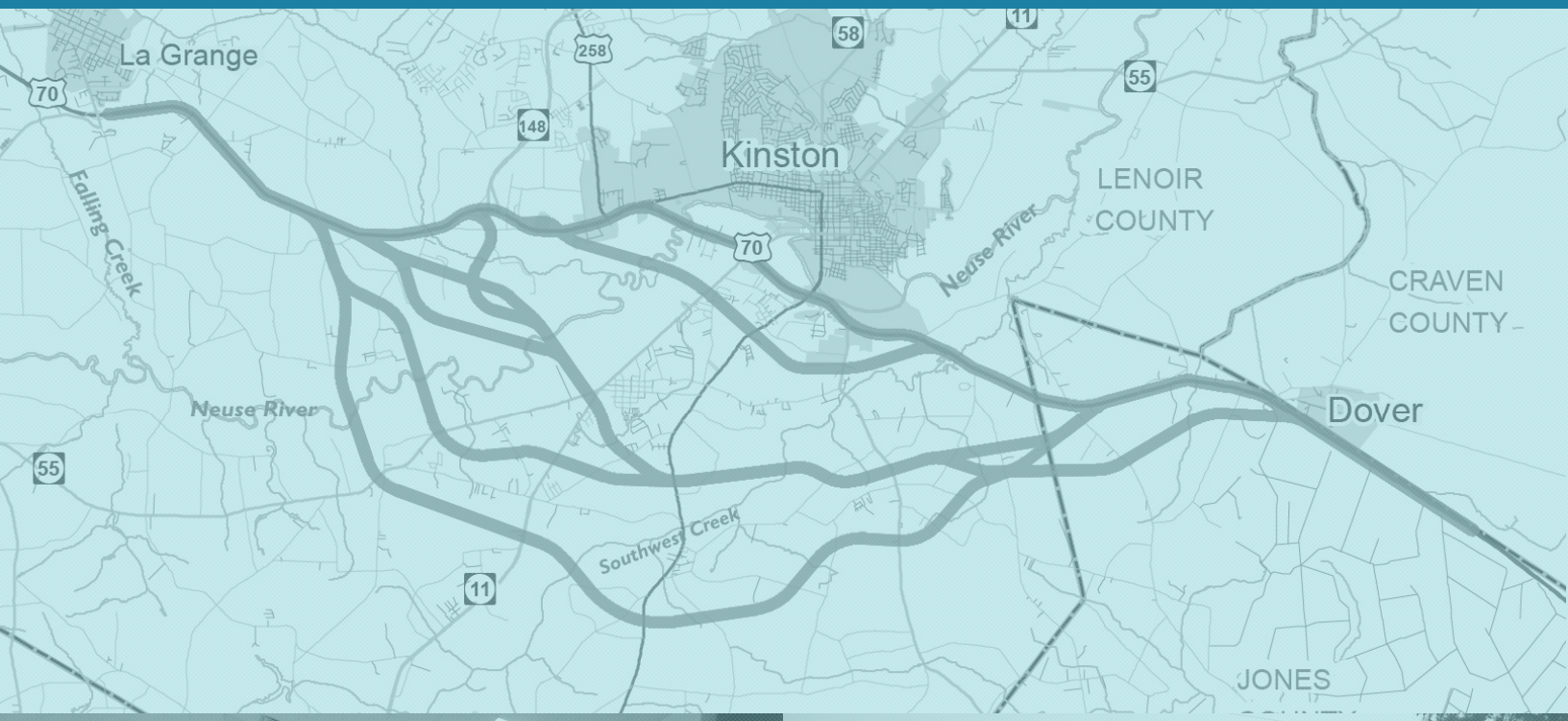
KINSTON BYPASS 70

STIP Project Number R—2553

Draft Environmental Impact Statement



North Carolina Department of Transportation

June 2019

PROPOSED KINSTON BYPASS
U.S. 70 FROM LA GRANGE TO DOVER
CRAVEN, JONES, AND LENOIR COUNTIES
WBS NUMBER 34460
STIP PROJECT NUMBER R-2553
USACE ACTION ID 2009-01603

ADMINISTRATIVE ACTION

DRAFT ENVIRONMENTAL IMPACT STATEMENT

June 2019

US Army Corps of Engineers®

Co-Lead Agency: US Army Corps of Engineers-Wilmington District
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FOR THE COMMANDER

3 June 2019 Scott McLendon

Date

Scott McLendon
Chief, Regulatory Division
Wilmington District

6/18/19

Date

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Documentation Prepared by
AECOM Technical Services of North Carolina, Inc.

6/19/19
Date

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For the:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

6/19/19
Date

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6/19/19
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KINSTON BYPASS 70 Project Fact Sheet

PROJECT LOCATION

Project is located in North Carolina near Kinston, Lenoir County; western part of Craven County; and northern part of Jones County, North Carolina.

ABSTRACT

The North Carolina Department of Transportation (NCDOT) is proposing a four-lane, median divided freeway with full control of access in Lenoir, Jones and Craven Counties in North Carolina. The project extends from US 70, a designated principal arterial, near La Grange (in Lenoir County) to US 70 near Dover (on the Jones and Craven County line), a distance of approximately 22 miles. The proposed action is listed in the State Transportation Improvement Program (STIP) as Project Number R-2553. The purpose of the Kinston Bypass project is to improve regional mobility, connectivity, and capacity for US 70 between La Grange and Dover in a manner that meets the intent of the North Carolina Strategic Transportation Corridors (STC) policy (previously the Strategic Highway Corridors policy). The project has a design speed of 70 miles per hour (mph), and would serve as a bypass of Kinston from La Grange to Dover. The Draft Environmental Impact Statement (DEIS) was prepared to consider the effects the proposed project would have on the human and natural environment.

PROJECT SPONSOR

NCDOT

FEDERAL LEAD AGENCY

United States Army Corps of Engineers (USACE)

NEPA RESPONSIBLE OFFICIAL

Thomas A. Steffens - USACE

CONTACT PERSONS

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DATE OF ISSUE

July 22, 2019

Authors & Principal Contributors

NCDOT | AECOM

DOCUMENT AVAILABILITY

This DEIS is available online at the following link: https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Copies of the DEIS are also available for viewing at the following locations:

NCDOT Division 2*
2815 Rouse Road Extension, Kinston, NC 28504

NCDOT Kinston District Office*
1629 U.S. 258 South, Kinston, NC 28504

Kinston-Lenoir County Public Library
510 N. Queen Street, Kinston, NC 28501

Cove City-Craven Library
102 N Main St, Cove City, NC 28523

La Grange Public Library
119 E Washington St, La Grange, NC 28551

* Indicates locations where copies of the Public Hearing Maps are also available for viewing.

COMMENTS

Comments on this DEIS can be made in writing by sending a letter to Ms. Heather Lane of the NCDOT at the address listed (see Contact Persons).
Written comments are due by the close of business on September 6, 2019.

Project Commitments

The project commitments listed below are preliminary in nature and will be further evaluated upon selection of the applicant's preferred alternative and the development of more detailed designs and environmental impact analysis that is part of the Final Environmental Impact Statement (FEIS). The FEIS will include a more definitive list of project commitments that includes those listed below, as applicable, as well as other needs that come to light during the public and agency review process, as well as during the development of the FEIS.

