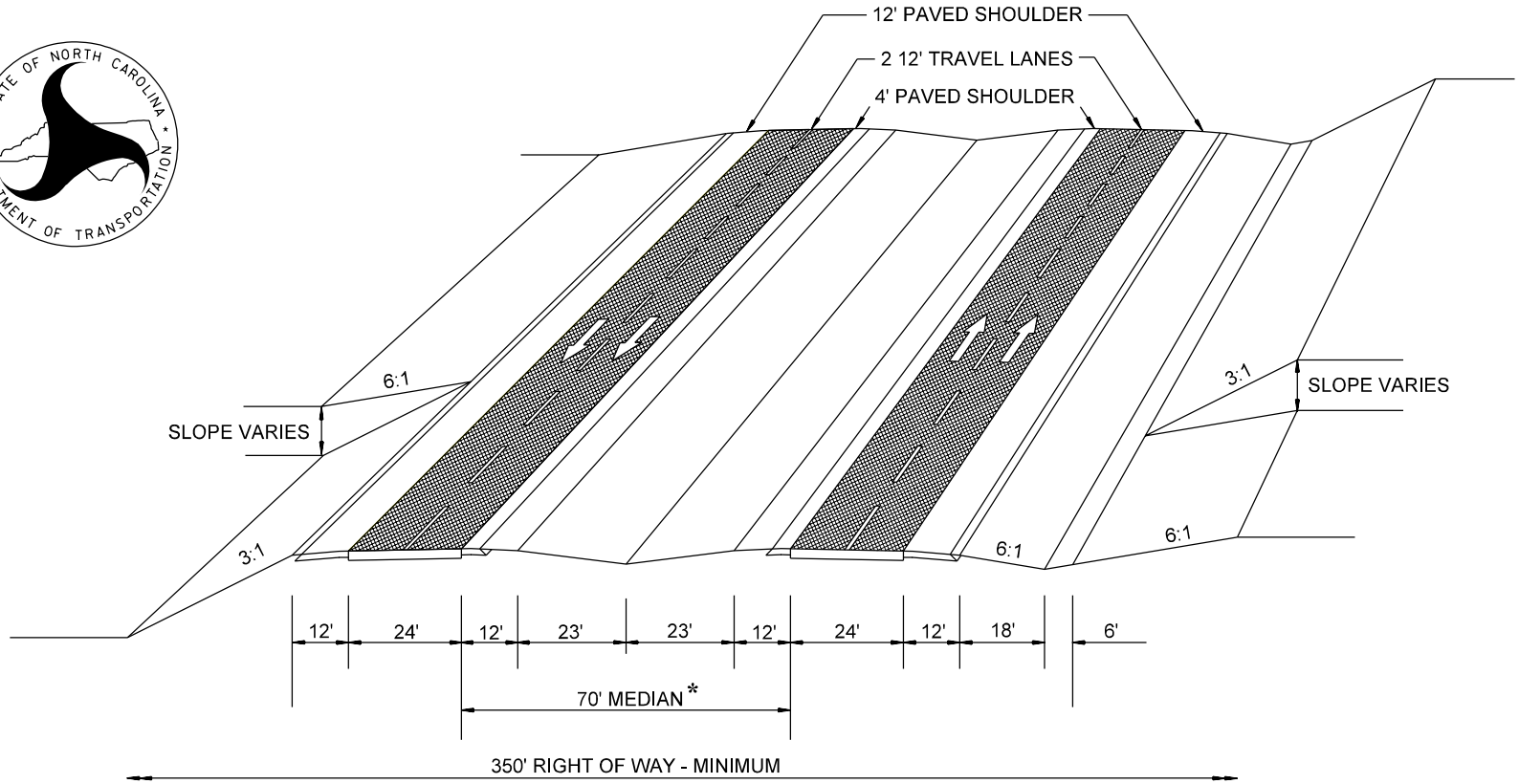
Due to the length of the project, it was divided into two segments for discussing Concurrence Points 2A and 4A. Proposed bridge locations and avoidance and minimization measures for the project from I-95 to Cliffdale Road (SR 1400) were presented on December 17, 2003. New or extended bridges were proposed to minimize impacts to natural resources, and additional minimization measures incorporated into the preliminary design were discussed. Agency representatives suggested a few modifications and asked for clarification on some items.

Agency representatives met in the field on February 9 and 11, 2004 to review bridging locations and proposed wetland and stream impact minimization measures. On February 9, agency representatives visited sites requested by the Merger Team at the December 17, 2003 Merger Meeting. Nine sites south of Cliffdale Road (SR 1400) were discussed. On February 11, a field meeting was held to familiarize the agencies with the preliminary design, natural systems, and proposed bridge locations north of Cliffdale Road (SR 1400). Six sites were discussed.

On March 16, 2004, the agencies met again to discuss bridging and avoidance and minimization for the project north of Cliffdale Road (SR 1400) to Ramsey Street (US 401). In addition, measures taken to minimize impacts to the federally endangered red-cockaded woodpecker were described, and agency comments from the December 2003 meeting were addressed. Agency representatives verbally agreed on Concurrence Points 2A and 4A at the March 16, 2004 meeting. The signed concurrence form is included in Appendix A.

Methods incorporated to avoid and minimize impacts to the natural resources, such as jurisdictional waters and red-cockaded woodpecker foraging habitat, included:

- The roadway alignment was intentionally shifted within the corridor to avoid, if at all possible, or minimize impacts to resources.



* A 46' MEDIAN WILL BE USED ON SELECTED PORTIONS OF THE FORT BRAGG MILITARY RESERVATION.

Fayetteville Outer Loop
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Typical Section

Exhibit 5-1

BACK OF EXHIBIT 5-1

- Interchange designs were specifically modified where feasible to avoid and minimize impacts to the maximum extent possible.
- Streams and wetlands were crossed perpendicularly and/or at their narrowest points, if at all possible, if they could not be avoided altogether.
- Bridges are proposed throughout the project to protect large, contiguous high-quality wetlands, large streams, and floodplains.

5.2.2.2 Corridor Boundaries and Public Involvement

At some locations, the project designs extended outside of the corridor boundaries that were presented in the DEIS and at the Corridor Public Hearing. This was necessary to incorporate the service roads into the preliminary designs and/or shift the roadway to minimize impacts to human and environmental resources. The corridor boundaries were expanded to incorporate these expanded designs. In addition, the corridor boundaries were expanded at interchanges to allow for 1,000 feet of controlled access around the interchange and from the termination of each access ramp and to facilitate smooth design transitions between interchanges and feeder roads. Additional human and environmental surveys, paralleling the original surveys presented in the DEIS, were performed for all expanded corridor areas.

Newsletter No. 8 notified the public that the corridor boundaries for the Preferred Alternative (Alternate D) had expanded and invited them to a series of Citizens Informational Workshops. Additional efforts were made to update the mailing list in an attempt to contact all known property owners within 200 feet of the Preferred Alternative corridor. The Workshops were held over three days at three different locations during the week of June 14, 2004. Over 1,100 people attended the Workshops during the three days. Maps showing the Preferred Alternative corridor boundaries and preliminary designs were provided at the Workshops for public review and to initiate input into the designs and receive comments. The Preferred Corridor boundaries will also be provided at the Design Public Hearing following the circulation of the FEIS. More details on the Workshops and Design Public Hearing are discussed in Section 3.

5.2.3 Existing Road Crossings and Access

The Preferred Alternative crosses 22 existing roads. The Outer Loop is a fully-controlled access facility with direct access provided at twelve locations along the 27.8 miles of the proposed project. Grade separations or road closings of the existing routes are proposed for the remaining crossroads (see Exhibit 5-2). The existing roads impacted by the Preferred Alternative are listed from south to north:

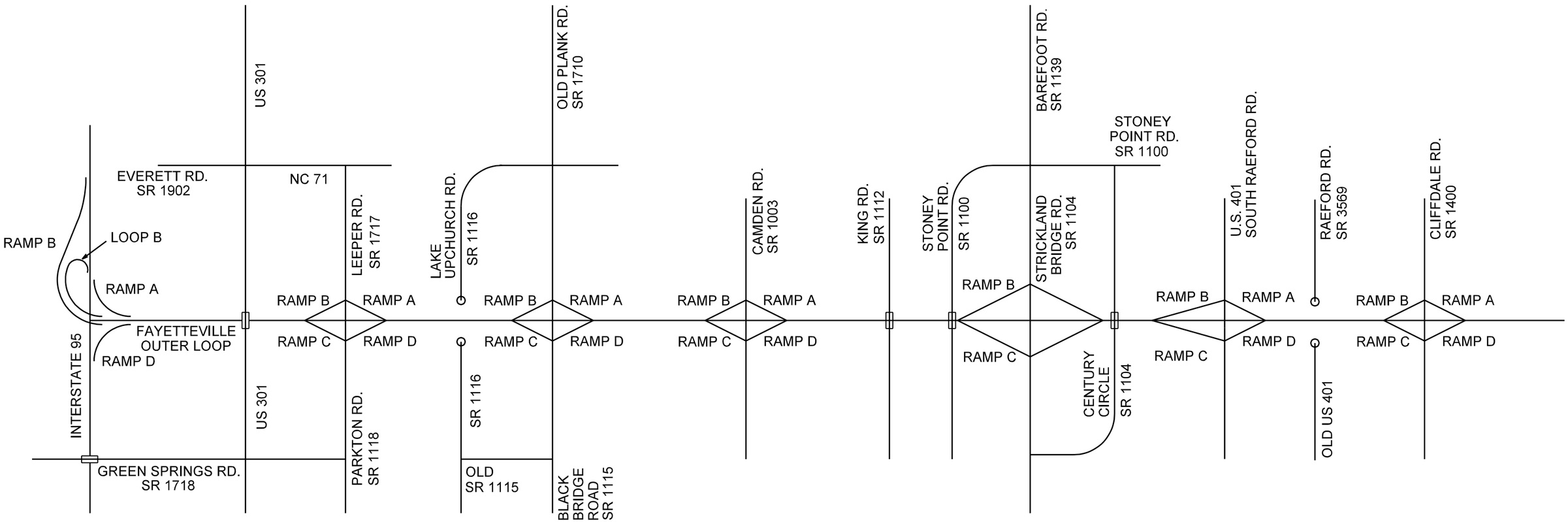
- I-95
- Green Springs Road (SR 1718)
- US 301
- Parkton Road (SR 1118)/Leeper Road (SR 1717)
- Brisson Road (SR 1117)
- Lake Upchurch Road (SR 1116)
- Camden Road (SR 1003)
- King Road (SR 1425)
- Stoney Point Road (SR 1100)
- Century Circle (SR 1140)
- Strickland Bridge Road (SR 1104)
- South Raeford Road (US 401)
- Raeford Road (SR 3569)
- Cliffdale Road (SR 1400)
- Morganton Road (SR 1404)
- Chicken Road
- Canopy Lane
- Reilly Road (SR 1403)
- Yadkin Road (SR 1415)
- All American Freeway (SR 1007)
- Bragg Boulevard (NC 24)
- Murchison Road (NC 87/210)
- McArthur Road (SR 1600)
- Ramsey Street (US 401)

5.2.3.1 Interchanges

The Outer Loop, as a fully-controlled access facility, will include twelve interchanges to provide access to the existing road network. In addition, a collector-distributor (CD) system will be provided between All American Freeway and Murchison Road. The CD system includes a two-lane continuous roadway in each direction, and it will eliminate the merge, diverge, and weave traffic movements from the Outer Loop. The following interchanges will be provided:

- I-95 will have access with the Outer Loop using an interstate-to-interstate directional interchange.
- Parkton/Leeper Road (SR 1118) will access the Outer Loop with a diamond interchange.
- Black Bridge Road/Old Plank Road (SR 1116) will be realigned to provide direct access to the Outer Loop with a diamond interchange. Signalized intersections will be located at the termini of the ramps.*
- Camden Road (SR 1003) has a proposed diamond interchange with two signalized intersections located at the termini of the northbound and southbound off-ramps.*

* Signals must meet warrant for current traffic and be agreed upon by the NCDOT Division Traffic Engineering and NCDOT Congestion Management.



LEGEND

CUL-DE-SAC

BRIDGE

NOT TO SCALE

SELECTED ALTERNATE 'D'

Fayetteville Outer Loop Interchange Layout

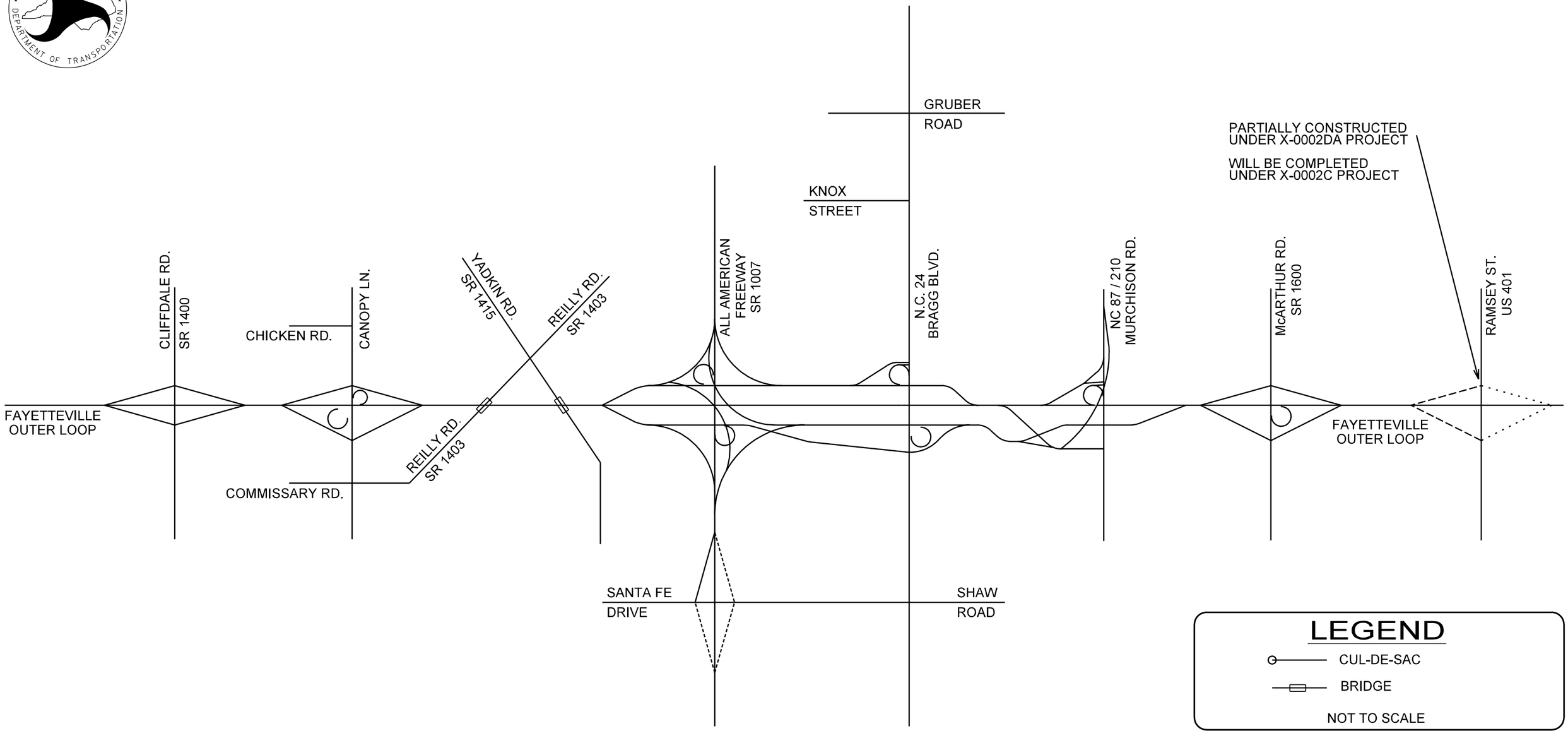
STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

Proposed Interchanges

Exhibit 5-2 Sheet 1 of 2

BACK OF EXHIBIT 5-2



SELECTED ALTERNATE 'D'

LEGEND

CUL-DE-SAC

BRIDGE

NOT TO SCALE

····· DASHED LINES REPRESENT EXISTING RAMPS

Fayetteville Outer Loop
Interchange Layout

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

Proposed Interchanges

Exhibit 5-2 Sheet 2 of 2

BACK OF EXHIBIT 5-2

- Strickland Bridge Road (SR 1140) will be realigned with a proposed diamond interchange. Two signalized intersections will be located at the termini of the northbound and southbound off-ramps.*
- South Raeford Road (US 401) has a proposed tight diamond interchange with two signalized intersections located on US 401 at the termini of the northbound and southbound off ramps.*
- Cliffdale Road (SR 1400) has a proposed diamond interchange with loops in the southeast and northwest quadrants and two signalized intersections located at the termini of the northbound and southbound off-ramps.*
- Canopy Lane has a proposed diamond interchange with a loop located in the southeast and northwest quadrants and two signalized intersections located at the termini of the northbound and southbound off-ramps.*
- All American Freeway (SR 1007) is also a fully controlled access facility and will access the Outer Loop with a directional interchange, providing traffic free-flow movements on all ramps, and a collector-distributor (CD) system.
- Bragg Boulevard (NC 24) has a partial diamond interchange with the Outer Loop CD system. The interchange includes two loops in the southeast and northwest quadrants.
- Murchison Road (NC 87/210) has a half cloverleaf with a signalized intersection located at the northwest off-ramp termini of the Outer Loop CD system. A flyover will accommodate the Outer Loop eastbound to Murchison Road movement.*
- McArthur Road (SR 1600) has a proposed diamond interchange with a loop in the northeast quadrant and two signalized intersections located at the termini of the northbound and southbound off-ramps.*
- Ramsey Street (US 401) will include completion of the single point urban interchange including bridges and ramps west of US 401.

5.2.3.2 Grade Separations

Grade Separations are proposed for seven roads, including:

- US 301
- Green Springs Road (SR 1718)
- Brisson Road (SR 1716)
- King Road (SR 1425)
- Stoney Point Road (SR 1100)
- Reilly Road (SR 1403)
- Yadkin Road (SR 1415)

5.2.3.3 Road Realignments and Closures

Based on the preliminary designs, four roads will be realigned and/or closed with alternate access provided. Re-alignments of Strickland Bridge Road, Old Plank Road/Barefoot Road, and Canopy Lane/Reilly Road are required to construct the interchanges and maintain efficient travel through the area. The Preferred Alternative will bisect Lake Upchurch Road (SR 1116), Raeford Road (SR 3569), Pineview Street (SR 2461), Garner Road (SR 2467), and Jacob Road (SR 2421).

Access to the bisected roadways will be maintained along adjacent existing roadways. Additional coordination with the neighborhoods adjacent to the interchange at McArthur Road (SR 1600) will be conducted during the Design Public Hearing and final design of the project.

5.2.3.4 Access and Service Roads

Federal and state resource and regulatory agencies have requested that NCDOT include new access and service roads in the preliminary designs to determine the impacts associated with providing access to the new roadway and interchanges. Service roads along the Outer Loop were incorporated into the preliminary designs at locations that provided access to property owners and minimized impacts to the environment.

The preliminary locations for these access and service roads were shown to the public for comment at the June 2004 Citizens Informational Workshops. Several property owners requested that service roads be coordinated prior to or during right-of-way acquisition for the project.