- Once the applicant's preferred alternative is selected, consultation will be undertaken to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic architectural resources (36 CFR 800.6).
- Full and fair access to meaningful involvement by low-income and minority populations in project planning and development is an important aspect of environmental justice. Ensuring full and fair access means actively seeking the input and participation from those typically under-represented groups throughout all the project stages. Residents can provide important information on community concerns, special sites, and unusual traffic, pedestrian, or employment patterns. This information can be used in the design and evaluation of alternatives, to avoid negative impacts to valued sites, and to support the development of safe, practical, and attractive designs of the detailed study alternatives (DSA) that are responsive to the concerns of environmental justice communities.
- An erosion and sedimentation control plan will be developed for the applicant's preferred alternative prior to construction.
- Impacts to Hazard Mitigation Grant Program properties will be avoided and minimized to the extent practicable during final project design. North Carolina Department of Transportation's (NCDOT) coordination with the Federal Emergency Management Agency (FEMA) and North Carolina Division of Emergency Management will ensure that any impacts will be mitigated to the fullest extent practicable.
- Field investigations, as appropriate and impacts for all federally protected species will be evaluated once the applicant's preferred alternative is selected.
- Identification of essential fish habitat will be coordinated with National Oceanic and Atmospheric Administration, National Marine Fisheries, and NCDOT's Biological Surveys Group once the applicant's preferred alternative is selected.
- During construction, the moratorium on in-water work during spawning periods within the designated anadromous fish spawning areas along the Neuse River will be observed (February 15 through June 30).
- Coastal Area Management Act areas of environmental concern determinations and potential impacts will be established once the applicant's preferred alternative is selected and formal consultation with North Carolina Division of Coastal Management has been completed.
- Impacts to the navigable waters in the form of bridge piers will be determined once the applicant's preferred alternative is selected and bridge designs have been completed.

- Potential impacts to protected stream buffers will be determined once the applicant's preferred alternative is selected and formal stream delineations have been conducted.
- For all new location crossings on FEMA-regulated streams, a Conditional Letter of Map Revision and Letter of Map Revision will be prepared and submitted to the North Carolina Floodplain Mapping Program for approval.
- If one of the new location DSAs is chosen to be the applicant's preferred alternative, the vertical alignment of the mainline will be revised during final design revisions so that the sag locations show a minimum of a 1.5-foot freeboard at the proposed shoulder point during a 1 percent annual chance flooding event.
- Additional testing at hazardous material sites will be completed once the applicant's preferred alternative is selected, and a work plan will be developed based on the final design to address any contaminated material that may be encountered during construction.
- NCDOT will ensure that access is maintained during construction for farm equipment and impacts to agricultural operations are minimized during construction.
- If right-of-way is acquired from the Voluntary Agricultural District (VAD) property through eminent domain, the Lenoir County VAD Ordinance requires that the Agricultural Advisory Board hold a public hearing on the proposed condemnation before condemnation may be initiated. Any VAD lands converted to non-agricultural use as part of a temporary construction easement must be returned to farmable condition by the project's completion.
- The highway will be landscaped to improve the aesthetic quality of the view shed.
- A Design Noise Report will be completed on the applicant's preferred alternative to determine more specific details regarding the noise abatement measures.

Table of Contents

List of Appendices

Figures

Tables

Acronyms and Abbreviations

#	number
1SB	Upgrade Existing US 70 with Shallow Bypass
1UE	Upgrade Existing US 70
AADT	average annual daily traffic
AASHTO	American Association of State Highway and Transportation Officials
ac	acre
ACS	American Community Survey
AEC	area of environmental concern
AFSA	anadromous fish spawning area
APE	area of potential effects
BG	block group
C	Class C Waters
CAMA	Coastal Area Management Act
CARTS	Craven Area Rural Transit System
C-CAP	Coastal Change Analysis Program
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGIA	Center for Geographic Information and Analysis
CIA	Community Impact Assessment
CP	concurrence point
CSX	CSX Transportation
CT	census tract
CTP	Comprehensive Transportation Plan
dB	decibel
DCIA	direct community impact area
DEIS	Draft Environmental Impact Statement
DOE	Department of Energy
DSA	detailed study alternative
DWR	Division of Water Resources
EIA	Economic Impact Assessment
EJ	environmental justice
EMS	emergency medical services
EPA	Environmental Protection Agency
ETJ	extraterritorial jurisdiction
FAST	Fixing America's Surface Transportation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLUSA	future land use study area
ft	foot/feet
GIS	geographic information system
GNIS	Geographic Names Information System
GS	General Statute
GTP	Global TransPark

HMGP	Hazard Mitigation Grant Program
HPO	Historic Preservation Office
IPNA	inland primary nursery area
LCT	Lenoir County Transit
LEP	limited English proficiency
LOS	level of service
LUSA	Land Use Scenario Assessment
MALAA	May affect, likely to adversely affect
MOA	Memorandum of Agreement
mph	miles per hour
MSAT	mobile source air toxics
MWh	megawatt hours
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NC	North Carolina
NCAC	North Carolina Administrative Code
NCDA&CS	North Carolina Department of Agriculture and Consumer Services
NCDCM	North Carolina Division of Coastal Management
NCDEM	North Carolina Division of Emergency Management
NCDENR	North Carolina Department of Environment and Natural Resources
NCDEQ	North Carolina Department of Environmental Quality
NCDMS	North Carolina Division of Mitigation Services
NCDOT	North Carolina Department of Transportation
NCDWR	North Carolina Division of Water Resources
NCEM	North Carolina Emergency Management
NC-HPO	North Carolina Historic Preservation Office
NCNHP	North Carolina Natural Heritage Program
NCRR	North Carolina Railroad
NCSHPO	North Carolina State Historic Preservation Office
NCTN	North Carolina Transportation Network
NCWRC	North Carolina Wildlife Resources Commission
NEPA	National Environmental Policy Act of 1969
NHS	National Highway System
NLEB	northern long-eared bat
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NRTR	Natural Resources Technical Report
NS	Norfolk Southern
NSA	noise study area
NSW	nutrient sensitive waters
PBO	programmatic biological opinion
PDA	probable development area
RCW	red-cockaded woodpecker

ROW	right-of-way
SB	shallow bypass
SQG	small quantity generator
SR	State Route
STC	strategic transportation corridors
STI	strategic transportation investments
STIP	State Transportation Improvement Program
STRAHNET	strategic highway network
Sw	swamp waters
TDM	transportation demand management
TRB	Transportation Research Board
TSM	transportation system management
U.S.C.	United States Code
UE	Upgrade Existing
US	United States
USACE	US Army Corps of Engineers
USCG	US Coast Guard
USDA	US Department of Agriculture
USDOJ	US Department of Justice
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
UST	underground storage tank
UT	unnamed tributary
VAD	voluntary agricultural district
VMT	vehicle miles traveled
WBS	work breakdown structure
WS	water supply

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

TYPE OF ACTION

Administrative Action Environmental Impact Statement

[X] Draft [ ] Final

CONTACTS

The United States (US) Army Corps of Engineers (USACE) is serving in the role of Lead Federal Agency on this project.

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

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Greenville, NC 27835
(252) 439-2847

PROPOSED ACTION

Description of Proposed Action

The NCDOT is proposing the Kinston Bypass, a projected four-lane, median-divided freeway with full control of access in Lenoir, Jones, and Craven counties in North Carolina. The project extends from US 70 near La Grange (in Lenoir County) to US 70 near Dover (at the Jones and Craven county line). The project study area is located mostly in Lenoir County in eastern North Carolina, with the eastern part of the project study area in Craven and Jones counties. For the purposes of this DEIS the term “upgrade” is defined as a widening of the existing roadway to include adequate capacity to handle the forecasted traffic and provide for full control of access.

The proposed action is listed in NCDOT’s State Transportation Improvement Program (STIP) as Project Number R-2553 (NCDOT 2017h). The project is funded in the 2018-2027 STIP for construction to start in state fiscal year 2024.

Purpose of the Proposed Action

The purpose of the Kinston Bypass project is to improve regional mobility, connectivity, and capacity for US 70 between La Grange and Dover in a manner that meets the intent of the North Carolina Strategic Transportation Corridors (STC) policy (previously the Strategic Highway Corridors policy) (NCDOT 2015c).

Need for the Proposed Action

The Kinston Bypass project is needed to address traffic congestion, capacity deficiencies, and through-traffic delays on US 70 between La Grange and Dover.

ALTERNATIVES

The National Environmental Policy Act (NEPA) requires that a full range of alternatives be considered for this project. Five general types of alternatives were considered and were evaluated to determine whether they could meet the stated purpose and need. The No-Build Alternative, the Transportation System Management Alternative, the Travel Demand Management Alternative, the Mass Transit Alternative, and the build alternatives.

Following the evaluation of the preliminary alternatives, the No-Build, Transportation System Management, Travel Demand Management, and Mass Transit alternatives were determined to not be reasonable because they would not meet the purpose of and need for the project. The No-Build Alternative must be carried forward under NEPA to allow for a basis of comparison of the detailed study alternatives (DSA). Therefore, the only type of alternative that would meet the purpose and need would be the construction of a build alternative. Numerous build alternatives were evaluated and several eliminated from further consideration due to either not meeting the purpose of and need for the project or not being practicable from an engineering or environmental standpoint.

Following the evaluation of the preliminary alternatives, 12 build alternatives were selected as DSAs for the Kinston Bypass project. The following is a brief description of each of the alternatives carried forward. Refer to section 2.4.1 for more detailed descriptions and figures of the alternatives.

Alternatives 1UE (Upgrade Existing US 70) and 1SB (Shallow Bypass): Alternatives 1UE and 1SB begin at the western terminus of the project at the North Carolina (NC) 903/US 70 interchange south of La Grange. Alternative 1UE would follow existing US 70 for approximately 21 miles from the NC 903/US 70 interchange south of La Grange to the project terminus east of Dover and would upgrade the existing US 70 to a full control of access highway. Alternative 1SB would also begin at the NC 903/US 70 interchange in La Grange and would follow existing US 70 for approximately 7 miles to just east of NC 148 (C.F. Harvey Parkway). A new interchange east of NC 148 would provide access to the shallow bypass section of Alternative 1SB, which would parallel existing US 70 to the south on new location for approximately 6.5 miles. A new interchange east of Lenoir Community College would connect Alternative 1SB back to existing US 70. Alternative 1SB would follow existing US 70 from this interchange east to the project terminus east of Dover and would upgrade US 70 to a full control of access highway with interchanges at Wyse Fork Road (State Route [SR] 1002)/Caswell Station Road (SR 1309) and Old US 70 (West Kornegay Street).

Alternatives 11 and 12: Alternatives 11 and 12 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 7 miles to the NC 148/US 70 interchange. At NC 148, both alternatives turn south and then east on new location for approximately 9.5 miles with interchanges at NC 11/NC 55, US 258, and NC 58. The alternatives cross NC 58 just south of Southwood Elementary School before diverging east of NC 58. Alternative 11 continues eastward on new location before interchanging with existing US 70 near Old US 70 just west of Dover. Alternative 12 would turn back to the north to interchange with existing US 70 just east of the Lenoir/Jones county line and would upgrade existing US 70 to the project terminus east of Dover.

Alternatives 31 and 32: Alternatives 31 and 32 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 4.5 miles and would then travel southeast on new location. A new connector approximately 1.5 miles long would connect north to the US 70/NC 148 interchange. From the Neuse River crossing to US 58, Alternatives 31 and 32 are the same as Alternatives 11 and 12.

Alternatives 35 and 36: Alternatives 35 and 36 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 2.25 miles. A new interchange here would allow both alternatives to diverge onto new location and travel to the south. The alternatives swing back to the north before diverging at Cobb Road. East of Cobb Road, Alternative 36 is the same as Alternatives 11, 31, 65, and 51. Alternative 35 continues northeast on new location, and from Wyse Fork Road eastward is the same as Alternatives 12, 32, 63, and 52.

Alternatives 51 and 52: Alternatives 51 and 52 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 2.25 miles. A new interchange here would allow both alternatives to diverge onto new location and travel to the south. East of US 258, Alternative 51 is the same as Alternatives 11, 31, and 65, and Alternative 52 is the same as Alternatives 12, 32, and 63.

Alternatives 63 and 65: Alternatives 63 and 65 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 4.5 miles and would then travel south and then east on new location. A new connector approximately 2 miles long would connect north to the US 70/NC 148 interchange. From east of the Neuse River crossing, Alternative 63 is the same as Alternatives 12 and 32, and Alternative 65 is the same as Alternatives 11 and 31.

SUMMARY OF IMPACTS

A comparison of the DSAs is shown in Table S-1.