Access to several neighborhoods will be altered. Specifically, in the College Lakes subdivision east of McArthur Road (SR 1600), several roads will be cut off by the Outer Loop. These include Sandstone Drive and Saddle Ridge Road. In addition, just east of College Lakes, Jacob Street (SR 2421) and Garner Street (SR 2467) will be bisected by the proposed roadway. Homeowners will access these areas via an extension of Pineview Street (SR 2461) or through the College Lakes subdivision. Based on comments received during the June 2004 Workshops, NCDOT is investigating other ways to maintain access in these communities. NCDOT will coordinate with the residents of these areas prior to the completion of the final designs.

In the southern portion of the project, the proposed facility will cross Lake Upchurch Road (SR 1116), cutting off existing routes. Residents west of the freeway wishing to access Black Bridge Road (SR 1115) or residents east of the freeway wanting to use the existing Old Plank Road (SR 1710) will cross the Outer Loop on a realigned Old Plank Road. NCDOT met with residents of this area on September 24, 2004 to present the preliminary design, explain new routings, and collect comments.

The final location of the access and service roads will be determined during right of way acquisition. Details of comments received at the Citizens Informational Workshops can be found in Section 3 and Appendix H of this FEIS.

5.2.3.5 Bridges

Bridges are proposed at each grade separation, interchange, and crossings of the CSX and Aberdeen & Rockfish Railroads for the Preferred Alternative. Twelve other bridges (ten additional and the lengthening of two proposed bridges) are proposed to minimize impacts to waters of the U.S., including jurisdictional wetlands and streams. These were reviewed with the Merger Team. These twelve bridges will reduce the amount of impacts to wetlands and streams by 18 and 10.5 percent, respectively.

5.2.3.6 Railroads

The inactive Cape Fear Railroad line located along the west side of Bragg Boulevard (NC 24) will be impacted by the Preferred Alternative. A continuous rail corridor will not be available through the interchange at Bragg Boulevard (NC 24). NCDOT is coordinating with the Cape Fear Railroad as to the future status of this line.

5.2.3.7 Pedestrian and Bicycle Facilities

Designs for the Preferred Alternative include a bridge or box culvert just south of Andrews Road, near the northern terminus of the project. This will allow for construction of a pedestrian trail between Pine Forest High School and the residential community south of the proposed Outer Loop. Other designated pedestrian and bicycle routes in Cumberland County, including Bragg Boulevard (NC 24), Reilly Road (SR 1403), Cliffdale Road (SR 1400), and Rockfish Road (SR 1112) will not be impacted as grade separations will provide continued access along these routes.

5.2.4 Fort Bragg Security Accommodations

Approximately 7 miles, or 25 percent, of the proposed Fayetteville Outer Loop is located within the boundaries of Fort Bragg Military Reservation. Following selection of a preferred alternate for the project in November 2000, NCDOT initiated discussions with Fort Bragg to develop preliminary designs consistent with the Reservation's goals. In September 2001, with preliminary designs for the Outer Loop nearly complete, the terrorist attacks of September 11 occurred. Following these events, Fort Bragg indefinitely restricted entry into the post and requested minor changes in the preliminary design of the Outer Loop to allow for an increase in security and access control onto the military reservation.

Over the course of the next two and a half years, a series of meetings with various Fort Bragg officials and planners was held to discuss security issues and design criteria. Discussions included, but were not limited to, perimeter fencing, security patrol roads, tank trails, visual screening, access control plazas (ACP), traffic flow changes, red-cockaded woodpeckers, existing and future development of the southern portion of the Post, and wetland and stream systems. Discussions concluded in March 2004, and revised preliminary designs for the Outer Loop were completed and provided to the public in June 2004.

5.2.4.1 Perimeter Fencing with Patrol Roads

An eight-foot security fence is currently being constructed and/or relocated along the southern edge of Fort Bragg where the Outer Loop will cross the military reservation. The fence will be bordered by a 15-foot cleared buffer on each side and a security patrol road within the base to allow Fort Bragg security to have a clear line of sight along the fence. A 20-foot patrol road is needed from Canopy Lane to just east of All American Freeway. The 20-foot wide portion of the road will be jointly used to move tanks and security patrols. From east of All American Freeway to Murchison Road, a 10-foot patrol road is required. These roads are also used for forest management and controlled burning on the base.

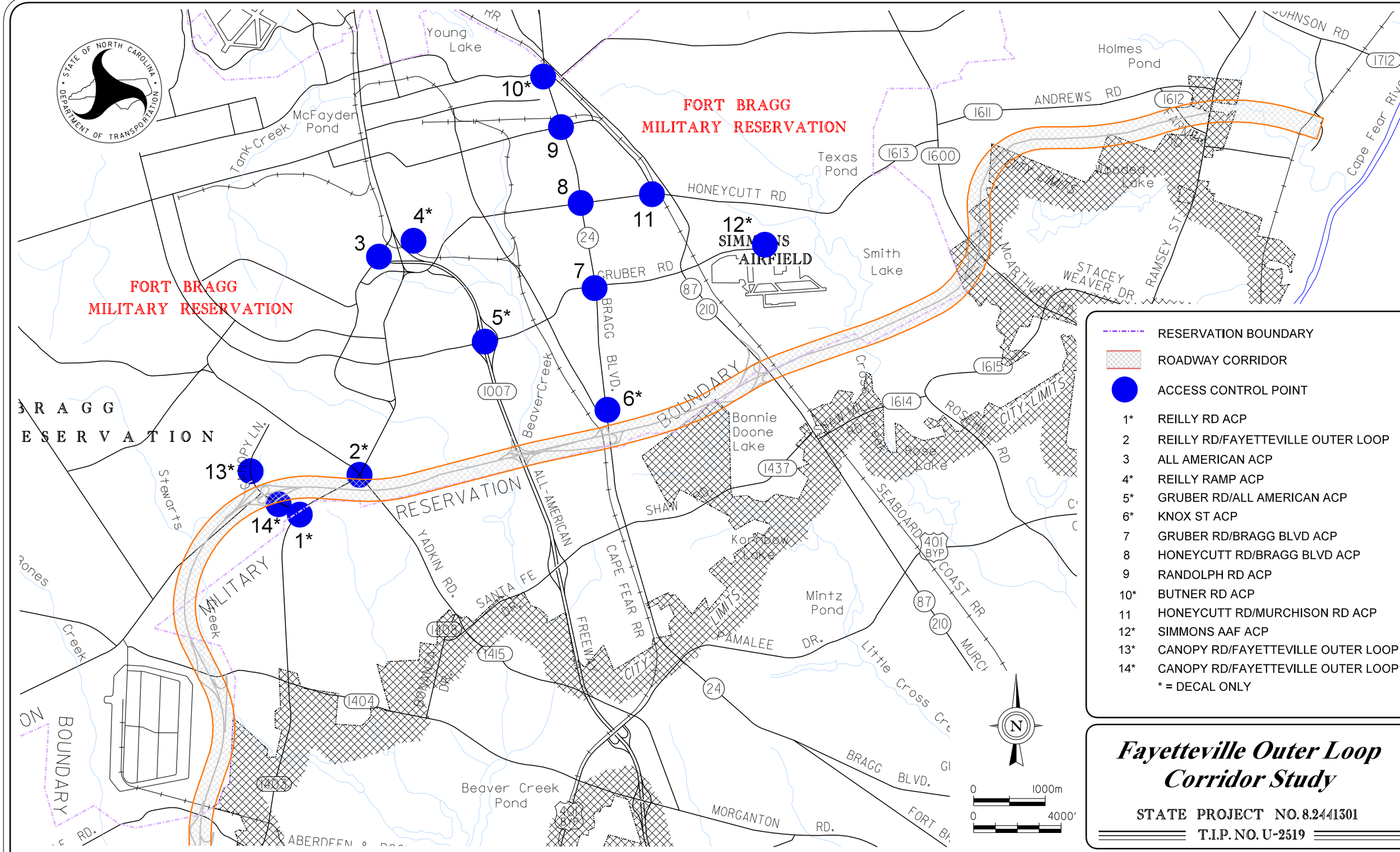
5.2.4.2 Visual Screening

Visual screening will be installed along the shoulder of the Outer Loop in designated areas to screen sensitive areas of the base from the adjacent roadway. The criteria and construction of the screening, including the detailing limits, heights, and acceptable materials, has been coordinated with Fort Bragg.

5.2.4.3 Access Control Plazas

Fort Bragg's security plan requires the construction of Access Control Plazas (ACPs) at each roadway accessing the post. As shown on Exhibit 5-3, the ACPs will be located at several locations in order to control access onto post. Some of the ACPs will only allow access to military personnel with "decals" while others will provide a check point for public use.

A new "decal only" ACP entering Fort Bragg from Bragg Boulevard will be located just south of Gruber Road. Access along Bragg Boulevard from the ACP south to Knox Street will be open for the public to access Striker Golf Course and the fairgrounds.



- RESERVATION BOUNDARY
- ROADWAY CORRIDOR
- ACCESS CONTROL POINT

1*	REILLY RD ACP
2	REILLY RD/FAYETTEVILLE OUTER LOOP
3	ALL AMERICAN ACP
4*	REILLY RAMP ACP
5*	GRUBER RD/ALL AMERICAN ACP
6*	KNOX ST ACP
7	GRUBER RD/BRAGG BLVD ACP
8	HONEYCUTT RD/BRAGG BLVD ACP
9	RANDOLPH RD ACP
10*	BUTNER RD ACP
11	HONEYCUTT RD/MURCHISON RD ACP
12*	SIMMONS AAF ACP
13*	CANOPY RD/FAYETTEVILLE OUTER LOOP
14*	CANOPY RD/FAYETTEVILLE OUTER LOOP

* = DECAL ONLY

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Fort Bragg Area

Exhibit 5-3

BACK OF EXHIBIT 5-3

ACPs at the top of the two ramps of the Canopy Lane interchange will allow access for military personnel only, decal-only vehicles. The existing ACP at Reilly Road will be removed, and a new ACP will be placed at the proposed Reilly Road/Canopy Lane intersection. These ACPs will consist of a canopy built over all entry lanes into the base, raised islands separating each entry lane, turn-around capabilities before and after identification check locations, and an active barrier system.

In order to prevent the re-construction of the new Yadkin Road ACP, NCDOT is coordinating the design of the on-site detour and bridge elevations for Yadkin Road with Fort Bragg. Fort Bragg will construct the new ACP on Yadkin Road based on the proposed elevation needed to cross Yadkin Road over the Outer Loop. The Class Six military liquor store and gas station will be impacted by the Preferred Alternative. The store and gas station are located west of Yadkin Road (SR 1415) just north of the military reservation boundary. Fort Bragg plans to move these facilities to another location within the reservation.

5.2.4.4 Traffic Flow Changes

With the increased security on Fort Bragg, there will be changes to the existing traffic flow patterns for both the military and non-military personnel in the project area. These changes are located along Bragg Boulevard, Reilly Road, Knox Street, Fourth Street, and Smith Lake Road.

- **Closure of Bragg Boulevard to Non-Military Traffic**

  For national security purposes, Fort Bragg requested that Bragg Boulevard (NC 24) be closed to non-military through traffic. As a result, those wishing to travel north through Fort Bragg will be routed from Bragg Boulevard (NC 24) onto the Outer Loop's collector-distributor system and will exit on Murchison Road (NC 87/210) to continue northward. NCDOT examined the implications this will have on the Outer Loop, as well as Murchison Road, and determined that it will be viable. NCDOT is undertaking a separate project to upgrade and widen Murchison Road (TIP Project U-4444) to accommodate the additional traffic. The closure of Bragg Boulevard (NC 24) will not be implemented until both the Outer Loop and Murchison Road projects are constructed.

- **Truck Traffic on Bragg Boulevard**

  All trucks entering the military reservation will be directed to a new truck plaza at the intersection of Knox Street and Bragg Boulevard (NC 24). Other non-military traffic will not be permitted to enter the base at this location.

- **Access along Bragg Boulevard at Knox Street**

Access on Bragg Boulevard (NC 24) from the Outer Loop north to Knox Street will be closed except for trucks rejected from the new central truck inspection plaza west of Bragg Boulevard (NC 24). The eastern access to Knox Street will be closed, except for major deployments from the base. Fort Bragg agreed to close this access to improve security and enhance traffic operations at the Outer Loop interchange with Bragg Boulevard (NC 24).

- **Fourth Street Extension**

Since the eastern Knox Street connection to Bragg Boulevard (NC 24) will be closed, access to the Fort Bragg Motor Pool Facilities located on Knox Street east of Bragg Boulevard (NC 24) will be provided with an extension of Fourth Street to Knox Street. The location, design, and construction of the Fourth Street Extension will be coordinated with Fort Bragg.

- **Access to Canopy Road and Reilly Road**

As noted above, access control plazas at the top of two ramps of the Canopy Lane interchange will allow access for military personnel only (i.e., "decal-only vehicles") onto the interchange. Non-military vehicles will be turned around at the control plazas at both Canopy Road and Reilly Road (SR 1403) and will not be able to enter the Outer Loop via this interchange. Instead, non-military traffic will be directed to access the Outer Loop via either the interchange at Cliffdale Road (SR 1400) or at All American Freeway (SR 1007).

- **Smith Lake Access Road**

The existing Smith Lake access road, located east of Murchison Road (NC 87/210), cannot be safely maintained from Murchison Road (NC 87/210). The access control limit requirements at the interchange with Murchison Road will necessitate closing of this access. The Smith Lake access road will be relocated to north and west of Simmons Airfield. New access will be provided from Honeycutt Road (SR 1613).

Every effort to minimize impacts to red-cockaded woodpecker (RCW) habitat will be taken by locating the road within previously cleared areas to the greatest extent possible. Two buildings will be relocated to accommodate the new access road. Coordination with Fort Bragg will be maintained through construction of the new access road to ensure that the buildings and access road are located to minimize RCW impacts and maintain the Smith Lake operations.

5.2.4.5 Fort Bragg Environmental Concerns

The Preferred Alternative preliminary designs were coordinated with Fort Bragg to incorporate measures to minimize impacts to the environmental resources located on the base.

- **Green Belt**

The Fort Bragg Green Belt was developed as a result of Section 7 consultation between the Army and the U.S. Fish and Wildlife Service during the construction of a new facility at Fort Bragg in 1992. To mitigate for impacts of the project on red-cockaded woodpeckers (RCW),

Fort Bragg agreed to develop a Green Belt design to maintain and provide habitat for RCW in the southern portion of the reservation. The Green Belt is bordered to the south by the City of Fayetteville. The Outer Loop project will impact the southern boundary of the Green Belt and foraging habitat associated with 13 RCW clusters located just inside of the Fort Bragg Boundary. The removal of habitat for the highway corridor will narrow the forested portion of the Green Belt.

- **Future Development**

Fort Bragg currently has plans for approximately 40 future projects to be built within the Green Belt through fiscal year 2009. These projects will further deplete foraging habitat for RCW within the Green Belt. These projects, and their impacts, have been considered and assessed in the Biological Assessment submitted for impacts to RWC and in the Indirect and Cumulative Impacts Report for the Fayetteville Outer Loop.

- **Wetlands and Streams**

The Fayetteville Outer Loop will impact approximately 3,500 linear feet of streams and 25 acres of wetlands on Fort Bragg. These impacts will be mitigated on Fort Bragg. In addition, Fort Bragg has agreed that mitigation opportunities on the base could be used to compensate for additional impacts throughout the project area. NCDOT and Fort Bragg are currently working to determine the amount of suitable mitigation area on the base.

Therefore, the change to the project in the Fort Bragg area between the DEIS and this document did not lead to any relevant impacts, or reveal any new information, which was not revealed in the DEIS.

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SECTION 6
IMPACTS OF THE PREFERRED ALTERNATIVE

As discussed in the previous section, the preliminary designs developed for the Preferred Alternative incorporated measures to minimize and/or avoid impacts to environmental resources within the Alternate D corridor identified in the DEIS. This section includes summaries of the results from the Phase II cultural resource studies, design noise analysis, and jurisdictional waters delineations conducted for the Preferred Alternative as well as discussions of specific impacts associated with the preliminary design. The impacts based on the preliminary designs incorporating these minimization measures are summarized in Table 6-1.

Table 6-1: Impacts of the Preferred Alternative

Resource	Units	Impacts
Corridor Length	Miles	27.8
Residential Relocations	Total	252
	Minority	69
Business Relocations	Total	8
	Minority	3
Non-Profit Relocations	Total	3
Right of Way	Parcels	477
Archaeological Resources	National Register Eligible Sites	10
Architectural Resources	National Register Eligible Sites	1
Potential Hazardous Materials Sites	Each	19
Wetlands	Acres	63.4
Stream Impacts	Linear Feet	12,833
Farmland	Acres	219.8
Noise (without sound barriers)	Impacted Properties	433
Sound Barriers	Feasible barriers	6
Noise (with sound barriers)	Impacted Properties	306
Air Quality 1-Hour	Carbon Monoxide (ppm)	2.8
Air Quality 8-Hour	Carbon Monoxide (ppm)	1.7
Utilities	Number of Crossings	32
Wetland/Stream Mitigation Cost	Dollars	*
Right of Way Cost	Dollars	99,356,000
Construction Cost	Dollars	483,200,000

* Not discernible at this time as it is uncertain what portion of the project's mitigation will be handled by NC Ecosystem Enhancement Program.

6.1 RELOCATION IMPACTS

The Preferred Alternative will impact a total of 477 parcels. The location of the Outer Loop and service roads were adjusted to avoid and minimize the impacts to properties.

As shown in the relocation reports included in Appendix C, a total of 263 relocations are anticipated with the project. Of the total relocations, 252 are residential; eight are businesses; and three are non-profits.

6.2 ENVIRONMENTAL JUSTICE ISSUES

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low Income Populations," directs all federal agencies to determine whether a proposed action will have an adverse or disproportionate impact on minority and/or low income populations. In compliance with Executive Order 12898, a review was completed to determine whether these social groups will experience disproportionately adverse health and/or environmental impacts from the proposed project.

6.2.1 Minority Populations

Within the project study area, approximately 48 percent of the population is comprised of minority groups, including African Americans, American Indians, Asians, and Hispanics. However, only 27 percent of residential relocations will impact minorities.

6.2.2 Low Income Populations

Median household income in the study area is slightly less than the state average. In Cumberland County, the median household income in areas impacted by the project is $41,400, which is greater than the countywide average of $37,466. In areas impacted by the proposed project in Hoke and Robeson Counties, the median household incomes are $35,901 and $27,254, respectively. In Hoke County, this is higher than the countywide median household income of $33,230, and in Robeson County it is comparable to the countywide average of $28,202.

6.2.3 Findings

The review of the minority populations relocated by the Preferred Alternative shows a lower percentage compared to the overall minority population of the surrounding area. Of 252 total residential relocations, 69, or 27 percent, are minority. Low income populations are not

disproportionately impacted by the project; therefore, the project is in compliance with Executive Order 12898.

6.3 CULTURAL RESOURCES

Archaeological and historic architectural resources were described in Section III of the DEIS, and Section IV of the DEIS included discussion on the impacts of the proposed project on these resources, in accordance with Section 106 of the National Historic Preservation Act. In coordination with the North Carolina State Historic Preservation Office (HPO), additional studies of archaeological and architectural resources were completed for the Preferred Alternative. The results of these studies are summarized below. In March 2004, regulatory agencies concurred with efforts to avoid and minimize impacts to archaeological and architectural resources. A copy of the Memorandum of Agreement with HPO is provided in Appendix E.