Table S-1: Alternatives comparison matrix

	Alternative 1UE	Alternative 1SB	Alternative 11	Alternative 12	Alternative 31	Alternative 32	Alternative 35	Alternative 36	Alternative 51	Alternative 52	Alternative 63	Alternative 65
General												
Length (miles)	24.5	24.5	26.5	26.7	25.3	25.5	28.6	28.3	25.9	26.1	25.6	25.4
Intelligent transportation system cost ($)	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000
Utility cost ($)	$12,830,000	$10,800,000	$9,130,000	$9,430,000	$7,840,000	$8,080,000	$8,620,000	$7,980,000	$7,930,000	$9,880,000	$7,880,000	$7,630,000
Right-of-way cost ($)	$183,070,000	$123,710,000	$78,330,000	$85,050,000	$63,340,000	$66,990,000	$65,490,000	$64,200,000	$54,560,000	$57,380,000	$64,010,000	$61,180,000
Construction cost ($)	$245,900,000	$292,800,000	$284,100,000	$299,000,000	$284,200,000	$288,900,000	$290,400,000	$297,800,000	$296,200,000	$275,800,000	$355,900,000	$358,900,000
Mitigation cost ($)	$12,940,000	$12,250,000	$12,130,000	$13,390,000	$12,290,000	$13,550,000	$13,940,000	$12,810,000	$11,720,000	$12,980,000	$13,440,000	$12,180,000
Total cost ($)	$455,190,000	$440,010,000	$384,140,000	$407,320,000	$368,120,000	$377,970,000	$378,900,000	$383,240,000	$370,860,000	$356,490,000	$441,680,000	$440,340,000
Socioeconomic Resources												
Residential (#)	125	162	95	101	76	92	130	113	97	113	98	80
Business (#)	137	67	35	40	30	37	32	27	26	32	36	30
Non-Profit (#)	0	0	0	0	0	0	0	0	0	0	0	0
Total (#)	**262**	**229**	**130**	**141**	**106**	**129**	**162**	**140**	**123**	**145**	**134**	**110**
Communities (#)	3	3	2	3	3	3	5	5	3	3	3	3
Environmental Justice residential areas (#)	4	6	2	3	2	3	5	4	4	5	4	3
Minority block groups (#)	2	0	0	0	0	0	0	0	0	0	0	0
Low income block groups (#)	6	3	3	3	3	3	3	3	3	3	3	3
Schools (#)	1	1	0	0	0	0	0	0	0	0	0	0
Hospitals (#)	0	0	0	0	0	0	0	0	0	0	0	0
Churches (#)	9	6	1	1	1	1	1	1	0	0	1	1
Fire departments (#)	1	1	1	2	1	2	1	0	1	2	2	1
Emergency Medical Services stations (#)	0	0	0	0	0	0	0	0	0	0	0	0
Airports (#)	0	0	0	0	0	0	0	0	0	0	0	0
Parks and recreational areas (#)	1	0	0	0	0	0	0	0	0	0	0	0
Cemeteries (#)	2	1	1	0	1	0	2	2	1	0	0	1
VADs (#)	0	0	0	0	0	0	1	1	0	0	0	0
VADs (ac)	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.0	0.0	0.0
NCNHP managed areas (ac)	6.0	2.3	0.0	0.0	6.1	6.1	0.0	0.0	0.0	0.0	0.0	0.0
Prime farmland (ac)	282.2	302.3	392.5	422.4	404.3	434.0	432.4	415.2	410.3	440.1	420.5	390.6
Farmland of statewide importance (ac)	172.2	222.5	236.8	210.2	263.7	236.6	203.4	225.6	224.4	198.3	218.2	243.7
Farmland of unique importance (ac)	53.3	53.3	56.8	56.8	51.7	51.7	47.3	47.3	48.8	48.8	51.7	51.7
Economic Resources												
Annual total net benefits (quantified 2040)	$22.5 million	$23.4 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million
Physical Resources												
Noise receptors impacted	38	56	34	37	41	44	23	21	24	27	41	38
Hazardous materials sites (#)	18	9	9	10	7	8	6	5	5	6	8	7
Cultural Resources												
Section 106 adverse effects	2	2	3	4	6	7	2	1	1	2	6	5
Archaeological sites - high probability (ac)*	649.8	829.3	628.9	753.6	590.3	714.3	626.1	526.3	516.8	641.8	668.4	542.8
Archaeological sites - low probability (ac)*	570.6	480.1	684.37	583.9	688.0	588.4	816.9	883.1	756.4	657.2	664.7	763.9

	Alternative 1UE	Alternative 1SB	Alternative 11	Alternative 12	Alternative 31	Alternative 32	Alternative 35	Alternative 36	Alternative 51	Alternative 52	Alternative 63	Alternative 65
Natural Resources												
Maintained/Disturbed (ac)	706.2	516.6	264.2	346.3	242.3	324.3	312.7	230.1	214.9	297.6	315.5	232.8
Agriculture (ac)	317.9	507.9	672.2	689.6	664.6	682.3	714.1	699.9	637.3	655.6	667.8	648.9
Pine Plantation (ac)	73.0	148.5	246.7	193.0	242.6	188.7	265.3	305.1	266.1	212.4	211.3	265.1
Forested Upland (ac)	21.5	25.3	28.0	19.9	27.9	19.7	29.7	38.0	34.2	26.0	19.4	27.6
Palustrine Wetland (ac)	98.3	97.4	98.2	86.6	97.0	85.4	117.3	130.7	115.1	103.5	114.8	126.3
Open Water (ac)	3.5	13.7	3.9	2.3	3.9	2.3	4.0	5.6	5.6	4.0	4.3	5.9
Total biotic resources (ac)	**1220.4**	**1309.4**	**1313.2**	**1337.7**	**1278.3**	**1302.7**	**1443.1**	**1409.4**	**1273.2**	**1299.1**	**1333.1**	**1306.6**
Stream crossings (#)[a]	43	44	45	50	41	45	42	40	38	42	45	41
Stream length (ft) [a]	32,057	33,112	26,771	33,864	26,620	33,699	31,295	24,888	23,638	30,717	31,368	24,289
100-year floodplain (ac) [b]	358.6	147.7	95.2	83.9	109.0	97.7	52.1	62.3	73.4	62.1	139.1	150.4
500-year floodplain (ac)[c]	75.0	130.8	23.9	23.9	21.7	21.7	40.2	40.2	46.2	46.2	29.2	29.2
Total floodplains (ac)[d]	**433.6**	**278.5**	**119.1**	**107.8**	**130.7**	**119.4**	**92.3**	**102.5**	**119.6**	**108.3**	**168.3**	**179.6**
Floodway (ac)[e]	35.6	0.6	1.8	1.9	1.1	1.1	0.1	0.1	1.1	1.1	1.2	1.2
Riparian wetland [a]	74.1	41.2	68.5	55.1	66.5	53.2	41.6	55.4	60.4	47.1	74.5	87.9
Non-riparian wetland [a]	11.8	24.2	49.4	37.4	60.1	48.1	107.4	116.4	81.8	69.8	37.7	49.7
Total wetland impacts (ac) [a]	**85.9**	**65.**	**117.9**	**92.5**	**126.6**	**101.3**	**149**	**171.8**	**142.2**	**116.9**	**112.2**	**137.6**

[a] Archaeological sites, stream, and wetland impacts were calculated using GIS predictive modelling. Methodologies are described in sections 3.4.2 and 3.6.7, respectively.

[b] The 100-year floodplain is a flood that has a 1 percent chance of being equaled or exceeded in any given year.

[c] The 500-year floodplain is a flood that has a 0.2 percent chance of being equaled or exceeded in a given year.

[d] Total floodplains is the total acreage of 100- and 500-year floodplains within each alternative corridor.

[e] Floodways are FEMA regulated areas that include the channel of a river or watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

UNRESOLVED ISSUES

The selection of an applicant's preferred alternative is necessary before moving forward with the following required actions:

- **Historic architecture studies**: Additional coordination, investigation, and documentation relating to historic architecture resources will be conducted for the applicant's preferred alternative. If affected, consultation with the North Carolina State Historic Preservation Office will be needed to develop appropriate mitigation plans. In addition, a memorandum of agreement (MOA) regarding project effects and mitigation measures will be prepared.
- **Archaeological survey**: A comprehensive archaeological survey of the applicant's preferred alternative will be conducted to identify potentially affected archaeological sites. If affected, consultation with the North Carolina State Historic Preservation Office will be needed to develop appropriate mitigation plans. In addition, an MOA will include archaeology.
- **Hazardous materials investigations**: Supplemental investigations will be conducted for the applicant's preferred alternative.
- **Threatened and endangered species investigations**: A request for concurrence with the biological conclusion will be submitted to the United States Fish and Wildlife Service (USFWS) after selection of the applicant's preferred alternative.
- **Wetland, stream, and riparian buffer investigations**: Two ArcGIS models were used in order to assess potential stream and wetland impacts for the project. A jurisdictional stream model was created by the North Carolina Division of Water Resources (NCDWR) and a jurisdictional wetland model was created by NCDOT. Supplemental investigations will be conducted for the applicant's preferred alternative.
- **Environmental justice**: Coordination with affected populations/communities will continue throughout the project development process.

ACTIONS REQUIRED BY OTHER STATE AND FEDERAL AGENCIES

Through agency coordination in the NCDOT Merger Process, the following permits have been identified as necessary for this project:

- Section 401 Certification from the NCDWR
- Section 404 Permit from the USACE
- Section 10 Permit from the USACE
- Section 9 Permit from the United States Coast Guard
- Section 7 Consultation by the USFWS
- Consultation with NOAA Fisheries

Stormwater discharge with the potential to impair water quality will be under the jurisdiction of the NCDOT National Pollutant Discharge Elimination System stormwater permit.

CHAPTER 1
PROJECT PURPOSE AND NEED

1. PURPOSE OF AND NEED FOR PROJECT

A Draft Environmental Impact Statement (DEIS) has been prepared for the proposed Kinston Bypass project, in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 United States Code [U.S.C.] 4321-4327) as codified in Title 40 of the Code of Federal Regulations (CFR) Parts 1500-1508, and the North Carolina (or State) Environmental Policy Act of 1971, as amended (North Carolina General Statutes [GS] Article 1 Chapter 113A), as codified in the North Carolina Administrative Code (NCAC), Title 1, Chapter 25. The DEIS is intended for use as an informational document by the decision-makers and the public. As such, it represents a disclosure of relevant environmental information concerning the proposed action.

The content of this DEIS conforms to the Council on Environmental Quality (CEQ) guidelines (CEQ 2005), which provide direction regarding implementation of the procedural provisions of NEPA, and the United States (US) Army Corps of Engineers (USACE) Public Interest review.

1.1 PROPOSED ACTION

The North Carolina Department of Transportation (NCDOT) is proposing the Kinston Bypass, by upgrading US 70 from the existing freeway near La Grange, in Lenoir County, to the existing freeway near Dover in Jones County. The proposed improvements include a four-lane, median-divided freeway with full control of access in Lenoir, Jones, and Craven counties in North Carolina. The proposed action is listed in NCDOT's State Transportation Improvement Program (STIP) as Project Number R-2553 (NCDOT 2017h). Figure 1-1 shows the project vicinity and study area of the proposed action.

1.2 PROJECT SETTING

1.2.1 Description of Project Area

Lenoir County lies in the Coastal Plain physiographic province of North Carolina. The topography of Lenoir County is characterized as mostly level, with gently rolling areas along interstream divides. Topography within the project study area is relatively flat with elevations ranging from 14 to 30 feet (4.3 to 9.1 meters) above mean sea level. The dominant natural features in the Kinston urban area are the Neuse River and its associated floodplains and wetland systems. Tributaries to the Neuse River within the study area include Bear Creek, Falling Creek, Briery Run, Stonyton Creek, Mosley Creek, and Southwest Creek.

Kinston, the county seat, is the largest city in Lenoir County with a population of close to 21,000 (US Census Bureau 2016). The Neuse River flows west-to-east through Kinston, dividing Lenoir County in half. Kinston is located within 30 miles of Goldsboro to the west and Greenville to the north. North Carolina's state capital, Raleigh, is located approximately 80 miles to the northwest of Kinston. Morehead City is located approximately 70 miles to the southeast of Kinston and Wilmington is located approximately 90 miles to the south.

KINSTON BYPASS
DEIS | R - 2553

Figure 1-1: Project study area

Legend

- Project Study Area
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

WAYNE COUNTY
GREENE COUNTY
PITT COUNTY
CRAVEN COUNTY
JONES COUNTY
LENOIR COUNTY
DUPLIN COUNTY
Grifton
Kinston
La Grange
Dover
Cove City
GTP
Contentnea Creek
Swift Creek
Neuse River
Falling Creek
Bear Creek
Southwest Creek
Barwick Station Rd
Jim Sutton Rd
Albert Sugg Rd
Willie Measley Rd
Caswell Station Rd
Wyse Fork Rd
13
903
258
123
148
11
118
70 BYP
70
55
70 BUS
58
41
111

Kinston has a mix of urban land uses that includes a central business district, office/institutional properties, residential neighborhoods, and commercial development. The most prominent land use throughout Lenoir County, excluding the urbanized area of Kinston, is agriculture. Other land uses are undeveloped land including pasture, forest, and wetlands. There are clusters of residential development in and around the municipal areas and large-lot residential development spread throughout the rural areas. Commercial and industrial development areas exist as well, particularly around the area of the Global TransPark (GTP) and US 70 west of Kinston.

The project study area, shown on Figure 1-1, is located mostly in Lenoir County in eastern North Carolina, with the eastern part of the project study area in Craven and Jones counties. Lenoir County borders Greene County to the north, Pitt County to the northeast, Craven County to the east, Jones County to the southeast, Duplin County to the southwest, and Wayne County to the west.

The western boundary of the project study area follows the Lenoir/Wayne county boundary, where access of US 70 is fully controlled. The southern boundary cuts through Lenoir County south of Kinston following the Neuse River for approximately 5 miles, then continues southeast crossing NC 55, NC 11 (south of Deep Run), US 258, and US 58 in southern Lenoir County. The eastern edge of the project study area is about 16 miles east of Kinston near the Town of Cove City in Craven County, where US 70 includes full control of access. The northern boundary is common with the county boundary between Greene and Lenoir counties. The boundary follows Beaver Creek as it crosses into Jones County all the way to NC 41 (north of Trenton).

The boundaries of the project study area were chosen to ensure that alternatives evaluated will connect to logical termini, as well as have independent utility, and provide adequate coverage to identify a full range of alternatives.

1.2.2 Existing Transportation Facilities

US 70 is a primary east-west corridor. Within the nearby region of the project, US 70 provides connections between Raleigh, Goldsboro, and points west, and New Bern, Havelock, and points east. In the project vicinity, US 70 may be split into three regions:

- From the western terminus of the project to the interchange with NC 148 (C.F. Harvey Parkway), US 70 is a four-lane divided rural expressway. In this section, US 70 carries 16,600 annual average daily traffic (AADT) west of NC 903, increasing to 21,200 AADT west of NC 148 (C.F. Harvey Parkway). The speed limit in this area varies between 55 miles per hour (mph) and 70 mph, and approximately 12 percent to 15 percent of the traffic is heavy vehicles.
- From NC 148 (C.F. Harvey Parkway) to NC 58/Trenton Highway, US 70 operates as a four-lane divided urban corridor. In this section, US 70 carries 19,800 AADT east of NC 148 (C.F. Harvey Parkway), rising to 40,000 AADT west of US 70 Business, and dropping to 25,600 AADT west of NC 58/Trenton Highway. The speed limit in this area varies between 45 mph and 55 mph, and approximately 9 percent to 14 percent of the traffic is heavy vehicles.
- From NC 58/Trenton Highway to the eastern terminus of the project, US 70 reverts to a four-lane divided rural expressway. In this section, US 70 carries 16,400 AADT east of NC 58/Trenton Highway, decreasing to 11,100 AADT east of State Route (SR) 1005

(Kornegay Street). The speed limit in this area varies between 45 mph and 55 mph, and approximately 15 percent to 21 percent of the traffic is heavy vehicles.

NC 903 is a two-lane undivided north-south roadway providing connections to La Grange and residential areas. It carries 4,000 AADT north of US 70, and 1,800 AADT south of SR 1002. The speed limit is 55 mph and approximately 7 percent to 9 percent of the traffic is heavy vehicles.