6.3.1 Archaeological Resources

6.3.1.1 Initial Archaeological Survey

In coordination with the HPO, an intensive archaeological survey was prepared for the Preferred Alternative. The specific findings of this survey are documented in Dimensions of Fall Line Site Function: Surveying and Testing the West Fayetteville North Carolina Outer Loop, Technical Report #992 by New South Associates (2002).

This initial survey identified forty-six cultural resources within the preferred corridor area, of which thirty-six qualified as archaeological sites, five were considered isolated finds (n artifacts =<5), and five were cemeteries. As a result of this survey, eighteen archaeological sites were recommended as eligible for the National Register of Historic Places (NHRP). Of these eighteen eligible archaeological sites, nine have been avoided by the preliminary design. The remaining nine eligible sites (31CD64, 31CD65, 31CD871, 31CD874, 31CD882, 31CD962, 31CD965, 31CD967/967**, and 31RB485) have a portion of their boundaries within the construction impact area of the project. Further work (i.e. data recovery efforts) is recommended at these impacted eligible sites. Preservation in place is not anticipated.

No further work is recommended on the twenty-three ineligible sites located within the corridor, including the fifteen that will be directly impacted by the construction. However, one of the

cemeteries (31CD976**) will need to be relocated per applicable State statutes (i.e. NC GS 65 or NC GS 70.3) after consultation with the Office of State Archaeology.

6.3.1.2 Archaeological Survey Addenda

In coordination with the HPO and the Fort Bragg Cultural Resources Program (FBCRP), three additional intensive archaeological surveys were prepared for expanded coverage of the Preferred Alternative. The specific findings of these surveys are documented in three separate addenda, which will be integrated into one appendix to be attached to the original 2002 survey report by New South Associates.

As part of the first addendum (*Cultural Resources Survey of 284 Acres South of Cliffdale Road, West Fayetteville Outer Loop, Cumberland and Hoke Counties, North Carolina*), forty-five parcels between Cliffdale Road and I-95 in western Cumberland and eastern Hoke Counties, North Carolina, were subjected to an intensive archaeological survey. These parcels were to be added to the western Fayetteville Outer Loop adjacent to lands already surveyed during previous work conducted by New South Associates. Ten cultural resources were identified within the expanded study area, of which seven qualified as archaeological sites and three were considered isolated finds (n artifacts =<5). As a result of this survey, one archaeological site (31CD1178) was recommended eligible for the NRHP. Site 31CD1178 has been avoided by the preliminary design. Of the remaining nine archaeological sites, seven were recommended as not eligible for the NRHP, one was previously subjected to mitigation efforts as a result of a prior NCDOT project (Robinson 1991), and one was destroyed by private borrowing activities in preparation for planting pines. In regards to the first expansion of the study area, no further work is recommended since no NRHP eligible sites were to be impacted by the project.

As part of the second addendum (*Cultural Resources Survey of 534 Acres North of Cliffdale Road, West Fayetteville Outer Loop, Cumberland County, North Carolina*), fourteen parcels between Cliffdale Road and McArthur Road in Cumberland County, North Carolina, were subjected to an intensive archaeological survey. These parcels were to be added to the western Fayetteville Outer Loop adjacent to lands already surveyed during previous work conducted by New South Associates. Twenty-one cultural resources were identified within the expanded study area, of which twelve qualified as archaeological sites and nine were considered isolated finds (n artifacts =<5). As a result of this survey, one archaeological site (31CD1181) was recommended eligible for the NHRP. Site 31CD1181 will not be impacted by the proposed design. All eleven remaining archaeological sites

were recommended as not eligible for the NRHP. Therefore, in regards to the second expansion of the study area, no further work is recommended since no NRHP eligible sites were to be impacted by the project.

As part of the third addendum (*Cultural Resources Survey of 31 Additional Land Parcels of the Proposed West Fayetteville Outer Loop, Cumberland and Robeson Counties, North Carolina*), thirty-one parcels between I-95 and McArthur Road in eastern Robeson and western Cumberland Counties, North Carolina, were subjected to an intensive archaeological survey. These parcels were to be added to the western Fayetteville Outer Loop adjacent to lands already surveyed during previous work conducted by New South Associates. Six cultural resources were identified, or revisited, within the expanded study area, of which three qualified as archaeological sites, one was considered an isolated find (n artifacts =<5), one was a cemetery (31CD106**), and one was a cemetery with an archaeological component (31CD967/967**). As a result of this survey, the three archaeological sites and isolated find were recommended as not eligible for the NHRP. The Whitehead Cemetery (31CD106**) will not be impacted by the proposed project. The prehistoric archaeological component of 31CD967/967** will not be impacted by the proposed project, but its historic cemetery component requires a GPR survey in order to determine the locations of unmarked burials that may or may not be impacted by the proposed project. In regards to the third expansion of the study area, no further work is recommended for any of the archaeological sites or isolated finds since no NRHP eligible sites are to be impacted by the project. However, if burials associated with 31CD967/967** are to be impacted by the proposed project, then such burials will be relocated per applicable State statutes (i.e. NC GS 65 or NC GS 70.3) after consultation with the Office of State Archaeology.

6.3.1.3 Additional Archaeological Work Required

For impacted archaeological sites identified as being eligible for the National Register, additional work is recommended to mitigate for impacts. Table 6-2 contains a summary of the work required for each site.

Table 6-2: Additional Archaeological Work

Site No.	TIP Section	NRHP Status	Resource Type	Impacted by the Project*	NCDOT Recommendations	On Bragg Property
31CD64	U-2519CB	Eligible	Site	Yes	Phase III Data Recovery	Yes
31CD65	U-2519CB	Eligible	Site	Yes	Phase III Data Recovery	Yes
31CD871	X-0002C	Eligible	Site	Yes	Phase III Data Recovery	Yes
31CD874	X-0002C	Eligible	Site	Yes	Phase III Data Recovery	No
31CD882	U-2519CB	Eligible	Site	Yes	Phase III Data Recovery	No
31CD962	U-2519CA	Eligible	Site	Yes	Phase III Data Recovery	No
31CD965	U-2519CA	Eligible	Site	Yes	Phase III Data Recovery	No
31CD967/967**	U-2519AB	Eligible^	Site/ Cemetery	Maybe^	GPR, Avoid or Relocate per GS 65/70	No
31CD976**	U-2519BA	--	Cemetery	Yes	Avoid or Relocate per GS 65/70	No
31RB485	U-2519AA	Eligible	Site	Yes	Phase III Data Recovery	No

* All sites listed are located with the project corridor. Those marked "Yes" will be impacted to some degree by the project (i.e. they are within 10ft of the cut/fill construction line).
^ The prehistoric component of Site 31CD967/967** will be avoided by the project; however, GPR is required in order to delineate the historic cemetery component, which may or may not be impacted by the project.

6.3.2 Historic Architectural Resources

Intensive architectural surveys for the project were prepared in 1997 and 2004. As presented in the DEIS, two historic properties are located within the Preferred Alternative corridor, the Keithville Rental Units and the Shaw-Gillis Historic District. In accordance with Section 106 of the National Historic Preservation Act, the project is anticipated to have no adverse effect to the Keithville Rental Units and a conditional no adverse effect to the Shaw-Gillis Historic District.

Mitigation measures were incorporated into the project to minimize impacts to these two resources:

- For the Shaw-Gillis property, a retaining wall will be provided along the project to reduce the right-of-way acquisition; landscaping will be provided; and Raeford Road (SR 3569) will be closed. The Section 4(f) Evaluation for this property is included in Section 7 of this FEIS.

- For the Keithville Rental Units, a retaining wall will be provided to avoid acquisition of any of the property. HPO requested vegetative screening be added along the Bragg Boulevard interchange to reduce visual impacts to the property. The HPO concurred with the Preferred Alternative and mitigation measures in March 2004.

Since the DEIS was prepared, the project study area was extended along Bragg Boulevard (NC 24) to just north of the intersection with Shaw Road (SR 1437) to connect with a widening project along Bragg Boulevard. A portion of the Buena Vista property, which is located at the intersection of Bragg Boulevard (NC 24) and Shaw Road (SR 1437), is now within the Preferred Alternative corridor. TIP project U-3423 includes widening Bragg Boulevard (NC 24) to six lanes from US 401 Bypass to just north of Shaw Road (SR 1437). The alignment of the Preferred Alternative was shifted to the west to completely avoid the Buena Vista property.

In addition, the project study area was extended along Bragg Boulevard (NC 24) north to the intersection of Gruber Road to allow for control of access entering Fort Bragg. As a result, a portion of the Stryker Golf Course, located west of Bragg Boulevard between Knox Street and Gruber Road, falls within the study corridor. Stryker Golf Course has been determined eligible for the NRHP; however, no right of way will be required within the Golf Course boundaries.

Studies within the additional corridor areas were conducted in November 2004. In accordance with Section 106 of the Historic Preservation Act, the results of the additional studies within the corridor limits and preliminary designs for the Preferred Alternative were coordinated with HPO on September 27, 2004 and March 29, 2005. HPO provided the following determinations of effect for each of the properties:

- Buena Vista Property – No Adverse Effect
- Keithville Rental Units – No Adverse Effect
- Shaw-Gillis Historic District – No Adverse Effect
- Stryker Golf Course – No Effect

The correspondence from the HPO is included in Appendix E.

6.4 AIR QUALITY IMPACTS

The air quality analysis for the project was updated for the 2025 traffic data and documented in the September 2004 *Air Quality Analysis for the Fayetteville Outer Loop* Technical Report. The findings remained as denoted in the 1999 DEIS; the Preferred Alternative will not create any adverse effects on the air quality of the Fayetteville attainment area. In comparing the projected carbon monoxide (CO) concentrations levels with the National Ambient Air Quality Standards, no violations of the 1-hour standard (35 ppm) or 8-hour standard (9 ppm) are expected. The 1-hour and 8-hour CO

concentrations for the year 2025 are not expected to exceed 4.4 ppm and 3.4 ppm (including background contributions), respectively, at any of the investigated sites.

6.5 DESIGN NOISE STUDY

Final design noise analyses were conducted to determine if noise levels generated along the Preferred Alternative will exceed criteria established by the FHWA. Detailed results of the noise analyses are presented in the following documents:

- *Noise Study and Evaluation, Fayetteville Outer Loop, I-95 to Cliffdale Road* (H.W. Lochner, 2005);
- *Noise Impact Assessment for the Fayetteville Outer Loop from East of NC 24 (Bragg Boulevard) to US 401 (South Raeford Road)* (H.W. Lochner, 2005);
- *Design Noise Report, Fayetteville Outer Loop from South of SR 1400 (Cliffdale Road) to East of SR 1415 (Yadkin Road)* (NCDOT, 2001); and,
- *Design Noise Report, Fayetteville Outer Loop from East of SR 1415 (Yadkin Road) to East of NC 24 (Bragg Boulevard)* (Florence & Hutcheson, 2000).

The following text provides a summary of the analysis methodology, results, and abatement measures considered for the project.

6.5.1 Noise Analysis

The noise analysis was conducted in accordance with FHWA requirements as detailed in Part 772 of Title 23 of the Code of Federal Regulations (23 CFR Part 772) and the NCDOT guidelines on highway noise.

Noise abatement measures are considered when predicted noise levels "approach or exceed" the FHWA Noise Abatement Criteria (NAC) or when predicted noise levels will substantially exceed existing noise levels. The State of North Carolina has defined "approach" as one decibel less than the NAC. The federal guidelines provide a second criterion for assessing impact. For some locations, a project may impose a large increase in noise levels over existing levels, although the levels may not reach the NAC. The NCDOT Traffic Noise Abatement Policy defines a sliding scale of increases over existing as a "substantial increase" that justify consideration of noise abatement measures.

Sliding Scale

Existing Leq(h)	Increase
50 or less dB(A)	15 or more dB(A)
51 dB(A)	14 or more dB(A)
52 dB(A)	13 or more dB(A)
53 dB(A)	12 or more dB(A)
54 dB(A)	11 or more dB(A)
55 or more dB(A)	10 or more dB(A)

Table 6-3: Summary of Noise Impacted Properties

Number of Impacted Receptors			
Approach, Equal, or Exceed NAC	**Substantial Increase**	**Both Criteria Exceeded**	**Total**
116	97	110	433

NCDOT guidelines consider 66 dBA Leq for residential areas and 71 dBA Leq for commercial areas as levels approaching FHWA noise abatement criteria (NAC)

Seventeen mitigation study areas were modeled using the FHWA's Computer Programs TNM 1.1 or TNM 2.5 to determine if barriers will be reasonable and feasible in these locations. Table 6-3 presents the results of the barrier analyses. The average reduction in decibels includes only the receptors that are benefited 5 dBA or more. Noise walls at Mitigation Study Areas 7, 8, 9, 10, 11, and 12 (see Table 6-4) are the only cost effective barriers of the fifteen evaluated, with the cost per receptor at $39,375; $38,571; $8,518; $13,510; $8,590; and $24,539, respectively. Cost effective barriers are shown on Exhibit 6-1. A noise abatement measure is considered cost-effective by NCDOT policy if the cost of the measures per protected residential property does not exceed $35,000 plus an incremental increase of $500 per dB(A) average increase.

6.5.2 Information on Noise for Local Officials

It is the policy of NCDOT that the type of material used in construction of noise abatement measures be an engineering decision based on economics, effectiveness, and to a limited degree, visual impact. Visual impact considerations assure that a barrier meets a basic aesthetic level and a basic durability level such that excessive deterioration or corrosion will not occur.

It is also a part of this policy to have traditional highway resources pay for the required noise abatement. Should a local jurisdiction request that a material be used for the noise barrier that is more costly than that proposed by NCDOT, the requesting body must assume 100 percent of the additional cost.

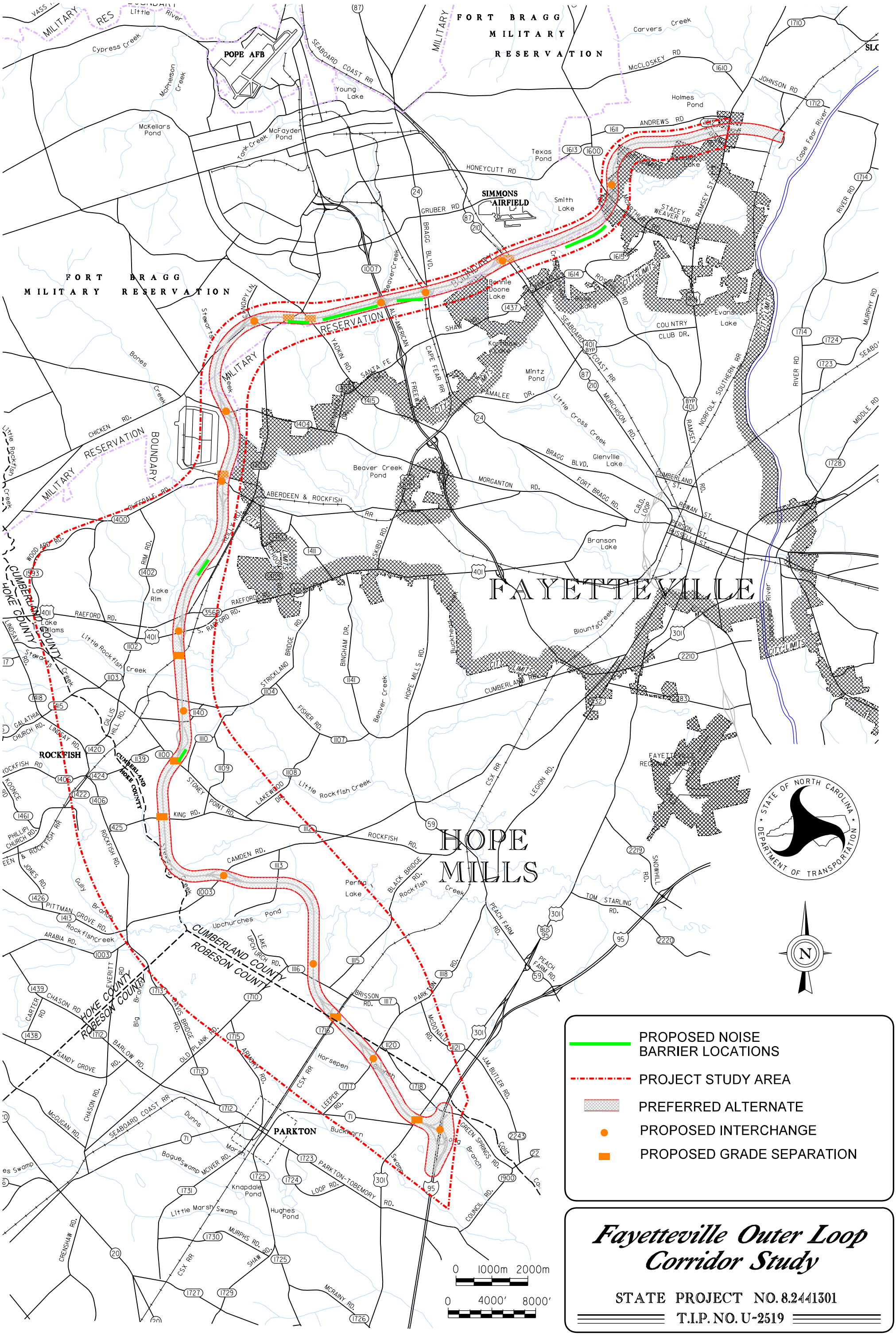
If a local jurisdiction insists on the provision of a noise abatement measure deemed feasible but not reasonable by NCDOT, a noise barrier may be installed, provided the locality is willing to assume 100 percent of the cost of the abatement measure, including but not limited to, preliminary engineering, construction, maintenance, and that NCDOT's material, design and construction specifications are met.

Table 6-4: Noise Barrier Evaluation

Mitigation Study Area	Receptor #'s	Benefited Receptors	Barrier Length ft (m)	Barrier Height ft (m)	Approximate Cost	Cost per Receptor
1	3-5	0	1,000 (305)	25 (7.5)	$375,000	---
2	88-117	18	2,200 (671)	25 (7.5)	$825,000	$45,833
3	173-182	4	800 (244)	25 (7.5)	$300,000	$75,000
4	194-196	1	500 (152)	15 (4.5)	$112,500	$112,500
5	197-218	11	2,200 (671)	25 (7.5)	$825,000	$75,000
6	184-193	1	800 (244)	15 (4.5)	$180,000	$180,000
7	228-235	3	525 (160)	15 (4.5)	$118,125	$39,375
8	289-298	7	1,200 (366)	15 (4.5)	$270,000	$38,571
9	434-473	37	1,779 (542)	10-14	$315,180	$8,518
10	525-604	75	4,757 (1,450)	(3-6)	$1,013,310	$13,510
11	664-722	47	470 (1,542)	(4.5-7)	$403,800	$8,590
12	792-892	20	3,422 (1,043)	(4)	$396,000	$20,000
13		2	(264)	(4)	$171,000	43,000
14	956-962 970-976	6	1,625 (500)	(4)	$320,000	$64,000
15	963-969	1	1,148 (350)	(4)	$226,000	$226,000

Note: Noise wall at Areas 7, 8, 9, 10, 11, and 12, shaded in the table, are considered cost effective barriers.

In an effort to prevent future noise impacts on currently undeveloped lands, NCDOT uses the following criteria:



Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

Proposed Noise Barrier Locations

Exhibit 6-1

- The "Date of Public Knowledge" is the approval date of Categorical Exclusions (CE), Findings of No Significant Impact (FONSI), Record of Decision (ROD), or the Design Public Hearing, whichever comes later. After the Date of Public Knowledge, Federal/State governments are no longer responsible for providing noise abatement measures for new development for which building permits are issued within the noise impact area of the proposed highway project.

- For development occurring after this public knowledge date, it is the responsibility of the local governing bodies to ensure that noise compatible designs are utilized.

- The date for determining when undeveloped land is "…planned, designed and programmed…" for development will be the issuance of a building permit for an individual site.

The information on projected noise level contours for each Detailed Study Corridor shown in Table 6-5 should assist local authorities in exercising land use control over the remaining undeveloped lands adjacent to the roadway within the local jurisdiction. For example, with the proper information on noise, the local authorities can prevent development of incompatible activities and land uses with the predicted noise levels of an adjacent highway.

Table 6-5: Distance to Fayetteville Outer Loop 2025 Noise Contours

Fayetteville Outer Loop Segment	Contour Distances* ft (m)	
	67 dBA	71 dBA
I-95 to Leeper Road	160 (49)	90 (27)
Leeper Road to Old Plank Road	170 (52)	100 (30)
Old Plank Road to Camden Road	160 (49)	100 (30)
Camden Road to Strickland Bridge Road	160 (49)	100 (30)
Strickland Bridge Road to US 401	180 (55)	110 (34)
US 401 to Cliffdale Road	180 (55)	110 (34)
Cliffdale Road to Morganton Road	221 (67)	138 (42)
Morganton Road to Yadkin Road	282 (86)	123 (37)
Yadkin Road to All American Freeway	354 (108)	187 (57)
All American Freeway to Bragg Boulevard	236 (72)	85 (26)
Bragg Boulevard to Murchison Road	310 (95)	235 (75)
Murchison Road to McArthur Road	270 (85)	180 (55)
McArthur Road to US 401	235 (70)	140 (45)

* Contour distances are measured from center of roadway.

6.6 PROTECTED SPECIES

Under federal law, any action that is likely to result in a negative impact to federally protected plants or animals is subject to review by the USFWS, under one or more provisions of the Endangered Species Act (ESA) of 1973. Field surveys were initially performed for all protected species in the build corridors in 1997. In May 2001 and August 2004, all areas of suitable habitat within the Preferred Alternative corridor were surveyed again for all listed species, including St. Francis' satyr butterfly (*Neonympha mitchelli francisca*) and red-cockaded woodpecker (RCW) (*Picoides borealis*).

Habitat exists within the Preferred Alternative corridor for federally protected plant species including American chaffseed (*Schwalbea americana*), southern spicebush (*Lindera melissifolia*), rough-leaf loosestrife (*Lysimachia asperulaefolia*), and Michaux's sumac (*Rhus michauxii*); however, no individuals have been located to date. Suitable habitat also exists within the corridor for St. Francis' satyr butterfly and for American alligator (*Alligator mississippiensis*), but field surveys have located no individuals.

A Biological Assessment (BA) providing Biological Conclusions for the red-cockaded woodpecker was submitted to the USFWS in September 2004. A separate BA for the remaining federally-protected species listed in Cumberland, Robeson, and Hoke Counties was submitted in October 2004. The Biological Opinion for the project was issued on April 28, 2005. Its conclusions include:

- The Fayetteville Outer Loop Project is not likely to jeopardize the continued existence of the RCW.
- No designated RCW critical habitat will be affected.
- One RCW cluster will be immediately subject to "take" due to direct impacts of the project. The "take" will be accounted for through the debiting/crediting process for the Calaway Tract. This would be considered an incidental take.
- Indirect effects of the highway project will be offset in the long term by cooperative efforts between NCDOT and other members of the North Carolina Sandhills Conservation Partnership to secure a demographic link for the RCW.

The USFWS recommends that NCDOT work with members of the North Carolina Sandhills Conservation Partnership to acquire a previously identified property, which contains approximately 75 acres of habitat that can be managed to create/maintain foraging habitat for RCW. USFWS also recommends that NCDOT coordinate with Fort Bragg and USFWS to establish and implement the best strategy for minimizing direct impacts of tree clearing and highway construction to the cluster subject to "take."

Additional surveys for all the protected species, except the red-cockaded woodpecker will be prepared again for the project prior to construction. These surveys and associated findings will be coordinated with USFWS.

6.6.1 Red-cockaded Woodpecker

Survey results show no RCW cavity trees and no active or inactive clusters within the corridor south of Cliffdale Road (SR 1400). The proposed Fayetteville Outer Loop project will impact foraging

habitat and result in one incidental take from the southern boundary of the Fort Bragg Green Belt north of Cliffdale Road.

The Green Belt was developed by Fort Bragg in 1992. The Green Belt Plan includes coordination between Fort Bragg and the USFWS to maintain suitable foraging habitat for existing RCWs and encourage new active clusters of RCWs. Regulations in the Green Belt are further formalized in the 1997 Fort Bragg and Camp Mackall Endangered Species Management Plan.

The project will impact foraging habitat associated with 13 RCW clusters located just inside (north) of the Fort Bragg boundary. Of the 356.65 acres of land on Fort Bragg that the project will occupy, 172 acres are located in RCW foraging habitat partitions. This acreage is considered unsuitable RCW habitat according to the Recovery Standard Guidelines, the stricter of two RCW management protocols established by USFWS. Nonetheless, the removal of habitat for the highway corridor will narrow the forested portion of the Green Belt. Prior to foraging habitat removals due to the proposed highway project, the southern portion of the Green Belt is only one RCW territory wide in places. Pre-project, the Green Belt clusters impacted by the project have an average density of 2.8 clusters per 1.25 mile radius.[1] Post-project, the impacted Green Belt clusters have an average density of 2.4 clusters/1.25 miles radius. These average cluster densities make these clusters vulnerable to abandonment.

On Fort Bragg, four cavity trees in one managed cluster (FB 65) will be removed due to the proposed highway corridor. In addition, seven cavity trees in three managed clusters (FB 208, 267, and 528) will be located within 200 feet of the proposed highway or Fort Bragg patrol roads. Three relic cavity trees[2] within two clusters (CC 10 and 17) located on private lands will be removed, and one private land relic cavity tree (CC 17) will be within 200 feet of the proposed highway.

The BA includes a Biological Conclusion of "May Affect, Likely to Adversely Affect." An incidental take will result due to removal of cavity trees by the proposed project at Cluster FB 65. Four of Cluster FB 65's ten cavity trees will be removed, including two active cavities and two active starts. A Biological Opinion confirming the conclusion of "May Affect, Likely to Adversely Affect" was approved on April 28, 2005.

[1] Population densities of 2.5 active groups or less within 1.25 miles are considered low.
[2] Relic cavity trees are trees that have not been used in at least five years.

6.6.2 Avoidance and Minimization

To minimize impacts to the RCW, the right of way for the preliminary plans was reduced between Cliffdale Road and Yadkin Road and east of Murchison Road by reducing the median width from 70 feet to 46 feet. This reduction allows for maintenance of the maximum amount of foraging habitat. In addition, where possible, existing alignments were utilized for Fort Bragg patrol roads/tank trails. Relocated roads within the Green Belt, including the Smith Lake access road and Knox Street/Fourth Street Extension, make utmost use of previously-cleared areas to minimize tree removal from potential foraging habitat. The Merger Team concurred on March 16, 2004 that sufficient effort had been taken to avoid and minimize impacts to the RCW to the maximum extent practicable.

6.7 JURISDICTIONAL WATERS

The project area is located in sub-basins of the Lumber River Basin and the Cape Fear Basin. The Lumber River Basin (Table 6-6) encompasses a small portion of the project area and drains the southern quarter of the project area. The remainder of the project is within the Cape Fear River Basin (Table 6-7).

Water bodies such as rivers, lakes, and streams are subject to jurisdictional consideration under the Section 404 program of the Clean Water Act. Additionally, wetlands are also classified as "Waters of the United States" and are subject to jurisdictional consideration.

Table 6-6: Lumber River Drainages in the Study Area

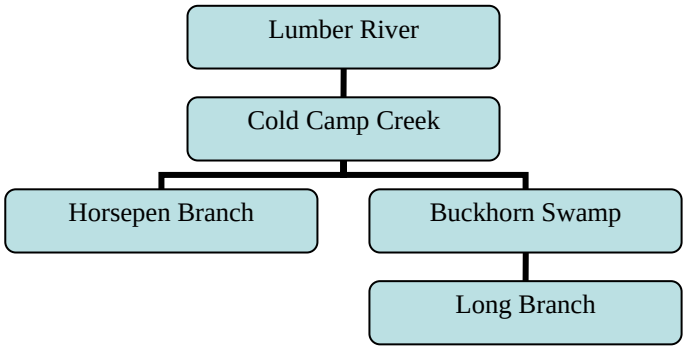
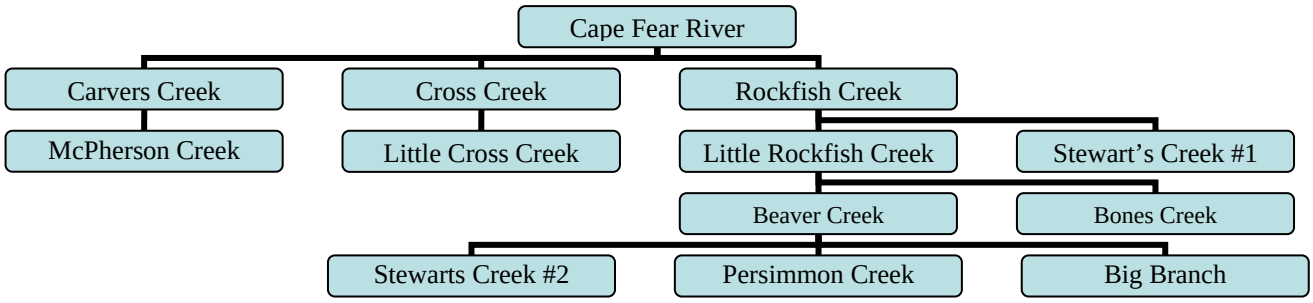


Table 6-7: Cape Fear River Drainages in the Study Area



6.7.1 Streams

Stream delineations were completed for the Preferred Alternative corridor. Jurisdictional streams were defined in the field based on Section 404 regulations and USACE guidance. Within the preferred corridor, approximately 53,300 linear feet of streams were delineated. Of this, approximately 12,800 linear feet will be impacted[3] by the Preferred Alternative. Mitigation will be required for approximately 11,200 linear feet of these impacts. The remaining impacts require no mitigation. Table 6-9 contains a listing of streams in the project area. Approximately 13.5 acres of ponds[4] were identified in the preferred corridor. The Preferred Alternative will impact approximately three acres of ponds. Ponds are shown in Table 6-8.

6.7.2 Wetlands

The wetlands were delineated for the Preferred Alternative using the guidelines defined by EPA and USACE:

> "Those areas that are inundated or saturated by groundwater at a frequency and duration sufficient to support, and 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)].

[3] Impact totals include area within the slope stakes plus 10 feet outside slope stakes to account for mechanized clearing impacts.
[4] Includes all wetland and deepwater habitats with at least 35 percent cover of particles smaller than stones and less then 30 percent vegetative cover creating a lack of large stable surfaces for plan and animal attachment.

Table 6-8: Jurisdictional Pond Impacts

SITE ID	Sub-basin	Type*	Total Acreage in Corridor	Total Acreage Impacted (Stakes + 10 ft)
Z-41	03-07-53	PUB	1.00	0.12
Z-60	03-06-15	PUB	0.26	0.00
Z-59	03-06-15	PUB	1.18	0.00
Z-55a	03-06-15	PUB	4.78	0.03
Z-55b	03-06-15	PUB	0.09	0.00
Z-9	03-06-15	PUB	0.15	0.07
Z-7.5	03-06-15	PUB	0.13	0.00
Z-2	03-06-15	PUB	0.39	0.00
D	03-06-15	PUB	2.71	1.98
56A	03-06-15	PUB	2.20	0.84
56B	03-06-15	PUB	0.55	0.00
56C	03-06-15	PUB	0.10	0.00
Total			13.55	3.04

* Palustrine Unconsolidated Bottom (PUB)-- Includes all wetland and deep water habitats with at least 25 percent cover of particles smaller than stones, and less than 30 percent vegetative cover creating a lack of large stable surfaces for plant and animal attachment.

Wetlands subject to review under Section 404 of the CWA (33 U.S.C. 1344) were defined for the project area and identified using the three parameter approach (soils, vegetation, and hydrology) detailed in the 1987 USACE Manual for Identification and Delineation of Jurisdictional Wetlands. The wetlands within the project area were identified in 1995. In 2001 through 2004, wetlands within the preferred corridor were delineated and the details of the delineations are included in the November 2004 Fayetteville Outer Loop "Final Jurisdictional Waters Report." The delineated features were verified by the USACE during field verification meetings on August 28 and 29, 2001, December 16, 2003, and October 12 and 13, 2004. A total of approximately 315 acres of wetlands were delineated within the preferred corridor. Approximately 60 acres will be impacted by the Preferred Alternative. Table 6-10 lists wetlands within the corridor.

Table 6-9: Jurisdictional Stream Impacts

SITE ID	Stream Name	Sub-basin	Stream Index Number	Best Usage Class	Perennial/ Intermittent	Cold/ Cool/Warm	Depth (feet)	Width (feet)	Substrate	Pool/Riffle Complex	USACE Score	NCDWQ Score	Mitigation Required	Total Linear Ft Impacted (Stakes + 10 ft)
Z-40	Buckhorn Swamp	03-07-53	14-22-1-2	C, Sw	Perennial	Warm	15-20	5-7	Sand/Silt	No	N/A	45.50	Yes	0
Z-24	Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Perennial	Warm	45-50	5-7	Sand/Silt	Yes	76	38.25	Yes	184
Z-23	Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Perennial	Warm	6-8	7	Sand/Silt	No	N/A	41	Yes	168
Z-23a	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	4	6	Sand/Silt	No	15	N/A	No	238
Z-23b	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	2-3	4	Sand/Silt	No	12	N/A	No	97
Z-22	Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Perennial	Warm	10	6	Sand/Silt	No	37	23	Yes	779
UTZ-22	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	4-6	5	Sand/Silt	No	15	11.75	Yes	880
2UTZ-22	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	8	6	Sand/Silt	No	14	8	No	497
3UTZ-22	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	8	6	Sand/Silt	No	9	N/A	No	0
4UTZ-22	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	8	8	Sand/Silt	No	17	N/A	No	0
5UTZ-22	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	4-6	4.5	Sand/Silt	No	21	N/A	Yes	0
6UTZ-22	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	4-6	5	Sand/Silt	No	23	33.00	Yes	0
Z-66	Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Perennial	Warm	7-8	5-6	Sand/Silt	No	33	21.00	Yes	1000
UTZ-66	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	4	6	Sand/Silt	No	12	N/A	No	444
2UTZ-66	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	2	.5-1	Sand/Silt	No	6	N/A	No	137
3UTZ-66	UT to Horsepen Branch	03-07-53	14-22-1-1-1	C, Sw	Intermittent	Warm	2	.5-1	Sand/Silt	No	18	N/A	No	0

Table 6-9: Jurisdictional Stream Impacts

SITE ID	Stream Name	Sub-basin	Stream Index Number	Best Usage Class	Perennial/ Intermittent	Cold/ Cool/Warm	Depth (feet)	Width (feet)	Substrate	Pool/Riffle Complex	USACE Score	NCDWQ Score	Mitigation Required	Total Linear Ft Impacted (Stakes + 10 ft)
Z-64	Cold Camp Creek	03-07-53	14-22-1-1	C, Sw	Perennial	Warm	Upstream 15 Downstream 45	Upstream 4 Downstream 5	Sand/Silt	Yes	Upstream 51 Downstream 69	Upstream 26.25 Downstream 33	Yes	554
Z-61	UT to Rockfish Creek	03-06-15	18-31-(18)	B	Perennial	Warm	3-5	3-15	Sand/Silt	Yes	N/A	37.8	Yes	0
Z-14	UT to Rockfish Creek	03-06-15	18-31-(18)	B	Perennial	Warm	4-6	25-40	Sand/Silt	Yes	N/A	44	Yes	0
Z-56	UT to Stewarts Creek #1	03-06-15	18-31-21	C	Perennial	Warm	3-5	5-7	Sand/Silt	Yes	N/A	40	Yes	331
Z-9	UT to Little Rockfish Creek	03-06-15	18-31-24-(3)	B	Intermittent	Warm	Upstream 10-12 Midstream 4-6 Downstream 4	Upstream 6 Midstream 1-4 Downstream 1	Sand/Silt	No	Upstream 14 Midstream 40 Downstream 37	Upstream 17.25 Midstream 22.50 Downstream 22	Yes	1585
Z-7.5	UT to Little Rockfish Creek	03-06-15	18-31-24-(1)	C	Perennial	Warm	2-5	5-10	Sand/Silt	Yes	N/A	29.50	Yes	301
Z-7	UT to Little Rockfish Creek	03-06-15	18-31-24-(1)	C	Perennial	Warm	3-6	15-20	Sand/Silt	Yes	N/A	47.50	Yes	0
Z-6	UT to Bones Creek	03-06-15	18-31-24-2	C	Perennial	Warm	5-7	13-30	Sand/Silt	Yes	N/A	43.50	Yes	44
Z-5	UT to Bones Creek	03-06-15	18-31-24-2	C	Perennial	Warm	3-5	4	Sand/Silt	Yes	N/A	31	Yes	0
Z-4	UT to Bones Creek	03-06-15	18-31-24-2	C	Intermittent	Warm	3-5	4	Sand/Silt	No	N/A	22.25	Yes	0
Z-2	UT to Bones Creek	03-06-15	18-31-24-2	C	Intermittent (up) Intermittent (mid) Perennial (down)	Warm	Upstream 2-4 Downstream 10	2-4 Upstream 3-5 Downstream	Sand/Silt	No	Upstream 29 Midstream 29 Downstream N/A	Upstream 11 Midstream 18.5 Downstream 28.25	Upstream No Midstream Yes Downstream Yes	371
Z-1	UT to Bones Creek	03-06-15	18-31-24-2	C	Perennial	Warm	1-2	1	Sand/Silt	Yes	N/A	33.25	Yes	0
BC	Bones Creek	03-06-15	18-31-24-2	C	Perennial	Warm	8-12	1-5	Sand/Silt	Yes	64	32.5	Yes	0
Z-67	UT to Bones Creek	03-06-15	18-31-24-2	C	Perennial	Warm	3-4	1-2	Sand/Silt	Yes	N/A	34.25	Yes	0
B	Stewarts Creek #2	03-06-15	18-31-24-5-4	C	Perennial	Warm	2-20	3-10	Sand/Silt	Yes	75	48.5	Yes	0
UTB	UT to Stewarts Creek #2	03-06-15	18-31-24-5-4	C	Perennial	Warm	2-4	1-5	Sand/Silt	Yes	65	38.75	Yes	0