NC 148 (C.F. Harvey Parkway) is a four-lane divided north-south freeway providing access to residential communities. It carries 2,800 AADT north of US 70. The speed limit is 70 mph and approximately 14 percent of the traffic is heavy vehicles.

US 258 is a primary north-south corridor providing connections to businesses and residential communities–US 258 connects with NC 148 (C.F. Harvey Parkway) to the north of US 70, co-routes with US 70 for approximately 3.7 miles, and then departs to the south:

- North of US 70, US 258 is a five-lane undivided urban roadway. In this section, US 258 carries 11,800 AADT north of US 70, increasing to 14,000 AADT north of SR 1546 (Banks School Road). The speed limit in this area is 45 mph and approximately 7 percent to 11 percent of the traffic is heavy vehicles.
- South of US 70, US 258 is a two-lane undivided rural roadway. In this section, US 258 carries 10,600 AADT south of US 70, decreasing to 5,000 AADT south of SR 1139 (Clarence Potter Road). The speed limit in this area varies between 45 mph and 55 mph and approximately 9 percent to 13 percent of the traffic is heavy vehicles.

US 70 Business is a five-lane undivided east-west corridor providing access to Kinston. It carries 19,800 AADT at the western interchange with US 70, and 15,000 AADT at the eastern intersection with US 70 and US 258. Near US 70, the speed limit is 45 mph and approximately 5 percent to 7 percent of the traffic is heavy vehicles.

NC 11/NC 55 is a five-lane undivided north-south roadway providing access to businesses and residential communities. NC 11/NC 55 carries 13,000 AADT north of US 70, and 17,000 AADT south of US 70, decreasing to 12,600 AADT north of the NC 11/NC 55 split. West of NC 11, NC 55 carries 4,800 AADT, while NC 11 carries 10,400 AADT. The speed limit varies between 45 mph and 55 mph and approximately 8 percent to 16 percent of the traffic is heavy vehicles.

NC 58/Trenton Highway is a two-lane north-south corridor providing access to residential communities. Trenton Highway carries 3,400 AADT north of US 70, while NC 58 carries 11,400 AADT south of US 70, dropping to 4,900 AADT south of SR 1913 (Elijah Loftin Road). The speed limit varies between 25 mph and 55 mph and approximately 6 percent to 12 percent of the traffic is heavy vehicles.

Numerous other secondary routes access US 70 throughout the study corridor, mainly to provide connectivity to residential and rural areas of Lenoir, Craven, and Jones counties. Multiple businesses and private driveways also intersect US 70. In total, the study area spans 21 miles through Lenoir and Jones counties.

1.2.3 Project History

NCDOT initiated environmental and engineering studies for the Kinston Bypass project in the late 1990s; however, the project was placed on hold several times due to other local and NCDOT

Division 2 (Jones, Lenoir, Greene, Pitt, Beaufort, Craven, Pamlico, and Carteret counties) funding priorities. NCDOT placed the project on hold most recently in 2014 and reinitiated the environmental and engineering studies for the Kinston Bypass project in 2016 when it was funded in NCDOT's current 2018-2027 STIP (NCDOT 2017h).

The Kinston Bypass is identified in the *City of Kinston Comprehensive Transportation Plan Highway Map* adopted by the City of Kinston on August 20, 2007, and by NCDOT on February 6, 2008, and endorsed by the Eastern Carolina Rural Planning Organization on August 27, 2007 (NCDOT 2007b).

1.3 PURPOSE OF PROPOSED ACTION

The purpose of the proposed action is to improve regional mobility, connectivity, and capacity for US 70 between La Grange and Dover in a manner that meets the intent of the North Carolina Strategic Transportation Corridors (STC) policy (previously the Strategic Highway Corridors policy) (NCDOT 2015c). The intent of the STC policy is to provide North Carolina with a network of high-priority, multi-modal transportation corridors and facilities that will connect statewide plus regional activity centers to enhance economic development, promote highly-reliable, efficient mobility and connectivity, and support good decision-making.

The proposed action would improve regional mobility and capacity by providing a highway that would consist of a median-divided multilane roadway, would limit access to major crossroads by way of interchanges, and would connect to the sections of US 70 that have full control of access near La Grange and Dover.

1.4 NEED FOR PROPOSED ACTION

The proposed action is needed to address traffic congestion, capacity deficiencies, and through-traffic delays on US 70 between La Grange and Dover. Supporting technical data for existing and forecasted conditions are included below.

Information that further supports the need for the project is discussed in sections 1.4.1, 1.4.2, and 1.4.3. These sections describe the traffic forecast and operational analysis for the US 70 corridor, as well as the project's relationship to other transportation systems and transportation plans.

- **Through-traffic delays**: Currently there is no control of access along US 70 and the existing US 70 Bypass between La Grange and Dover. Numerous street and driveway connections to adjacent development substantially reduce the mobility of this corridor. Mobility is considered the ability to move unimpeded, safely, and efficiently using a reliable transportation system. Currently there are 60 intersections along the US 70 corridor within the project study area. Seven of these intersections are controlled by traffic signals that prohibit uninterrupted traffic flow.
- **Travel time deficiencies:** A travel time analysis (NCDOT 2012d) was completed to assess the travel speeds of US 70 between La Grange and Dover. The section of US 70 studied from NC 903 (NC 903) to SR 1313 (Tucker Town Road), a total distance of 20.16 miles, was broken down into 10 smaller segments of varying lengths to better detail the route and to show where signal delays typically occur. The segments were selected based on existing signals and major crossing roadways. The study revealed that 4 of the 10 segments in the

eastbound direction are operating at speeds lower than the recommended minimum 45 mph in the a.m. and/or p.m. peak periods. Five of the 10 segments in the westbound direction are operating at speeds lower than the recommended minimum 45 mph in the a.m. and/or p.m. peak periods. As a result approximately half of the segments along existing US 70 in the study area do not meet the mobility and capacity requirements for the recommended speed in the study area.

- **Existing and future roadway capacity deficiencies**: US 70 and the existing US 70 Bypass within the project study area are classified as principal arterials, consisting of four- to seven-lane roadways. US 70 and the existing US 70 Bypass include signalized intersections, unsignalized intersections, and numerous commercial and residential driveway connections. In 2015, 59 out of the 63 intersections analyzed along the project corridor performed at level of service (LOS) D or better in both peak hours. Four intersections exhibited poor LOS (LOS E or F) in at least one peak hour. These intersections are all unsignalized and the delay stems from the minor side street movements. In the 2040 No-Build Alternative, 47 out of the 63 intersections are predicted to perform at LOS D or better in both peak hours. Sixteen intersections exhibit poor LOS (LOS E or F) in at least one peak hour, which translates into a 300 percent increase in intersections that perform at poor LOS from 2015, including one signalized intersection

1.4.1 Traffic Forecasts and Operations Analysis

The geometric design and operational characteristics, including number and type of vehicles traveling on it, determines how well the highway will perform. A traffic operations analysis is performed to evaluate the existing and future travel conditions and to determine the effectiveness of the proposed action to improve the regional mobility, connectivity, and capacity for US 70 within the project study area.