Table 6-9: Jurisdictional Stream Impacts

SITE ID	Stream Name	Sub-basin	Stream Index Number	Best Usage Class	Perennial/ Intermittent	Cold/ Cool/Warm	Depth (feet)	Width (feet)	Substrate	Pool/Riffle Complex	USACE Score	NCDWQ Score	Mitigation Required	Total Linear Ft Impacted (Stakes + 10 ft)
2UTB	UT to Stewarts Creek #2	03-06-15	18-31-24-5-4	C	Perennial	Warm	3	.5-1	Sand/Silt	Yes	65	29.25	Yes	77
C	Stewarts Creek #2	03-06-15	18-31-24-5-4	C	Perennial	Warm	4-8	1-6	Sand/Silt	No	78	40.5	Yes	0
S	UT to Stewarts Creek #2	03-06-15	18-31-24-5-4	C	Perennial	Warm	1-4	.5-3	Sand/Silt	Yes	62	23.75	Yes	680
UTS	UT to Stewarts Creek #2	03-06-15	18-31-24-5-4	C	Perennial	Warm	2-4	1-4	Sand/Silt	Yes	55	26	Yes	428
U	UT to Persimmon Creek	03-06-15	18-31-24-5-3	C	Perennial	Warm	2-6	2-6	Sand/Silt	No	51	27.50	Yes	0
V	UT to Persimmon Creek	03-06-15	18-31-24-5-3	C	Perennial	Warm	2-4	2-4	Sand/Silt	No	39	30	Yes	0
N	UT to Big Branch	03-06-15	18-31-24-5-1	C	Perennial	Warm	7	1-3	Sand/Silt	Yes	59	40.25	Yes	435
G	Beaver Creek	03-06-15	18-31-19-5	C	Perennial	Warm	3-10	3-7	Sand/Silt	Yes	81	47	Yes	1056
M	Little Cross Creek	03-06-15	18-27-4-(1)	WS-IV	Intermittent (up) Perennial (down)	Warm	Upstream 3-4 Downstream 3-6	Upstream 2-4 Downstream 3-12	Sand/Silt	Yes	50	Upstream 24 Downstream 34.75	Yes	199
UTM	UT to Little Cross Creek	03-06-15	18-27-4-(1)	WS-IV	Intermittent	Warm	1-3	4-6	Sand/Silt	No	45	Upstream 16.25 Downstream 22.5	No	0
2UTM	UT to Little Cross Creek	03-06-15	18-27-4-(1)	WS-IV	Intermittent	Warm	1-3	.5-1	Sand/Silt	Yes	46	16.5	Yes	101
L	Little Cross Creek	03-06-15	18-27-4-(1)	WS-IV	Perennial	Warm	3-8	.5-2	Sand/Silt	Yes	N/A	34.75	Yes	499
1UTL	UT to Little Cross Creek	03-06-15	18-27-4-(1)	WS-IV	Perennial	Warm	2-12	.5-2	Sand/Silt	Yes	65	36.50	Yes	0
2UTL	UT to Little Cross Creek	03-06-15	18-27-4-(1)	WS-IV	Perennial	Warm	6-12	4-8	Sand/Silt	No	38	27.50	Yes	0
3UTL	UT to Little Cross Creek	03-06-15	18-27-4-(1)	WS-IV	Perennial	Warm	4-6	3-4	Sand/Silt	Yes	83	35.25	Yes	0
D	UT to Cross Creek	03-06-15	18-27-(1)	WS-IV	Perennial	Warm	2-4	.5-2.5	Sand/Silt	Yes	59	25.5	Yes	0
A	UT to Cross Creek	03-06-15	18-27-(1)	WS-IV	Perennial	Warm	Upstream 2-3 Downstream 2-6	2 Upstream 2 Downstream .5-2	Sand/Silt	Yes	Upstream 58 Downstream 74	Upstream 28 Downstream 32.75	Yes	230

Table 6-9: Jurisdictional Stream Impacts

SITE ID	Stream Name	Sub-basin	Stream Index Number	Best Usage Class	Perennial/ Intermittent	Cold/ Cool/Warm	Depth (feet)	Width (feet)	Substrate	Pool/Riffle Complex	USACE Score	NCDWQ Score	Mitigation Required	Total Linear Ft Impacted (Stakes + 10 ft)
56	McPherson Creek	03-06-15	18-24-3-(1)	WS-IV	Perennial	Warm	3-5	.5-1	Sand/Silt	Yes	N/A	26.5	Yes	845
UT56	UT to McPherson Creek	03-06-15	18-24-3-(1)	WS-IV	Intermittent	Warm	1-3	1-2	Sand/Silt	Yes	33	21.75	No	217
56A	UT to McPherson Creek	03-06-15	18-24-3-(1)	WS-IV	Perennial	Warm	3-4	.5-2	Sand/Silt	Yes	47	21.5	Yes	0
55	UT to McPherson Creek	03-06-15	18-24-3-(1)	WS-IV	Perennial	Warm	5-7	.5-1.5	Sand/Silt	Yes	N/A	42.75	Yes	0
54	UT to McPherson Creek	03-06-15	18-24-3-(1)	WS-IV	Perennial	Warm	2-3	1.5-2	Sand/Silt	Yes	N/A	30.75	Yes	0
53	UT to McPherson Creek	03-06-15	18-24-3-(1)	WS-IV	Perennial	Warm	3-4	1-2	Sand/Silt	Yes	N/A	28.5	Yes	454
UT53	UT to McPherson Creek	03-06-16	18-24-3-(1)	WS-IV	Perennial	Warm	1-3	.5-1.5	Sand/Silt	Yes	53	27.75	Yes	0
													TOTAL IMPACTS	12,833**

N/A = not applicable; feature is a man-made ditch, so use of the NCDWQ stream rating form is not necessary
* = Linear Feet Avoided/Minimized assumes impact area extends to 10-ft beyond slope stakes.
** = Of the total impacted stream length, mitigation is required for 11,203 linear feet. No mitigation is required for the remaining 1,630 linear feet

6.7.3 Avoidance and Minimization

Avoidance and minimization measures were incorporated throughout the project planning and design process to minimize impacts to human and natural resources. The Merger Team concurred with these efforts on March 16, 2004. The following are specific examples of minimization efforts:

- Site Z-7.5 – a grade separation was removed to minimize wetland, stream, pond, and archaeology impacts.
- Site Z-6 – the bridge was extended to minimize construction impacts to wetlands and streams.
- Site Z-24 – the alignment was shifted to avoid the meandering of Stream Z-14.
- Site Z-24 – the alignment was shifted to follow an existing road to minimize impacts to wetlands and streams. Also, an offsite detour will be used.
- Sites Z-2 and Z-1 – the alignment was shifted east to minimize impacts to wetlands and streams.
- Site Z-26 – use equalizer pipes perpendicularly across and under the proposed service road to assist in maintaining wetland hydrology between the two pieces of the wetland split by the mainline highway and the service road.
- Site Z-28 – the alignment of the service road was shifted west to minimize impacts to wetlands.
- Site Z-41P – the alignment was revised to avoid the pond.
- Site Z-61 – the proposed retaining wall was removed and the bridge lengthened to minimize impacts to wetlands and streams.
- Site Z-59 – ramp alignments were adjusted to minimize impacts to wetlands, and a service road was relocated to avoid impacts to wetlands.
- Site Z-56 – the alignment was shifted south to minimize impacts to wetlands and streams.
- Site Z-9 – a service road was revised to minimize impacts to wetlands and streams outside of the interchange area.
- Retaining walls were added to avoid the Lake Rim Recreational Area and the Shaw-Gillis Historic District.
- Site Z-4 – the design was shifted just south of Cliffdale Road (SR 1400) to cross wetland Z-4 as perpendicular as possible and to minimize impacts to wetlands and streams at Sites Z-2 and Z-1.
- Sites B and C – the proposed interchange at Morganton Road (SR 1404) was eliminated to minimize impacts to wetlands and streams.
- Sites B and C – the corridor was shifted west to minimize impacts to wetlands.
- Sites D and A – the corridor was shifted south to minimize impacts to wetlands.
- An existing soil road was used for the relocation of Smith Lake Road to minimize impacts to wetlands and red-cockaded woodpecker habitat.
- The alignment was shifted north to avoid the Keithville Rental Units Property.
- Between Cliffdale Road (SR 1400) and Yadkin Road (SR 1415) and west of Murchison Road (NC 87/210), the median width was reduced from 70 feet to 46 feet to minimize impacts to wetlands, streams, and red-cockaded woodpecker habitat.
- Throughout the corridor, existing alignments and existing Fort Bragg patrol roads/tank trails were used where possible. Bridges are proposed at 12 wetland/stream crossings to avoid and minimize impacts to wetlands and streams. An additional bridge, at Site 54, is proposed to provide pedestrian access to a school.

6.7.4 Mitigation and FHWA Step Down Compliance

All compensatory mitigation must be in compliance with 23 CFR Part 777.9, "Mitigation of Impacts" that describes the actions that should be followed to qualify for Federal-aid highway funding. This process is known as the FHWA "Step Down" procedures:

- Consideration must be given to mitigation within the right-of-way and should include the enhancement of existing wetlands and the creation of new wetlands in the highway median, borrow pit areas, interchange areas, and along the roadside.
    - The onsite potential for this project has been reviewed and most of the stream crossings were highly constrained by existing houses, roads, etc. Big Branch has the most potential for onsite mitigation and will tie into the Fort Bragg mitigation for this site if Fort Bragg gets the funding to build.

- Where mitigation within the right-of-way does not fully offset wetland losses, compensatory mitigation may be conducted outside the right-of-way including enhancement, creation and preservation.

Based upon the agreements stipulated in the "Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation and the U.S. Army Corps of Engineers, Wilmington District" (MOA), it is understood that the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP), will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for NCDOT projects that are listed in Exhibit 1 of the subject MOA during the EEP transition period which ends on June 30, 2005.

Since the subject project is listed in Exhibit 1, the necessary compensatory mitigation to offset unavoidable impacts to waters that are jurisdictional under the federal Clean Water Act will be provided by the EEP. The offsetting mitigation will derive from an inventory of assets already in existence within the same 8-digit cataloguing unit. The Department has avoided and minimized impacts to jurisdictional resources to the greatest extent possible. The remaining unavoidable impacts will be offset by compensatory mitigation provided by the EEP program.

Table 6-10: Jurisdictional Wetlands and Impacts

SITE ID	Sub-basin	Cowardin Classification	NCDWQ Wetland Classification	NCDWQ Rating	Schafale and Weakley Classification	Riverine/ Non-riverine	Total Acreage Impacted^
Z-40	03-07-53	PFO	Bottomland Hardwood Forest	74	Streamhead Pocosin	Riverine	0.1
Z-28	03-07-53	PFO	Headwater Forest	64	Streamhead Pocosin	Non-Riverine	0.1
Z-26	03-07-53	PFO-1 PFO-2	Headwater Forest Headwater Forest	40 25	Streamhead Pocosin	Non-riverine	1.2
Z-26.5	03-07-53	PFO	Bottomland Hardwood Forest	78	Coastal Plain Small Stream Swamp	Riverine	0.0
Z-24	03-07-53	PFO	Bottomland Hardwood Forest	88	Coastal Plain Small Stream Swamp	Riverine	0.6
Z-23	03-07-53	PFO	Bottomland Hardwood Forest Scrub-Shrub	76 14	Coastal Plain Small Stream Swamp	Riverine	3.6
Z-22	03-07-53	PFO	Bottomland Hardwood Forest	56	Coastal Plain Small Stream Swamp	Riverine	2.2
Z-68	03-07-53	PFO	Headwater Forest	17	Coastal Plain Small Stream Swamp	Non-Riverine	0.0
Z-61**	03-06-15	PFO PSS	Bottomland Hardwood Forest Scrub-Shrub	70 60	Coastal Plain Small Stream Swamp	Riverine	0.0
Z-14**	03-06-15	PFO	Bottomland Hardwood Forest	62	Coastal Plain Small Stream Swamp	Riverine	3.1
Z-60	03-06-15	PFO	Headwater Forest	36	Coastal Plain Small Stream Swamp	Non-Riverine	1.9
Z-59	03-06-15	PFO	Headwater Forest	55	Coastal Plain Small Stream Swamp and Coastal Plain Semipermanent Impoundment	Non-Riverine	2.9
Z-55.5	03-06-15	PFO	Headwater Forest	20	Streamhead Pocosin	Non-Riverine	0.1

Table 6-10: Jurisdictional Wetlands and Impacts

SITE ID	Sub-basin	Cowardin Classification	NCDWQ Wetland Classification	NCDWQ Rating	Schafale and Weakley Classification	Riverine / Non-riverine	Total Acreage Impacted^
Z-57	03-06-15	PFO	Headwater Forest	27	Streamhead Pocosin	Non-Riverine	0.4
Z-56**	03-06-15	PFO	Bottomland Hardwood Forest	82	Coastal Plain Small Stream Swamp	Riverine	0.0
Z-55	03-06-15	PFO	Bottomland Hardwood Forest	86	Coastal Plain Small Stream Swamp	Riverine	0.8
Z-70	03-06-15	PFO	Swamp Forest	78	Coastal Plain Small Stream Swamp and Coastal Plain Semipermanent Impoundment	Riverine	0.0
Z-53	03-06-15	PFO PEM	Headwater Forest Emergent	29	Coastal Plain Semipermanent Impoundment	Non-Riverine	0.0
Z-9	03-06-15	PFO	Headwater Forest	47	Coastal Plain Small Stream Swamp	Riverine	0.8
Z-7.5	03-06-15	PFO	Headwater Forest	62		Non-Riverine	0.02
Z-7**	03-06-15	PFO	Bottomland Hardwood Forest	69	Coastal Plain Small Stream Swamp	Riverine	0.7
Z-6**	03-06-15	PFO	Bottomland Hardwood Forest	65	Coastal Plain Small Stream Swamp	Riverine	0.8
Z-5**	03-06-15	PFO	Bottomland Hardwood Forest	75	Streamhead Pocosin	Riverine	0.0
Z-4	03-06-15	PFO	Headwater Forest	6	Streamhead Pocosin	Non-Riverine	0.2
Z-2	03-06-15	PFO	Headwater Forest	61	Coastal Plain Small Stream Swamp	Non-Riverine	0.2
Z-1	03-06-15	PFO	Headwater Forest	27	Streamhead Pocosin	Non-Riverine	0.2
BC	03-06-15	PFO	Bottomland Hardwood Forest	47	Coastal Plain Small Stream Swamp	Riverine	0.0
Z-67	03-06-15	PFO	Bottomland Hardwood Forest	49	Coastal Plain Small Stream Swamp	Riverine	0.6

Table 6-10: Jurisdictional Wetlands and Impacts

SITE ID	Sub-basin	Cowardin Classification	NCDWQ Wetland Classification	NCDWQ Rating	Schafale and Weakley Classification	Riverine/ Non-riverine	Total Acreage Impacted^
B	03-06-15	PFO PSS	Swamp Forest Scrub-Shrub	80 76	Coastal Plain Small Stream Swamp	Riverine	0.7
C	03-06-15	PFO PFO LUB	Swamp Forest Bottomland Hardwood Forest Swamp Forest	80 76 80	Coastal Plain Semipermanent Impoundment	Riverine	6.2
C2	03-06-15	PFO	Headwater Forest	43	Streamhead Pocosin	Non-Riverine	0.0
P	03-06-15	PFO	Headwater Forest	45	Streamhead Pocosin	Non-Riverine	0.0
S	03-06-15	PFO	Headwater Forest	59	Streamhead Pocosin	Non-Riverine	2.1
T	03-06-15	PFO	Headwater Forest	52	Streamhead Pocosin	Non-Riverine	0.2
U	03-06-15	PFO	Headwater Forest	49	Streamhead Pocosin	Non-Riverine	0.0
N	03-06-15	PFO	Headwater Forest	59	Streamhead Pocosin	Non-Riverine	1.1
O	03-06-15	PFO PSS	Bottomland Hardwood Forest Scrub-Shrub	63 59	Coastal Plain Small Stream Swamp	Riverine	8.5
G3**	03-06-15	PFO PSS PUB	Scrub-Shrub Swamp Forest	74 71	Coastal Plain Small Stream Swamp	Riverine	0.6
G2	03-06-15	PFO PSS PUB	Bottomland Hardwood Forest Scrub-Shrub Swamp Forest	72 72 71	Coastal Plain Small Stream Swamp	Riverine	6.3
G1	03-06-15	PFO-1 PFO-2 PUB	Ephemeral Wetland Bottomland Hardwood Forest Swamp Forest	64 68 73	Coastal Plain Small Stream Swamp	Riverine	0.0
H	03-06-15	PFO	Headwater Forest	61	Streamhead Pocosin	Non-Riverine	0.01
I	03-06-15	PFO	Ephemeral Wetland	50	Streamhead Pocosin	Non-Riverine	0.04
M	03-06-15	PFO	Bottomland Hardwood Forest	71	Streamhead Pocosin	Riverine	1.5
M-WEST	03-06-15	PFO	Headwater Forest	72	Streamhead Pocosin	Non-Riverine	0.05
AA	03-06-15	PFO	Headwater Forest	38	Streamhead Pocosin	Non-Riverine	0.01
BR	03-06-15	PFO	Headwater Forest	38	Streamhead Pocosin	Non-Riverine	0.0
L**	03-06-15	PFO	Bottomland Hardwood Forest	67	Streamhead Pocosin	Riverine	5.8

Table 6-10: Jurisdictional Wetlands and Impacts

SITE ID	Sub-basin	Cowardin Classification	NCDWQ Wetland Classification	NCDWQ Rating	Schafale and Weakley Classification	Riverine/ Non-riverine	Total Acreage Impacted^
E	03-06-15	PFO	Bottomland Hardwood Forest Wet flat	24 53	Streamhead Pocosin	Riverine Non-Riverine	0.0
D**	03-06-15	PFO	Bottomland Hardwood Forest	75	Coastal Plain Small Stream Swamp	Riverine	3.7
D2	03-06-15	PFO	Bottomland Hardwood Forest	56	Coastal Plain Small Stream Swamp	Riverine	0.0
A	03-06-15	PFO	Headwater Forest Bottomland Hardwood Forest Swamp Forest	57 55 72	Streamhead Pocosin	Riverine	0.0
Aa	03-06-15	PFO	Headwater Forest Bottomland Hardwood Forest Swamp Forest	57 55 72	Streamhead Pocosin	Riverine	1.5
Ab	03-06-15	PFO	Headwater Forest Bottomland Hardwood Forest Swamp Forest	57 55 72	Streamhead Pocosin	Riverine	0.5
57	03-06-15	PFO	Headwater Forest	57	Streamhead Pocosin	Non-Riverine	0.9
SLA	03-06-15	PFO	Headwater Forest	49	Streamhead Pocosin	Non-Riverine	0.03
56	03-06-15	PFO	Bottomland Hardwood Forest	79	Streamhead Pocosin	Riverine	0.9
56A	03-06-15	PFO	Headwater Forest	36	Streamhead Pocosin	Riverine	0.0
55**	03-06-15	PFO PSS PUB	Bottomland Hardwood Forest Seep Wetland	89 43,31	Streamhead Pocosin	Riverine	0.0
54**	03-06-15	PFO PSS PEM	Headwater Forest Freshwater Marsh	63 63	Streamhead Pocosin	Non-Riverine	0.0
53	03-06-15	PFO	Headwater Forest	63	Streamhead Pocosin	Non-Riverine	1.8
^ Total Acreage Impacted assumes impact area extends to 10 feet beyond slope stakes ** Proposed bridge location						**TOTAL**	63.4

6.8 WETLAND FINDING

In accordance with Executive Order 11990, practicable alternatives to the proposed action and minimization measures for proposed impacts to wetlands were examined. Based on the above considerations, it is determined that there are no practicable alternatives to the proposed construction in wetlands and that the proposed action includes all practicable measures to avoid and minimize harm to the wetlands resulting from such use.

6.9 FLOODPLAIN FINDING

The protection of floodplains is required by Executive Order 11988, "Floodplain Management." The Preferred Alternative will impact 100-year floodplains associated with major drainages within the study area, including Rockfish Creek, Little Rockfish Creek, Bones Creek, and Cross Creek. All of the stream crossings will be perpendicular, which will minimize impacts to the associated floodplains. All bridges or culverts designed for the project will be sized to ensure that no increases to the extent and level of flood hazard risk will result from such encroachments.

The Preferred Alternative was selected based on impacts to natural resources, human environment, and ability to minimize impacts. As such, there is no other practicable alternative to reduce impacts to floodplains within the project area.

6.10 SECONDARY AND CUMULATIVE IMPACTS

According to the Council on Environmental Quality (CEQ) indirect/secondary impacts are "impacts on the environment, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." Cumulative impacts are those impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (public or private sector) undertakes the action. Potential secondary and cumulative impacts associated with the proposed Outer Loop include complementary land development, shifts in the location of commercial and other non-residential land uses to interchange locations, redevelopment of underdeveloped or underutilized properties, and encroachment-alteration effects on the environment.

The following findings were noted in the *Fayetteville Outer Loop Indirect and Cumulative Impacts Analysis*:

- Growth in the Fayetteville region has largely been dependent on the presence and growth of Fort Bragg and Pope Air Force Base;

- Recent transportation improvements in the Fayetteville region were constructed to improve congestion rather than to spur additional development;

- It is anticipated that the TIP X-0002 project will have an impact on the development potential for the rural lands east of the Cape Fear River possibly switching some of the growth impetus from eastern Hoke County to the newly accessible areas of northeastern Cumberland County.

- Growth and development will continue within the ICI study area regardless of whether the Fayetteville Outer Loop is constructed; however, as the construction of the Outer Loop will provide improved access to, and result in decreased commuting times from, northeast Cumberland, Hoke, and Robeson Counties, it is anticipated that the pace of development may accelerate along the major feeder roads that will connect the interchange locations.

- It is anticipated that low-density residential growth will continue to occur along the feeder roads that support the interchange locations. The density of the growth in the area will be tempered by the lack of water and sewer infrastructure in the southern and western portions of the study area.

- Under the No-Build scenario, four interchanges were rated as having low development potential, five rated as having moderate potential, and three were rated as having high potential for development.

- Under the Build scenario, one interchange was rated as having no potential for development, one was considered to have a low potential, three were rated as moderate, one was rated as having moderate to high development potential, and six were rated as having a high potential for development.

- As Cumberland County has designated activity nodes (allowing only commercial and non-residential uses) at each of the interchange locations, it is not anticipated that the project will cause shifts in population to those areas. While residential and supporting uses could be attracted to the vicinity of interchange locations in Robeson County, any development would likely remain low-density, rural residential in nature due to the lack of water and sewer service.

- It is anticipated that the pace of residential growth in Hoke County will continue and may be accelerated along Raeford Road (US 401) and Rockfish Roads in Hoke County. The connection of these roads to the interchange locations in Cumberland County will result in an expanded commuteshed allowing for faster and easier commutes into the Fayetteville Urban Area which may entice developers to build within these areas.

- It is anticipated that complementary land development, such as highway-retail oriented businesses will locate at or near the interchange locations and that there will likely be some shifts in the location of commercial and other non-residential uses to interchange locations to

take advantage of improved access.. In addition, it is anticipated that the construction of the Outer Loop may spur redevelopment of underdeveloped and underutilized properties within proximity of Fort Bragg and areas adjacent to the Outer Loop that are currently built-out.

- The construction of the Fayetteville Outer Loop when combined with the construction of other programmed transportation projects and public/private development projects could constitute a cumulative impact on the study area. However, adequate development ordinances and storm water rules coupled with a strong land use plan that is readily enforced will serve to minimize any development-related impacts and as such no additional study or analysis is warranted.

- It is possible that encroachment-alteration effects associated with the construction of the project when combined with development projects on Fort Bragg will cumulatively impact the habitat and potentially the number of Red Cockaded Woodpeckers (RCW) within the study area. In order to offset any cumulative impacts to the RCW as a result of the project, NCDOT has purchased 2,500 acres of land in Hoke County for the purpose of RCW mitigation, conveyed the property to the Nature Conservancy, and has provided a $600,000 endowment to manage the property; in addition, NCDOT has offered three additional compensation options. As such, no further study or analysis is warranted.

6.11 MITIGATION

NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize impacts to jurisdictional waters and protected species and to providing full compensatory mitigation of all remaining impacts. Detailed mitigation plans will be developed in coordination with the USACE, USFWS, and other federal and state resource agencies. Mitigation will be required for impacts to wetlands, streams, and protected species. Mitigation requirements for impacts to wetlands and streams will be determined during the permitting process, and a detailed mitigation plan will be developed in coordination with the USACE and other federal and state resource agencies.

6.11.1 Jurisdictional Waters

The project will continue through the Merger 01 Process with the development of the mitigation and permitting plans. Impacts to jurisdictional waters and streams will be further minimized if practicable during the final design of the proposed project. Compensatory mitigation will occur for all unavoidable impacts to these natural systems. Once on-site opportunities are exhausted, compensatory wetland and stream mitigation will be provided.

A search for on-site wetland and stream mitigation was completed in August 2004. Four potential sites were identified.

- Big Branch: Crosses the roadway corridor but extends so far away from the corridor, NC Ecosystem Enhancement Program decided that it would not be considered on-site. Therefore, NCDOT could not pursue the site. However, Fort Bragg is willing to coordinate with EEP to restore the entire reach of stream, offering approximately 5000 linear feet of off-site stream mitigation.

- UT to Rockfish Creek: This site is a combination of wetland and stream mitigation. A feasibility study is underway to determine the amount of potential mitigation at this site.

- UT to Cold Camp Creek: This creek offers approximately 715 linear feet of restoration, possibly more. A feasibility study is underway.

- Horsepen Branch: Offers approx. 1250 linear feet. A feasibility study is underway.

6.11.2 Protected Species

Anticipating that future highway projects will have impacts to the RCW in the Sandhills area, NCDOT entered into a Memorandum of Understanding (MOU) with the USFWS and The Nature Conservancy (TNC) to mitigate for these impacts in advance of proposed highway projects in the Sandhills. Via this MOU, NCDOT agreed to fund the purchase of, and acquire fee simple title to, the Calloway Tract, a 2,500-acre property in Hoke County, North Carolina. In 2001, NCDOT purchased the Calloway Tract and, in July 2002, conveyed the property to TNC while reserving a perpetual conservation easement on the tract. In addition, NCDOT provided a $600,000 endowment to TNC to help fund the management of the property for RCW habitat and other ecological values. At the time of acquisition, the Calloway Tract supported five active RCW clusters. It was anticipated that with habitat management, additional RCW clusters could be created. The property now serves as an RCW mitigation bank for NCDOT and secures mitigation credits for RCWs already present on the property as well as for additional RCW clusters that may be developed in the future.

Every active RCW cluster impacted by a NCDOT project must be mitigated by a demographically equivalent or greater credit. Demographic equivalence is to be determined by the USFWS on a case-by-case basis. At the time of purchase, the five existing active RCW clusters were considered "Project Credits" for mitigation purposes. New RCW clusters created on the Calloway Tract are "Compensation Credits." While Compensation Credits are being established, Project Credits may be debited to allow NCDOT road development projects to proceed. At any one time, NCDOT may impact a quantity of RCW clusters up to the five Project Credits available. Once a Compensation Credit is established for a particular impact, an associated Project Credit is returned to the "bank" for reuse in a future project.

In order to offset any direct impacts associated with this project at the "RCW cluster level", namely the potential take of the RCW group in FB Cluster 65, NCDOT proposes to create one additional active cluster, using artificial cavities, on the Calloway Tract. In order to offset any direct or indirect demographic impacts associated with this project at the "RCW neighborhood level", namely the potential take of RCW groups in FB Clusters 64, 65, 205, 207, 208, and 528, NCDOT proposes the following compensation options:

- NCDOT will contribute financially to aid existing efforts by the North Carolina Sandhills Conservation Partnership in getting priority lands into protected status; or
- NCDOT proposes to contribute financially to the restoration and/or augmentation of abandoned clusters (CC 16 and 17) located south of the Green Belt (after conservation easements on these properties are secured); or
- NCDOT proposes to fund a telemetry study to better understand dispersal events within the Sandhills RCW population(s), particularly in the Green Belt and Overhills area.

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SECTION 7
FINAL SECTION 4(F) EVALUATION

This section of the Final Environmental Impact Statement includes the Final Section 4(f) Evaluation for the Fayetteville Outer Loop. The Draft Section 4(f) Evaluation was circulated as part of the 1999 DEIS for the Fayetteville Outer Loop.

In accordance with Section 4(f) of the 1966 Department of Transportation Act, an evaluation of the project area was conducted for properties determined to be qualified for Section 4(f) evaluation. The Draft Section 4(f) Evaluation reviewed the impacts of the detail study alternates on Section 4(f) properties in the project area. As discussed in Section 4, Alternate D was selected as the Preferred Alternative for the project in November 2000.

This Final Section 4(f) Statement includes the following information:

- A summary of all the Section 4(f) resources in the project area,
- The information provided in the Draft Section 4(f) Evaluation for all build alternates,
- Updated information regarding the status of the Section 4(f) properties,
- Impacts and measures to minimize harm for the Preferred Alternative.

7.1 SECTION 4(F) EVALUATION SUMMARY

In the project area, there are ten properties qualified for Section 4(f) evaluation, including seven historic properties, two parks, and a wildlife conservation easement. Exhibit 7-1 shows these properties relative to the alternates considered.

7.1.1 Section 4(f) Properties In Project Area

The historic properties include the Shaw-Gillis Historic District, Keithville Rental Units, Buena Vista, William John Gillis House No. 1, Wood's Store, McInnis House, and Stryker Golf Course. Though these properties have all been determined eligible for listing on the National Register of Historic Places, none are currently listed. A brief description of each of these properties follows:

- The Shaw-Gillis Historic District is located near the intersection of Raeford Road (SR 3569) and Reilly Road (SR 1403) near Lake Rim. The Shaw-Gillis Historic District is privately owned and contains two parcels of land identified as the Shaw-Gillis House and the William

John Gillis House No. 2. In 1998, the State Historic Preservation Office (HPO) concurred that the Shaw-Gillis Historic District is eligible for the National Register under Criterion C for architecture. A copy of the concurrence letter is located in Appendix E.

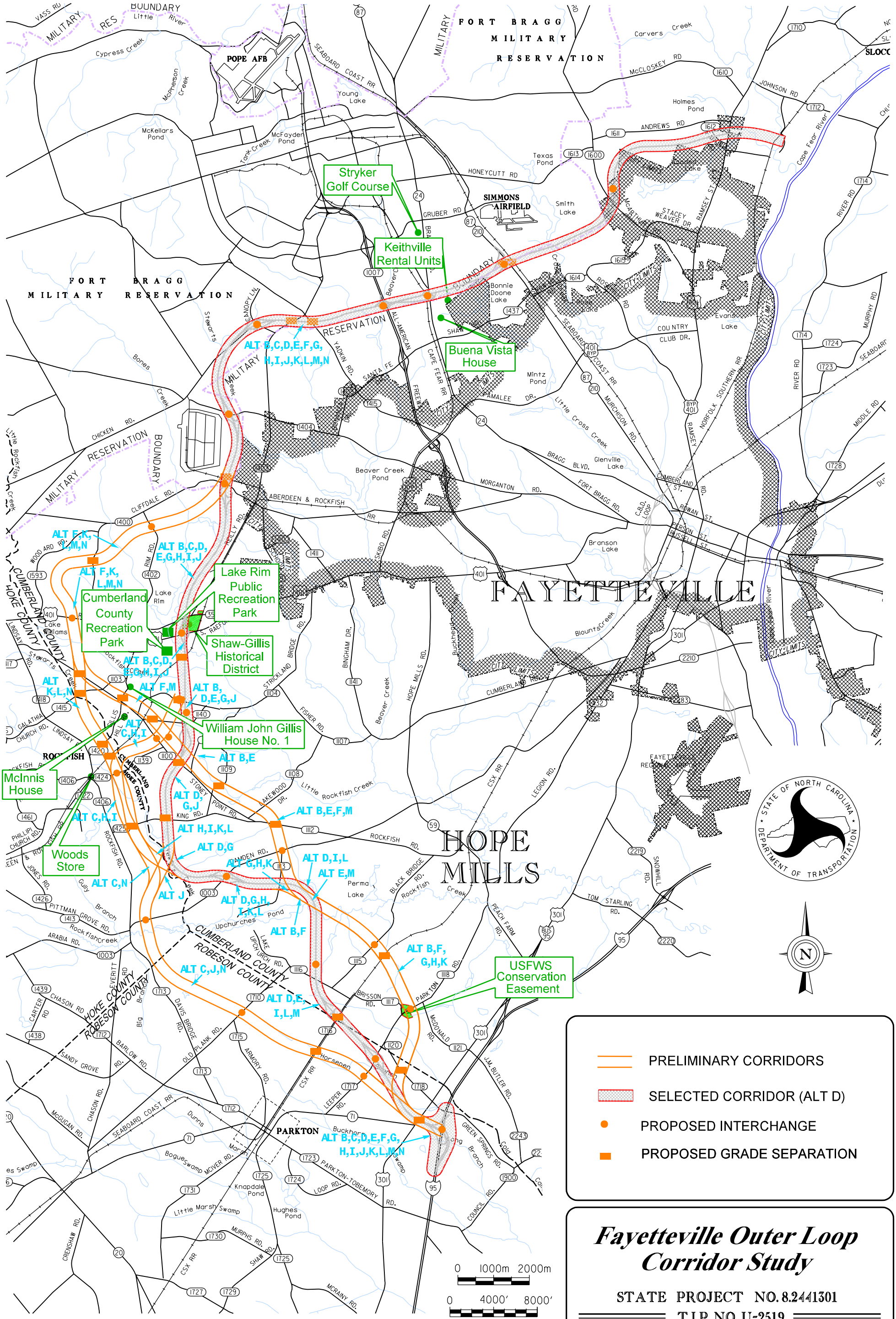
- The Keithville Rental Units are located east of Bragg Boulevard (NC 24) and adjacent to Fort Bragg Military Reservation. The rental units once served the housing needs of servicemen from Fort Bragg. According to the Cumberland County Property Record Card, the site contains 15 structures constructed between the years 1923 and 1946. In addition, the Keithville Rental Units are eligible for listing in the National Register under Criteria A and C. Under Criterion A, "the Keithville Rental Units represent a unique area response to the economic opportunities provided by the growth of Fort Bragg and Pope (Air) Field after 1934." Under Criterion C, "the Keithville Rental Units embody distinctive characteristics of a type, period, and method of construction." The HPO agreed with the eligibility and boundaries of the Keithville Rental Units, as shown by the letter dated March 21, 1996 in Appendix E.

- The Buena Vista House and property is located at the corner of Bragg Boulevard (NC 24) and Shaw Road (SR 1437) and extends northward along the east side of Bragg Boulevard (NC 24). The Buena Vista House was constructed in 1844 and is eligible for the National Register under Criteria A and C. Under Criterion A, the home is associated with the antebellum plantation farming economy of Cumberland County in the mid-nineteenth century. Under Criterion C, the home is an example of the Vernacular Greek Revival style of the antebellum period. The HPO agreed with the eligibility and boundaries of the Buena Vista House.

- The William John Gillis House No. 1 is located on the east side of Gillis Hill Road (SR 1102) approximately 0.2 mile north of Stoney Point Road (SR 1100) in Cumberland County. This house is eligible under Criterion C as a well-preserved example of turn of the century, rural domestic architecture in Cumberland County. The HPO agreed with the eligibility of the William John Gillis House No. 1, as shown by the letter dated January 6, 1998 in Appendix E.

- Wood's Store is located on the east side of Rockfish Road (SR 1406), south of the junction with the Aberdeen and Rockfish Railroad, in Hoke County. This 1920s store and filling station illustrates the type of commercial buildings erected in the region and throughout rural America after World War I to serve rural communities as well as a growing automobile-oriented trade. It is eligible under Criterion A for commerce and Criterion C for design. The HPO agreed with the eligibility of Wood's Store, as shown by the letter dated January 6, 1998 in Appendix E.

- The McInnis House is located on the east side of Gillis Hill Road (SR 1102) approximately 0.2 mile south of Stoney Point Road (SR 1100). This house in an extremely rare surviving example of nineteenth century rural domestic architecture in Cumberland County and is eligible under Criterion C. Although the dwelling has been partially remodeled, it retains important elements of its original style. The HPO agreed with the eligibility of the McInnis House, as shown by the letter dated January 6, 1998 in Appendix E.



Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

Section 4(f) Properties

Exhibit 7-1

BACK OF EXHIBIT 7-1

- Stryker Golf Course is located on Fort Bragg, west of Bragg Boulevard (NC 24) between Knox Street and Gruber Road. The course was built in 1946 to the design of noted golf course architect Donald Ross. It is an eighteen-hole course measuring 6,279 yards in length. A modern clubhouse stands on the east side of the property, along Bragg Boulevard. Stryker Golf Course is considered eligible for the National Register under Criterion C.

Parks in the project area include the North Carolina Wildlife Resources (NCWRC) Lake Rim Public Recreation Area, located in western Cumberland County. The park is divided by Raeford Road (SR 3569) into two distinct land uses: the lake is located north of Raeford Road (SR 3569) and is managed for public use; while, the portion of the property south of Raeford Road (SR 3569) and east of Bones Creek contains maintenance buildings and the former fish hatchery operations of NCWRC. In addition, Cumberland County operates a 30-acre park south of Raeford Road (SR 3569) and west of Bones Creek.

The U.S. Fish and Wildlife Service's Roanoke River National Wildlife Refuge manages a 14.3-acre conservation easement in southwestern Cumberland County, approximately 3 miles south of the town of Hope Mills. The conservation easement is divided by Parkton Road (SR 1118) into two tracts. The northern tract is also bounded on the west by Brisson Road (SR 1117). The property is privately owned.

7.1.2 Project Alternates and Summary of Impacts to Section 4(f) Properties

Two Section 4(f) properties will be impacted by alternates considered for the project. Alternates B, C, D, E, G, H, I, and J impact the National Register eligible Shaw-Gillis Historic District, and Alternates B, F, G, H, and K impact the wildlife refuge conservation easement with Section 4(f) protection. Detailed descriptions of the impacts and measures taken to avoid and minimize impacts to these two properties are included in this Section 4(f) statement.