The *Traffic Forecast Technical Memorandum, Kinston Bypass Alternatives Study, TIP Project R-2553, Lenoir, Jones & Craven Counties,* which was prepared using output from the Kinston Travel Demand Model, used the base year 2015 and the horizon year 2040 (NCDOT 2012a, 2016b). The Kinston Travel Demand Model forecasts growth using various socioeconomic data to predict future demands on a transportation network. Projected traffic in a horizon year is determined using regional growth expectations and assumptions about future development activity, and changes in distribution of population and employment in the forecasted study area are embedded in the model.

A capacity analysis performed for this project is based on methodologies from the *Highway Capacity Manual* (Transportation Research Board [TRB] 2010) and is summarized in the *Traffic Capacity Analysis Report* (NCDOT 2017i). The capacity analysis used the a.m. and p.m. peak hour traffic volumes from the traffic forecast prepared for this project (NCDOT 2016b). The results of the traffic capacity analysis are presented in terms of LOS, which is a qualitative measure that describes the operational conditions within a traffic stream and the perception of the traffic service by the driving public.

What is Level of Service (LOS)?

The traffic carrying ability of a roadway is defined by a LOS letter grade A through F that indicates the ability for a highway to carry traffic. LOS A indicates free-flow conditions and LOS F indicates extreme delay. The maximum capacity of a roadway is defined by LOS E.

The Kinston Bypass has been considered by NCDOT in previous forecasts and studies for projects in and around the City of Kinston. The following forecasting projects were reviewed as part of the current forecasting efforts:

- North Carolina Global TransPark (GTP) Study – May 1996
- R-2719A C.F. Harvey Parkway (formerly Crescent Road) – June 2004
- Kinston Eastern Loop/NC 11 Relocation (FS-0802) – May 2008
- US 70 Strategic Highway Corridor Study (including US 70 at NC 11/NC 55 Feasibility Study)
- US 70 Kinston Bypass (R-2553) – July 2009
- R-2554 Goldsboro Bypass (Public Hearing Map) – project completed May 2016
- US 70 Kinston Bypass (R-2553) – July 2012

In addition, the *Kinston Comprehensive Transportation Plan* (CTP), adopted in February 2008, provides future regional forecasts assuming multiple transportation projects identified for the area. Many of these projects are not included in the financially feasible network identified for the current Kinston Bypass forecast. A review of these forecasts was conducted and compared with model runs of the latest Kinston area regional demand model using TransCAD software. This demand model was initially developed by NCDOT in April 2012 and has been used as part of the latest forecast.

1.4.1.1 Forecasted Traffic Volumes for 2015 and 2040 No-Build Conditions

Without the project, traffic volumes are forecasted to increase along the entirety of the project corridor by 2040. The largest increases will be seen at the two terminuses of the project, with the western terminus seeing an increase of 113 percent and the eastern terminus seeing an increase of 116 percent. In general, the western portion of the project corridor, from west of NC 903 to C.F. Harvey Parkway, is forecasted to experience the highest overall increases with all volumes ranging between 84 percent and 113 percent. Moderate increases ranging from 24 percent to 66 percent are forecasted between C.F. Harvey Parkway and NC 58. From NC 58 to the eastern terminus of the project, volumes will steadily increase from 40 percent to 116 percent along the corridor. More detailed information on the forecasted traffic volumes for 2015 and 2040 No-Build conditions for US 70 and the existing US 70 Bypass within the project study area are provided in Appendix A (NCDOT 2016b).

1.4.1.2 Capacity Analysis for 2015 and 2040 No-Build Conditions

Sixty-three intersections were analyzed for the 2015 and 2040 No-Build conditions to evaluate the current and future traffic operations of US 70 and the existing US 70 Bypass corridor within the project study area.

In the 2015 No-Build Alternative, 59 out of the 63 intersections analyzed perform at LOS D or better in both peak hours. Four intersections exhibited poor LOS (LOS E or F) in at least one peak hour: Kennedy Home Road/Eason Road at US 70, Shopping Center Drive/Pinelawn Cemetery Drive at US 70, NC 11 at Edgewood Drive/Mary Beth Road, and Hillcrest Road at US 70. These intersections are all unsignalized and the delay stems from the minor side street movements.

In the 2040 No-Build Alternative, 47 out of the 63 intersections analyzed perform at LOS D or better in both peak hours, down from 59 in the 2015 No-Build Alternative. 16 intersections exhibit poor LOS (LOS E or F) in at least one peak hour, which translates into a 300 percent increase in intersections that perform at poor LOS from the 2015 No-Build Alternative, including one signalized intersection: NC 11 at US 70. The remaining failing intersections are unsignalized and the delay stems from the minor side street movements, with one exception: the westbound US 70 left turn at Ruby Tuesday operates at LOS E in the p.m. peak hour.

1.4.2 Transportation Systems

The US 70 corridor is one of the primary east-west corridors across eastern North Carolina and is a major connection between Raleigh, Goldsboro, Kinston, Havelock, and the Port of Morehead City. The US 70 corridor is just a few miles south of the North Carolina GTP and is heavily used for moving freight. It also provides important connections to two military bases serviced by US 70, Seymour Johnson Air Force Base in Goldsboro and the Marine Corps Air Station in Cherry Point.

1.4.2.1 Relationship to the Interstate System

There are currently no interstate routes in Lenoir, Craven, or Jones counties; however, US 70 between Raleigh and Morehead City intersects three interstate highways. I-40, approximately 55 miles west of the project study area, is an east-west interstate highway that spans the US from Wilmington, North Carolina to Barstow, California. I-95, approximately 35 miles west of the project study area, is a north-south interstate highway that spans from Miami, Florida to Houlton, Maine. I-795, approximately 15 miles west of the project study area, is a spur route to I-95 and runs from west of Goldsboro to I-95 near Wilson, North Carolina.

The US 70 Corridor between I-40 and Morehead City is included as Corridor 82 in Fixing America's Surface Transportation Act (FAST Act) signed into Public Law on December 4, 2015 (FAST Act 2015). In 2016, North Carolina received approval from the American Association of State Highway and Transportation Officials (AASHTO) for the US 70 Corridor, between I-40 and Morehead City, to be labeled as Future I-42 (AASHTO 2016).

1.4.2.2 North Carolina Transportation Network and Strategic Transportation Corridors

NCDOT started updating its STC policy in 2013, which 10 years earlier had identified 55 highway corridors across the state deemed to be of high priority in achieving state development goals (NCDOT 2015c). The result is the North Carolina Transportation Network (NCTN), and the STC policy and corridor network (NCDOT 2015d). The NCTN and STC network relate to long-range transportation planning across North Carolina in the following ways:

- The NCTN identifies the most significant multi-modal transportation assets of the state arrayed into three levels: statewide, regional, and local.
- The STC network is a subset of the NCTN statewide level highways and rail lines and is comprised of corridors of greatest importance in supporting statewide connectivity, mobility, and economic prosperity.

The purpose of the STC policy is to identify, from existing highways, a network of multi-modal, high priority, strategic transportation corridors to form a core network of highly performing highways for movement of high volumes of people and freight within North Carolina. The STC has identified 25 transportation corridors that move most of the freight and people in the state, link critical centers of economic activity to international air and sea ports, and support interstate commerce. The STC map shown on Figure 1-2 designates US 70 and the North Carolina Railroad (NCRR) as STC "P" from I-40 near Raleigh to Morehead City.