Alternate D was selected as the Preferred Alternative for the project in November 2000. The Preferred Alternative will impact only the Shaw-Gillis Historic District. Though the Keithville Rental Units, Buena Vista property, Stryker Golf Course, and the NCWRC Lake Rim Public Recreation Area are adjacent to the Preferred Alternative, no right of way will be required from any of these properties. Avoidance measures such as alignment shifts and retaining walls were included in the design to avoid these properties. For the Keithville Rental Units, a retaining wall is provided to avoid acquisition of any of the property. HPO requested vegetative screening be

added along the Bragg Boulevard (NC 24) interchange to minimize the potential visual effects of the project. The HPO concurred with the Preferred Alternative and mitigation measures in March 2004. The Section 106 determinations of effect for the Preferred Alternative to the historic resources in the project study area were coordinated with HPO and are included in Section 6 of this FEIS.

The project study area boundaries were extended after the DEIS in some areas to incorporate service roads and avoidance and minimization measures. The study area along Bragg Boulevard (NC 24) was extended to just north of Shaw Road (SR 1437). A separate TIP project (U-3423) proposes to widen Bragg Boulevard (NC 24) from the US 401 Bypass to just north of Shaw Road (SR 1437). Therefore, the study area for the Outer Loop project was extended to include the remainder of Bragg Boulevard (NC 24) between the end of the TIP U-3423 project and the proposed Outer Loop. The Buena Vista house and property are located along the east side of Bragg Boulevard (NC 24) north of Shaw Road (SR 1437). A small portion of the property will be impacted by TIP project U-3423, and is addressed in a Programmatic 4(f) Statement approved by the Federal Highway Administration in August 2004. The design along Bragg Boulevard from the Outer Loop to the Shaw Road intersection was revised to avoid the right of way acquisition from this historic property.

7.2 THE SHAW-GILLIS HISTORIC DISTRICT SECTION 4(f) PROPERTY

7.2.1 Description of the Shaw-Gillis Historic District

7.2.1.1 Size and Location

The National Register-eligible Shaw-Gillis Historic District is located in western Cumberland County on the north and south sides of Raeford Road (SR 3569). The historic district consists of two parcels of land identified as the Shaw-Gillis House and the William John Gillis House No. 2. The two Gillis properties were historically part of one farm. The Shaw-Gillis House, located on approximately 44 acres of land, is located south of Raeford Road (SR 3569) and is bounded by South Raeford Road (US 401) to the south, the Aberdeen and Rockfish Railroad to the east, and to the west by the North Carolina Wildlife Resources Commission's former Lake Rim fish hatchery. The William John Gillis House No. 2 is located north of Raeford Road (SR 3569),

across from the Shaw-Gillis property. The William John Gillis House No. 2 contains approximately 3.3 acres.

NCDOT previously acquired 8.7 acres of land from the Shaw-Gillis property for the construction of relocated South Raeford Road (US 401). This relatively new highway is a multilane, partially controlled-access facility that forms the current southern boundary of the Shaw-Gillis Section 4(f) property. South Raeford Road (US 401) is elevated at this location in order to cross over the Aberdeen and Rockfish Railroad. A Section 4(f) Evaluation was not done for the 8.7-acre property acquisition because no U.S. Department of Transportation funds, licenses, or permits were involved in the US 401 relocation project.

7.2.1.2 Relationship to Alternatives

The Preferred Alternative (Alternate D), as well as Study Alternates B, C, E, G, H, I, and J, impacts the westernmost portion of the Shaw-Gillis Historic District. Alternates F, K, L, M, and N and the No-Build Alternative avoid the historic district.

7.2.1.3 Ownership and Type of Section 4(f) Property

The two parcels within the Shaw-Gillis Historic District are privately owned. In correspondence dated January 6, 1998 (see Appendix E), the HPO concurred that the Shaw-Gillis Historic District is eligible for the National Register of Historic Places under Criterion C for architecture. Prior to this date, the Keeper of the National Register determined that the Shaw-Gillis House was eligible for listing in the National Register in 1981.

The Shaw-Gillis property was originally owned by David Gillis and his wife, Christian Black. The Shaw-Gillis house was built on the property between the years 1856 and 1857 by Duncan Shaw and his wife, Catherine Gillis. In 1918, Collen Shaw mortgaged the property and lost ownership; afterward, W. J. Gillis purchased the property at an auction. The property is currently owned by William J. Gillis.

The Shaw-Gillis house and the associated property has survived essentially unchanged since the Determination of Eligibility in 1981. The house continues to satisfy Criterion C for architecture and the property remains unaltered. The house is a two-story frame dwelling and is a rare surviving Greek Revival farmhouse in Cumberland County. Prior to its 1981 National Register

of Historic Places (NRHP) determination of eligibility, the house was relocated approximately 90 feet southward from Raeford Road (SR 3569) because of improvements at the intersection of Raeford Road (SR 3569) and Reilly Road (SR 1403).

The Shaw-Gillis House is situated on a slight rise above Raeford Road (SR 3569) immediately south of the intersection with Reilly Road (SR 1403). Most of the surrounding farmland is either level with the house or gradually slopes downward. The views from the house and the surrounding area are generally unencumbered by obstructions except for a few trees. The house is very visible from both highways north and south of the property. Views to and from the west and southwest are limited because of trees along the property boundary with the former Lake Rim Fish Hatchery. An aerial photograph of the site is included in Exhibit 7-2.

There are three distinct land areas on the Shaw-Gillis property. The house and yard area is located in the northeast corner of the property along Raeford Road (SR 3569) toward the railroad track and utilizes approximately eight acres of the property. At the southwest corner of the site, the land slopes steeply towards Bones Creek. This nine-acre area is densely wooded. The remaining 27 acres of the property has been used for agricultural purposes.

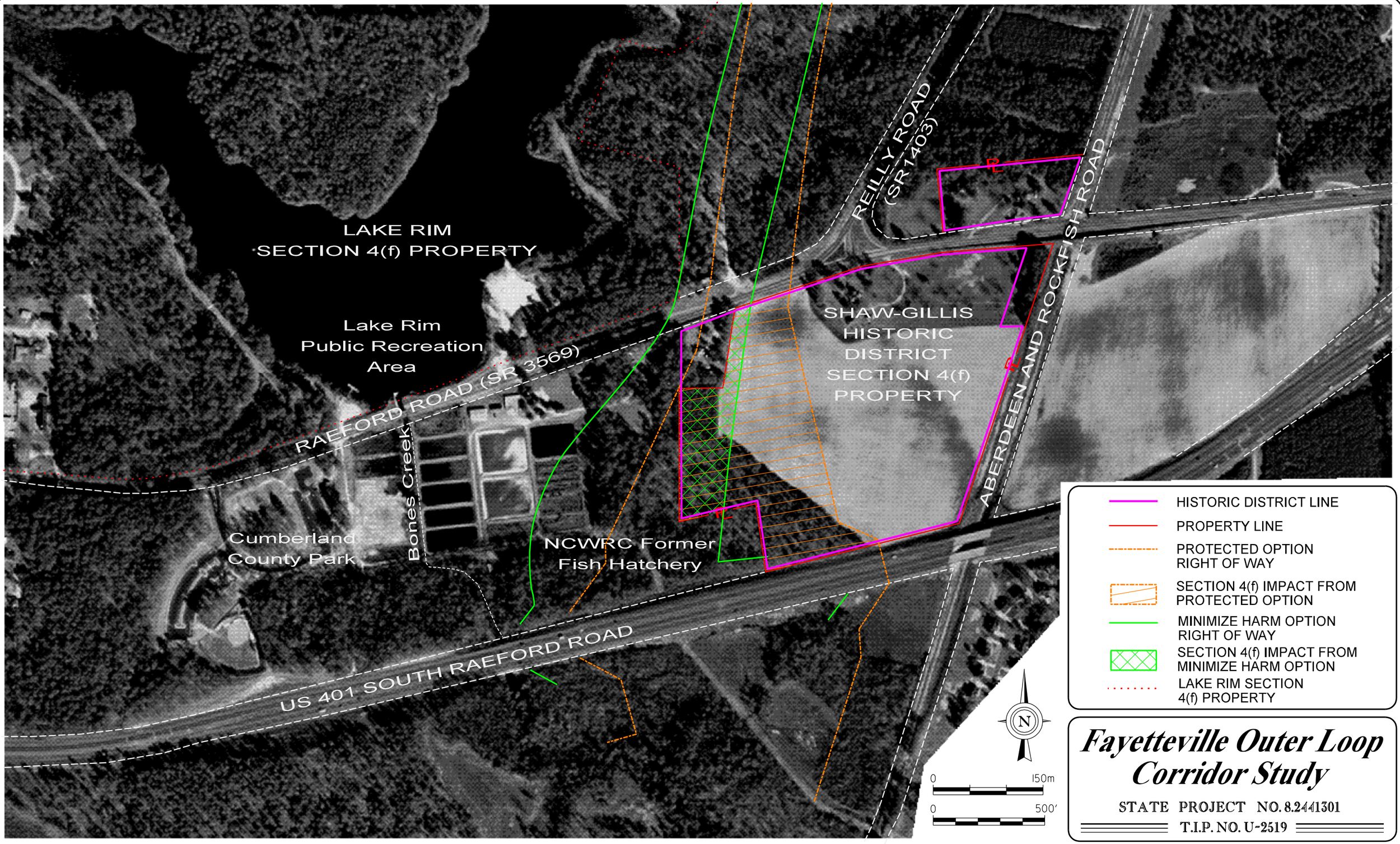
Built ca. 1920, the William John Gillis House No. 2 is a well-preserved L-Plan dwelling with an engaged front porch, classical posts on brick piers, and two-over-two windows. A kitchen wing is located to the rear of the structure. The tract also includes a collection of frame outbuildings located amidst mature trees northwest of the house.

7.2.1.4 Function

There are no public activities within the Shaw-Gillis Historic District. The historic district contains a working farm with row crops grown in the field located south and west of the Shaw-Gillis House.

7.2.1.5 Facilities

There are no public facilities within the Shaw-Gillis Historic District. Private facilities in the historic district include two dwellings and outbuildings associated with farm operations.



Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

Shaw-Gillis Section 4(f) Impact

Exhibit 7-2

BACK OF EXHIBIT 7-2

7.2.1.6 Access

Access to the Shaw-Gillis Historic District is by private drive. The Shaw-Gillis House and William John Gillis House No. 2 are accessed from Raeford Road (SR 3569).

7.2.1.7 Relationship to Similarly Used Lands

In Cumberland County, there are other privately-owned farm properties that have been either listed or determined eligible for listing in the NRHP. However, few of these farm sites have architecture similar to the Shaw-Gillis House.

There are other farmlands located to the east of the Aberdeen and Rockfish Railroad and to the north of Raeford Road (SR 3569). These lands are owned and operated as part of the Shaw-Gillis farm complex; however, other fields are not part of the eligible historic district boundaries determined in 1981. The historic district boundaries contain the architectural resources that qualify the property for eligibility. The district was determined eligible under Criterion C (Architecture) only.

7.2.1.8 Applicable Clauses Affecting Ownership

There are no known special covenants, restrictions, or deed conditions that preclude the use of the Shaw-Gillis Historic District for highway purposes. NCDOT has previously obtained land from this parcel at the southeast corner for the construction of the relocated South Raeford Road (US 401).

7.2.1.9 Unusual Characteristics

The Shaw-Gillis Historic District is bounded on three sides by transportation facilities: the relocated South Raeford Road (US 401) to the south, the Aberdeen and Rockfish Railroad to the east, and Raeford Road (SR 3569) to the north. South Raeford Road (US 401) is a multilane highway facility that extends along the entire southern boundary of the Shaw-Gillis Historic District. South Raeford Road (US 401) is elevated along the southern border of the Shaw-Gillis Historic District in order to cross over the Aberdeen and Rockfish Railroad; therefore, the roadway is the most prominent feature in the southern landscape. The Aberdeen and Rockfish Railroad extends along the entire eastern boundary of the historic district and is elevated. Raeford Road (SR 3569) is located along the entire northern property limits and crosses under the

Aberdeen and Rockfish Railroad. The historic district is isolated from adjacent farmland and the scattered urban development in the area.

In addition to the transportation facilities, the Shaw-Gillis Historic District is bordered by NCWRC Lake Rim property, a public park, and high quality wetlands. The western boundary of the Shaw-Gillis Historic District is located adjacent to NCWRC's Lake Rim property. The Lake Rim site is divided by Raeford Road (SR 3569) into two distinct land uses, the public recreation area and the fish hatchery. To the west of the fish hatchery, Cumberland County operates a public park. High quality wetlands are located south of Shaw-Gillis, adjacent to the relocated section of South Raeford Road (US 401).

7.2.2 Impacts on the Section 4(F) Shaw-Gillis Historic District

The Shaw-Gillis Historic District is impacted equally by the Preferred Alternative (Alternate D) and several of the study alternates, including Alternates B, C, E, G, H, I, and J. According to the Noise Abatement Criteria, none of the above alternates pose a noise level violation or substantial noise increase at the property. Contained within the alternates is the original alignment protected under the Roadway Corridor Official Map Act and an alignment that minimizes harm to the Section 4(f) property. For this evaluation, these two alignments are identified as the Protected Option and the Minimize Harm Option, respectively. The Minimize Harm Option is located approximately 180 feet to the west of the Protected Option in order to avoid as much of the Shaw-Gillis Historic District as possible, without impacting the adjacent Section 4(f) property at the Lake Rim Public Recreation Area and Cumberland County Park at Lake Rim.

7.2.2.1 Protected Option

The Protected Option features a standard diamond interchange at relocated South Raeford Road (US 401). The right of way required for the Protected Option impacts approximately 14.3 acres of the western side of the Shaw-Gillis Historic District but does not impact the Shaw-Gillis House. Exhibit 7-2 shows the right of way limits of the Protected Option in relation to the Shaw-Gillis Historic District.

7.2.2.2 Minimize Harm Option

The Minimize Harm Option was established in order to decrease the impacts to the Shaw-Gillis Historic District. This option minimizes Section 4(f) impacts by shifting the alignment

approximately 180 feet west of the Protected Option. Section 4(f) impacts to the historic district are also minimized by using a loop entrance ramp in the southeast quadrant of the South Raeford Road (US 401) interchange. The right of way required for the Minimize Harm Option with the loop ramp impacts approximately 4.7 acres of the Shaw-Gillis Historic District and does not impact the Shaw-Gillis House. The Minimize Harm Option is located as far west as possible without impacting other Section 4(f) resources, such as the Lake Rim Public Recreation Area and the Cumberland County Park at Lake Rim. Approximately 12.4 acres of the high quality wetlands and 16.6 acres of the fish hatchery are be impacted with this option. Exhibit 7-2 shows the right of way required for the Minimize Harm Option in relation to the Shaw-Gillis Historic District and the Lake Rim property.

The proposed right of way required for the Minimize Harm Option does not impact the Lake Rim Public Recreation Area Section 4(f) property north of Raeford Road (SR 3569). The Cumberland County Park at Lake Rim is located across from Lake Rim just south of South Raeford Road (US 401). This land is protected under Section 4(f) and is avoided by the Minimize Harm Option.

The portion of the property south of Raeford Road (SR 3569) and east of Bones Creek containing the NCWRC fish hatchery property is not Section 4(f) property according to a determination by FHWA. At the time of the DEIS, daily fish hatchery operations had ceased at this site and were relocated to another hatchery in the area. The buildings on the site are used as storage facilities only. The Minimize Harm Option, as provided in the DEIS, directly impacts the former fish hatchery operation area and removes the seven easternmost fish rearing ponds from operation and may impact one additional pond.

The Minimize Harm Option impacts 9.6 fewer acres of the Shaw-Gillis Historic District than the Protected Option and does not encroach on the Lake Rim Public Recreation Area or the Cumberland County Park. The Minimize Harm Option will require acquisition of 5.1 acres of the NCWRC fish hatchery property.

7.2.2.3 Avoidance Alternatives

In order to completely avoid impacting the Shaw-Gillis Historic District, two avoidance alternates were identified and considered for the project. One of the avoidance alternates was identified as

the East Avoidance Corridor, while the other was labeled the West Avoidance Corridor, see Exhibit 7-3.

The East Avoidance Corridor begins along Alternates B, C, D, E, G, H, I, and J approximately 3,500 feet north of the Shaw-Gillis Historic District. The alternate continues southeast across Reilly Road and the Aberdeen and Rockfish Railroad, then forms an interchange with South Raeford Road (US 401) approximately 1,000 feet east of the Shaw-Gillis Historic District. The corridor turns south, bisecting the Rayconda Subdivision, then merges with Alternates B, C, D, E, G, H, I, and J south of the historic district.

NCDOT and FHWA, in conjunction with federal, state, and local agencies, eliminated the East Avoidance Corridor from further consideration because of its impacts to neighborhoods, residences, wetlands, and floodplains. Comments received at a July 1993 Citizens Informational Workshop also contributed to the elimination of the East Avoidance Corridor since the proposed location bisected the Rayconda Subdivision. The East Avoidance Corridor would have added approximately 30 displaced families to the impact of Alternates B, C, D, E, G, H, I, and J. As shown by the exhibit, Lake Rim and the surrounding housing developments limit the available sites for the proposed roadway.

The West Avoidance Corridor contains Alternates F, K, L, M, and N, which are located approximately 10,000 feet west of the Shaw-Gillis Historic District. These alternates avoid the large Lake Rim Public Recreation Area and the many existing housing developments located west of Lake Rim. These alternates were eliminated by agency representatives during a field visit on September 13, 2000 based on cumulative impacts to other resources:

- Alternates F and K impact the USFWS Conservation Easement Section 4(f) property.
- Alternates F and M each impacted 24 hazardous materials sites, more than any other alternate.
- Alternate F impacted approximately 195 acres of wetlands, ten acres more than the next alternate.
- Alternates F and M also have noise impacts on nearly 50 more houses than other alternates and more than 100 more than the selected alternate.
- Alternate L impacted the most parcels with proposed right of way.
- Alternate N impacted the greatest amount of streams, more than 2,000 linear feet more than any other alternate.
- Alternates L, M, and N have impacts to both the natural and human environment that are almost always greater than the comparable alternates that impact the historic resource. The combined effects of these impacts yields these avoidance alternates as imprudent. In addition

Shaw-Gillis Avoidance Alternatives

Exhibit 7-3

BACK OF EXHIBIT 7-3

following a field visit to the impacted wetland and stream sites, the Project Team concluded that the upstream crossing locations of Alternates L, M, and N would have more substantial impacts to wetlands and streams than comparable wetland and stream crossings associated with Alternate D (Preferred Alternate), which impacts the Shaw-Gillis Historic District. Therefore, Alternates L, M, and N were eliminated from further consideration.

7.2.3 Preferred Alternative

As discussed in Section 4, Alternate D was selected for the project based on extensive coordination with federal, state, and local agencies. Alternate D was identified as the "least environmentally damaging practicable alternative" in October 2000 based on its ability to meet the Purpose and Need of the project and its overall minimization of impacts to the project area.

The Preferred Alternative includes Alternate D with the Minimize Harm Option, discussed in Section 7.2.2.2. Therefore, the Preferred Alternative incorporates the 180-foot alignment shift to the west to minimize impacts to the Shaw-Gillis Historic District, avoids the Lake Rim Public Recreation Area, and avoids the Cumberland County Park. However, the Preferred Alternative will impact the NCWRC fish hatchery property.

Based on the increased funds and plans for NCWRC to redevelop the fish hatchery property into an Educational Facility, the "interchange loop entrance ramp" in the southeast quadrant of the South Raeford Road (US 401) included in the Minimize Harm Option was reviewed with three additional interchange designs. These three interchange designs included:

- Large Loop Interchange
- Single Point Urban Interchange (SPUI)
- Compressed Diamond Interchange

These interchanges were developed, reviewed, and coordinated with FHWA, NCWRC, and USACE to determine the design that minimizes harm to the Shaw-Gillis Historic District, as well as minimizes the impacts to the NCWRC fish hatchery property to the west and the wetlands to the south. Table 7-1 summarizes the impacts to the Shaw-Gillis Historic District, Lake Rim Park and the fish hatchery property, and Exhibits 7-4a, 7-4b, 7-4c, and 7-4d show the general interchange geometry.

Based on a review of the impacts, traffic operations, and coordination with the FHWA, HPO, NCWRC, and USFWS, the Compressed Diamond Interchange design was selected. The original

design took 9.5 acres from the NCWRC, 4.7 acres from the Shaw-Gillis Historic District, and 5.5 acres of high quality wetlands. The Large Loop Interchange minimized impacts to the Shaw-Gillis Historic District but had undesirable traffic operations and more property impacts to the west side of the wetlands. The Single Point Urban Interchange had greater than or equivalent impacts to both the historic district and the fish hatchery. The compressed diamond interchange, along with a retaining wall, minimized the acquisition of property from the Shaw-Gillis Historic District, the fish hatchery property, and impacts to the high quality wetlands. In addition, the compressed diamond interchange allows for access to the Shaw-Gillis Historic District from South Raeford Road (US 401) to be retained.

Table 7-1: US 401/Fayetteville Outer Loop Interchange Alternate Designs

	Design Alternates			
	Original SE Entrance Loop/ Entrance Ramp	**Large Loop Interchange**	**Single Point Urban Interchange (SPUI)**	**Compressed Diamond Interchange**
Shaw-Gillis Historic District	4.7 acres	3.6 acres	4.7 acres	3.5 acres*
Lake Rim Park	0 acres	0 acres	0 acres	0 acres
NCWRC Fish Hatchery Property	9.5 acres	4.0 acres	6.4 acres	5.1 acres
Jurisdictional Wetlands	5.5 acres	5.6 acres	4.7 acres	1.7 acres

* Includes addition of a retaining wall to further minimize impacts.

The Preferred Alternative (Alternate D), with the compressed diamond interchange at South Raeford Road (US 401), will directly impact approximately 3.5 acres of the western side of the Shaw-Gillis Historic District. The Shaw-Gillis House will not be impacted, and impacts to the historic district, fish hatchery property, and Lake Rim Park are minimized.

7.2.4 Coordination

Coordination with the HPO, the NCWRC, and other agencies has taken place throughout the course of the study. Correspondence and meetings with the HPO and other agencies included discussions of avoidance alternatives, measures to minimize harm, and a determination of Section 4(f) properties.

Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

US 401 Interchange
Original

Exhibit 7-4A

100 50 0 100 200

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

N

LEGEND

- EDGE OF PAVEMENT
- BRIDGE LOCATION
- FILL LINE
- CUT LINE

U.S. 401

RAEFORD RD

NC STATE FISH HATCHERY

N C STATE FISH HATCHERY

STATE FISH HATCHERY

BARKER CORP

PARKER, G. B. HEIRS

SHAW-GILLIS PROPERTY

GILLIS, WILLIAM J & MOTHER

BUDDING BROOK DR

CULPEPPER LN

ABERDEEN & ROCKFISH RR

BACK OF EXHIBIT 7-4A

Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

US 401 Interchange
Large Loop

Exhibit 7-4B

100 50 0 100 200

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

N

LEGEND

- EDGE OF PAVEMENT
- BRIDGE LOCATION
- FILL LINE
- CUT LINE

U.S. 401

RAEFORD RD

NC STATE FISH HATCHERY

N C STATE FISH HATCHERY

STATE FISH HATCHERY

BARKER CORP

PARKER, G. B. HEIRS

SHAW-GILLIS PROPERTY

GILLIS, WILLIAM J & MOTHER

BUDDING BROOK DR

CULPEPPER LN

R/W

SOIL

ISBKD

ISFD

ISBK BUS

ISF BUS

ISF MTL BUS

HTR

10' GR

20' BST

BACK OF EXHIBIT 7-4B

Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

US 401 Interchange
Tighter Diamond

Exhibit 7-4C

100 50 0 100 200

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

N

LEGEND

- EDGE OF PAVEMENT
- BRIDGE LOCATION
- FILL LINE
- CUT LINE

U.S. 401

RAEFORD RD

NC STATE FISH HATCHERY

N C STATE FISH HATCHERY

STATE FISH HATCHERY

BARKER CORP

PARKER, G. B. HEIRS

SHAW-GILLIS PROPERTY

GILLIS, WILLIAM J & MOTHER

RETAINING WALL

RETAINING WALL

BUDDING BROOK DR

CULPEPPER LN

R/W

SOIL

BACK OF EXHIBIT 7-4C

Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

US 401 Interchange
SPUI

Exhibit 7-4D

100 50 0 100 200

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

N

LEGEND

- EDGE OF PAVEMENT
- BRIDGE LOCATION
- FILL LINE
- CUT LINE

U.S. 401

RAEFORD RD

NC STATE FISH HATCHERY

RETAINING WALL

RETAINING WALL

RETAINING WALL

SHAW-GILLIS PROPERTY

GILLIS, WILLIAM J & MOTHER

BARKER CORP

PARKER, C. B. HEIRS

N C STATE FISH HATCHERY

STATE FISH HATCHERY

BACK OF EXHIBIT 7-4D

On April 21, 1993, an Interagency Meeting was held for the project. At the meeting a representative of the HPO and a representative of NCWRC were present. During the meeting the East and West Avoidance Corridors were introduced and the impacts of each were discussed. It was decided that both Avoidance Alternates be shown to the public at the second Citizens Informational Workshop.

On June 25, 1993, a meeting was held with the HPO. At the meeting the HPO representative indicated a desire to see one of the avoidance corridors selected to preserve the Shaw-Gillis House and property. If avoiding the property was not possible, it was suggested to purchase the house and move it as mitigation for impacting the property.

Correspondence from the NCWRC on November 5, 1993 indicated that acquisition of fish hatchery ponds for highway use may be considered by the NCWRC if comparable pond and/or depot facilities are provided to compensate for those lost.

In November 1993, at the property owner's request, consideration was given to acquiring the Shaw-Gillis House and associated property through advance right-of-way acquisition and relocating the house to another site. However, this action was not possible prior to the completion of the Draft Environmental Impact Statement (DEIS) and Section 4(f) Evaluation.

In March 1996, the FHWA Regional Office in Atlanta, Georgia, determined that the fish hatchery ponds south of Raeford Road (SR 3569) was not eligible for protection under Section 4(f).

In January 1998, the National Register-eligible Shaw-Gillis Historic District was formed by combining the Shaw-Gillis House and property with the William John Gillis House No. 2. The HPO concurred that the Shaw-Gillis Historic District was eligible for the NRHP under Criterion C for architecture. It was determined that Alternates B, C, D, E, G, H, I, and J have a Conditional No Adverse Effect on the Shaw-Gillis Historic District. The determination is contingent on review of the road closure plan for Raeford Road (SR 3569) and review of the landscape plan along US 401 and proposed Outer Loop Corridor (see Appendix E for a copy of the correspondence).

In October 2000, the "least environmentally damaging practicable alternative" was chosen through the combined NEPA/404 process. The Preferred Alternative (Alternate D) will impact the Shaw-Gillis Historic District.

In September 2003, project team members met with Mr. William Gillis to review three interchange design alternatives at South Raeford Road (US 401) that minimize impacts to his property. They also discussed possible 4(f) mitigation, such as retaining walls and landscaping.

In December 2003, representatives from FHWA, HPO, NCWRC, and other federal, state, and local agencies reviewed the three interchange design options. The agencies selected the compressed diamond interchange since it comprehensively minimized harm to the Shaw-Gillis Historic District and impacts to the other resources in this area. In March 2004, the Merger Team concurred with avoidance and minimization of the Preferred Alternative with a compressed diamond interchange at South Raeford Road (US 401).

7.3 THE USFWS SECTION 4(f) CONSERVATION EASEMENT

7.3.1 Description of the USFWS Conservation Easement

7.3.1.1 Size and Location

The USFWS conservation easement encompasses 14.3 acres in southwestern Cumberland County, approximately 3 miles south of the town of Hope Mills. The conservation easement is divided by Parkton Road (SR 1118) into two tracts of land; one tract is north of Parkton Road (SR 1118) and the other is south, as shown by Exhibit 7-5. The northern tract of the easement is also bounded by Brisson Road (SR 1117) to the west. Based on the Department of Interior's August 9, 1999 comments on the DEIS, the conservation easement is located within a tract of land belonging to a private citizen. The property contains a home site that is excluded from the conservation easement. The easement is managed by the Roanoke River National Wildlife Refuge in Windsor, North Carolina.

MINIMIZE HARM RIGHT OF WAY

SECTION 4(f) IMPACT FROM MINIMIZE HARM OPTION

CONCEPTUAL RIGHT-OF-WAY

SECTION 4(f) IMPACT FROM CONCEPTUAL RIGHT OF WAY

USFWS CONSERVATION EASEMENT SECTION 4(f) PROPERTY

0 150m

0 500'

Fayetteville Outer Loop Corridor Study

STATE PROJECT NO. 8.2441301

T.I.P. NO. U-2519

USFWS Conservation Easement
Section 4(f) Impact

Exhibit 7-5

BACK OF EXHIBIT 7-5

7.3.1.2 Relationship to Alternatives

Exhibit 7-1 shows the relationship of the USFWS conservation easement to Alternates B, F, G, H, and K, which impact the eastern portion of the conservation easement. The Preferred Alternative (Alternate D), Alternates C, E, I, J, L, M, N, and the No-Build Alternative avoid the Section 4(f) property.

7.3.1.3 Ownership and Type of Property

The conservation easement is in private ownership and is managed by the Roanoke River National Wildlife Refuge as part of the National Wildlife Refuge System pursuant to the National Wildlife Refuge System Administration Act. The conservation easement was deeded on July 31, 1989 and is part of a tract of land conveyed from Thomas and Myrtle Furmage to the United States of America on December 3, 1988. The purposes of the conservation easement are to preserve and maintain wetland and floodplain areas as well as protect and enhance the plant and animal habitat and populations within the easement area. The easement is predominantly forested, serving as good habitat for resident and migratory wildlife species.

- The restrictions and covenants contained in the easement deed are perpetual and protect the property from being disturbed. The covenants include: No dwellings, barns, outbuildings, or other structures shall be built within the easement area.

- The vegetation or hydrology of the easement will not be altered in any way or by any means including cutting or mowing, cultivation, grazing, harvesting wood products, burning, placing of refuse, draining, dredging, channeling, filling, leveling, disking, pumping, diking, impounding, or diverting or affecting the natural flow of surface or underground waters into, within, and out of the easement area.

7.3.1.4 Available Activities

The USFWS, as the Grantee of the easement deed, has access to the property and has various rights regarding the management of the easement. The easement does not authorize public entry upon or use of the land.

7.3.1.5 Access

The conservation easement is located south of the town of Hope Mills and can be accessed from Parkton Road (SR 1118) or Brisson Road (SR 1117). There are no apparent roads leading into the conservation easement.

7.3.1.6 Relationship to Other Similarly Used Lands

There are no other conservation easements in or around the project area.

7.3.1.7 Applicable Clauses Affecting Ownership

The conservation easement is in private ownership and functions as a National Wildlife Refuge managed by the USFWS. Section 4(f) protection is afforded to the perpetual conservation easement. The conservation easement represents all ownership rights to real property for so long as the property is used for its intended purpose or until it is relinquished.

7.3.1.8 Unusual Characteristics

There are no unusual characteristics of the Section 4(f) land.

7.3.2 Impacts on the Section 4(f) Conservation Easement

Alternates B, F, G, H, and K impact the eastern portion of the conservation easement with the alignment protected under the Roadway Corridor Official Map Act. The alternates form an interchange with Parkton Road (SR 1118) and impact the easement with the conceptual entrance/exit ramps as well as the through lanes of the freeway. Exhibit 7-5 shows the location of the proposed freeway and interchange in relation to the Section 4(f) conservation easement. The conceptual right of way of the alternates impacts approximately 12.8 acres of the entire 14.3-acre area under Section 4(f) protection.

7.3.2.1 Avoidance Alternatives

The No-Build Alternative, the Preferred Alternative (Alternate D), and Alternates C, E, I, J, L, M, and N does not impact the Section 4(f) property. The relationships of these alternates to the conservation easement are shown in Exhibit 7-1.

The avoidance alternates form two separate corridors located south of the Section 4(f) conservation easement. The Preferred Alternative and Alternates E, I, L, and M are located

approximately 1 mile south of the easement while Alternates C, J, and N are located approximately 1.5 miles south of the easement.

Avoidance of the conservation easement was studied on both sides of the property. Avoidance to the north of the conservation easement is not a viable option because of increased residential relocations associated with the Arlington Plantation subdivision. The subdivision is located just north of the conservation easement along the northeast boundary of Alternates B, F, G, H, and K. This portion of Cumberland County is quickly being developed as the town of Hope Mills and the city of Fayetteville continue to grow and expand.

Avoidance of the conservation easement immediately south of the conceptual alignment of Alternates B, F, G, H, and K also was determined to be unreasonable. The resulting interchange geometrics were undesirable; residential relocations increased; and construction costs increased. Additionally, improvements to Parkton Road (SR 1118) were required. These improvements result in direct impacts to the conservation easement property.

7.3.2.2 Measures to Minimize Harm

Minimization alternatives were examined for the alternates that impact the conservation easement (Alternates B, F, G, H, and K). Minimizing harm to the Section 4(f) conservation easement was accomplished by revising the interchange design at Parkton Road (SR 1118). Replacing the southbound exit ramp in the northwest quadrant of the interchange with an elongated loop ramp in the southwest quadrant reduces and minimizes the impact to the conservation easement. The revised interchange design impacts approximately 3.15 acres of the Section 4(f) property as shown on Exhibit 7-5. The minimize harm option impacts approximately 1.8 acres of wetlands on the conservation easement compared to the original alignment of Alternates B, F, G, H, and K, which impacts approximately 11.5 acres of wetlands.

7.3.3 Preferred Alternative

The Preferred Alternative (Alternate D) will not impact the Section 4(f) wildlife refuge conservation easement. No additional measures to minimize harm are required.

7.3.4 Coordination

Coordination with the USFWS has taken place during the study concerning the conservation easement. On September 24, 1997, a meeting was held to discuss the USFWS conservation easement at the Furmage property. The discussion focused on the impacts associated with the alignment protected by the Roadway Corridor Official Map, the minimize harm option, and the avoidance alternates.

In October 2000, Alternate D was chosen as the "least environmentally damaging practicable alternative" through the NEPA/Section 404 Merger 01 Process. The Preferred Alternative (Alternate D) will not impact the Wildlife Refuge conservation easement.

7.4 MEASURES TO MINIMIZE HARM

Measures to minimize harm to the Shaw-Gillis Historic District, the only Section 4(f) property impacted by the Preferred Alternative, were incorporated into the Preferred Alternative selected for the Fayetteville Outer Loop. The Preferred Alternative (Alternate D) will directly impact approximately 3.5 acres of the western side of the Shaw-Gillis Historic District. The Shaw-Gillis House will not be impacted.

The Preferred Alternative incorporates a 180-foot shift in the four-lane roadway away from the property to minimize impacts. A compressed diamond interchange at South Raeford Road (US 401) is also included in the Preferred Alternative to minimize impacts to the historic district, fish hatchery, high quality wetlands, and Lake Rim Park. Additional measures to minimize harm incorporated in the Preferred Alternative include the closing of Raeford Road (SR 3569) and providing landscaping adjacent to the project. A retaining wall along the ramp adjacent to the property was reviewed as a measure to minimize harm. This retaining wall reduces the impacts to the Shaw-Gillis property from 4.7 acres to 3.5 acres.

7.5 CONCLUDING STATEMENT

Based upon a review of all the alternates and cumulative impacts to all resources, there is no feasible and prudent alternative to the use of land from the Shaw-Gillis Historic District, and the proposed action includes all possible planning to minimize harm to the Shaw-Gillis Historic District.

SECTION 8
REFERENCES

The following references were used in the preparation of this Condensed Final Environmental Impact Statement:

Department of Transportation Act of 1966, Section 4(f).

Florence & Hutcheson, *Design Noise Report, Fayetteville Outer Loop from East of SR 1415 (Yadkin Road) to East of NC 24 (Bragg Boulevard)*, 2000.

H.W. Lochner, *Design Year 2025 Capacity Analysis – Fayetteville Outer Loop, I-95 to Cliffdale Road*, 2001 (revised 2002).

H.W. Lochner, *Design Year 2025 Capacity Analysis – Fayetteville Outer Loop, North of Cliffdale Road*, 2003 (revised 2004).

H.W. Lochner, *Air Quality Study – Fayetteville Outer Loop Corridor Study*, August 2004.

H.W. Lochner, *Noise Impact Assessment for the Fayetteville Outer Loop from East of NC 24 (Bragg Boulevard) to US 401 (Raeford Road)*, 2004.

H.W. Lochner, *Noise Study and Evaluation, Fayetteville Outer Loop, I-95 to Cliffdale Road*, 2004.

H.W. Lochner, Inc., *Jurisdictional Waters Report*, November 2004.

J.H. Carter and Associates, *Red-cockaded Woodpecker Biological Assessment for the Fayetteville Outer Loop, Cumberland, Hoke, and Robeson Counties, North Carolina*, August 4, 2004 (revised September 9, 2004).

J.H. Carter and Associates, *Biological Assessment (excluding the red-cockaded woodpecker) for Fayetteville Outer Loop, Cumberland, Hoke, and Robeson Counties, North Carolina*, September 2004.

Mattson, Alexander and Associates, Inc., *Phase II Intensive Architectural Survey and Evaluations, Fayetteville Outer Loop Corridor Study*, 1997.

National Historic Preservation Act of 1966, Section 106, as amended (36 C.F.R. 800).

New South Associates, *Technical Report #992 for the Fayetteville Outer Loop Project*, May 6, 2002.

New South Associates, *Preliminary Management Summary, Cultural Resources Survey of 285 Acres South of Cliffdale Rd*, November 24, 2003.

New South Associates, *Preliminary Management Summary, Cultural Resources Survey of 534 Acres North of Cliffdale Rd*, February 12, 2004.

New South and Associates, *Cultural Resource Survey of 31 Additional Land Parcels of the Proposed West Fayetteville Outer Loop, Cumberland and Robeson Counties, North Carolina*, October 18, 2004.

State of North Carolina, Department of Transportation, *Design Noise Report, Fayetteville Outer Loop from South of SR 1400 (Cliffdale Road) to East of SR 1415 (Yadkin Road)*, 2001.

United States Department of Army, *Fort Bragg, Fort Bragg and Camp Mackall Endangered Species Management Plan*, 1997.

Conservation Easement Deed - land conveyed to the United States of America acting by and through the Secretary of the Interior on behalf of the United States Fish and Wildlife Service by deed dated July 31, 1989, which deed is recorded at book 3503, page 0561, in the land records of Cumberland County, State of North Carolina.