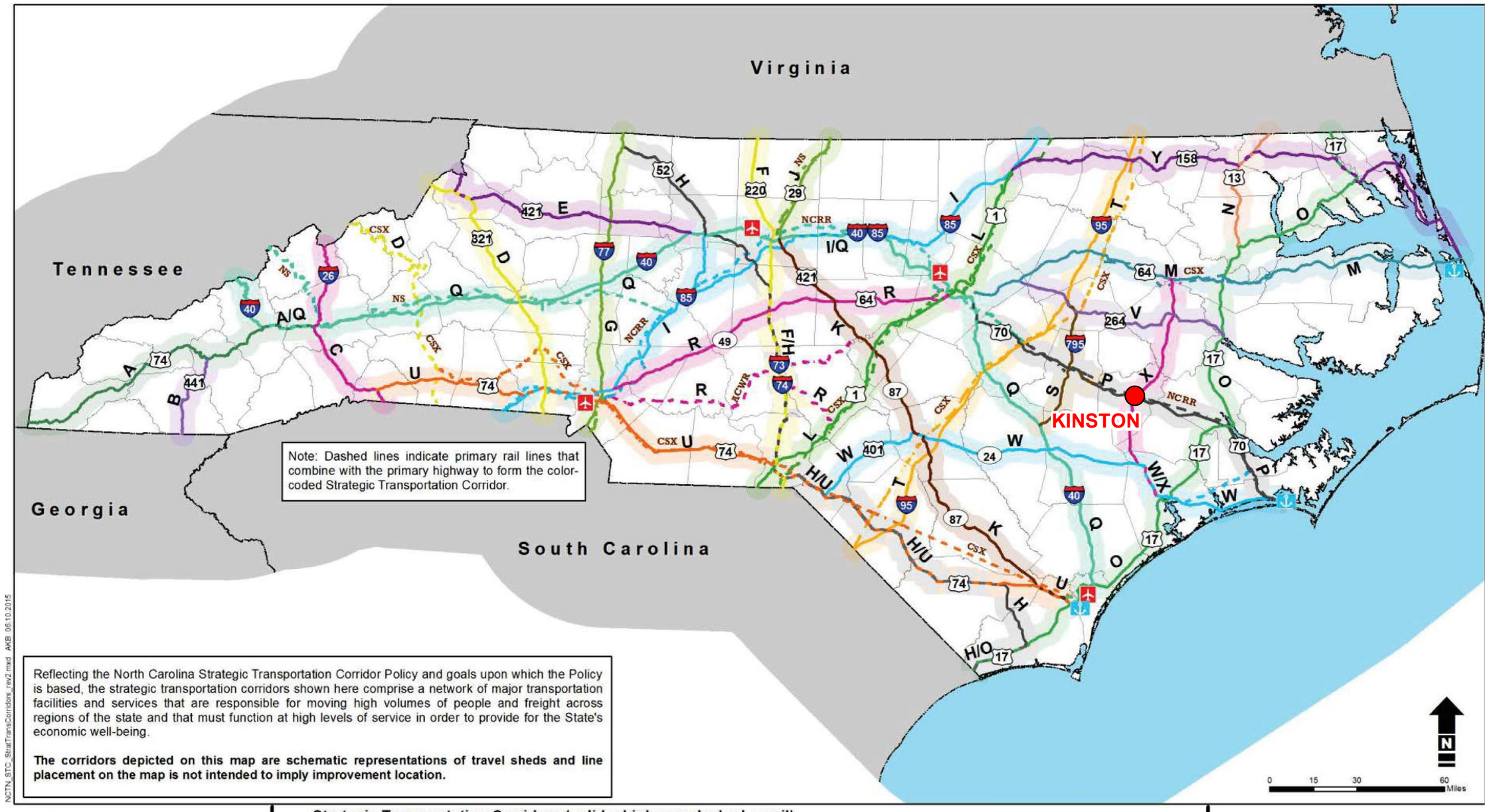
1.4.2.3 National Highway System and STRAHNET

In addition to its designation as an STC in North Carolina, US 70 is designated at the federal level as part of the National Highway System (NHS) and as part of the strategic highway network (STRAHNET), which itself is part of the NHS. The federal-aid highway system, which includes the interstate system and the NHS, is defined in 23 CFR 470.107. The NHS includes approximately 160,000 miles of roadway that are important to the nation's economy, defense, and mobility (Federal Highway Administration [FHWA] 2016b).

The STRAHNET is a 62,791-mile system of roads deemed necessary for emergency mobilization and is critical to the Department of Defense's domestic operations. It is also used during peacetime for the movement of heavy armor, fuel, ammunition, repair parts, food, and other commodities to support US military operations (FHWA 2014). US 70 between I-40 (near Raleigh) and Morehead City is designated as a STRAHNET non-interstate route (see Figure 1-3). The proposed action has the potential to improve the mobility of armed forces located at Seymour Johnson Air Force Base and Marine Corps Air Station Cherry Point.

1.4.2.4 Emergency Evacuation Routes

The North Carolina Division of Emergency Management (NCDEM) has identified the US 70 corridor as a major hurricane evacuation route. The proposed action has the potential to reduce hurricane evacuation clearance time for residents and visitors who use the US 70 corridor during evacuation (NCDOT 2013)



NORTH CAROLINA TRANSPORTATION NETWORK
MARCH 2015
Source: NCOneMap, NCDOT GIS, ESRI

Legend

Strategic Transportation Corridors (solid = highway; dashed = rail)

- A (US74W)
- B (US441)
- C (I26/US23)
- D (US321/CSX)
- E (US421W)
- F (I73/Future I73)
- G (I77)
- H (I74/Future I74)
- I (I85)
- J (US29N/NS)
- K (US421/NC87)
- L (US1)
- M (I495/US64E)
- N (US13)
- O (US17)
- P (US70E/NCRR)
- Q (I40)
- R (US64W/NC49)
- S (I795/US117)
- T (I95/CSX)
- U (US74W/US74E)
- V (US264E)
- W (US401/NC24/US258)
- X (US258/NC11/US13)
- Y (US158)

NC Seaports
NC Int'l or Major Freight Airports

NORTH CAROLINA STRATEGIC TRANSPORTATION CORRIDORS NETWORK

70 KINSTON BYPASS
DEIS | R - 2553

Figure 1-3: National Highway System: North Carolina

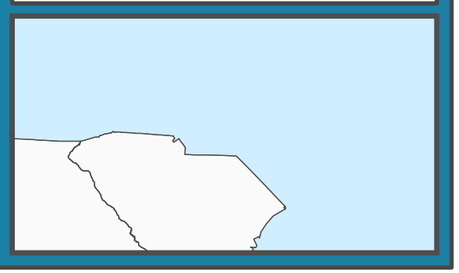
Legend

- Project Study Area
- Non NHS routes
- Eisenhower Interstate System
- STRAHNET
- STRAHNET Connector
- Other NHS Routes
- Approved Intermodal Connector
- Municipal Boundary
- County Boundary

0 5 10 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



1.4.2.5 Relationships to other Modes of Transportation

1.4.2.5.1 Railroads

The NCRR Company/Norfolk Southern (NS) and CSX Transportation (CSX) own and/or operate railroads in Lenoir County (NCDOT 2008). The NCRR/NS railroad EC branch, a statewide tier, is a single track mainline that runs from Raleigh to Morehead City. It runs east-west through the project study area near La Grange to south of Dover and Cove City. The NCRR/NC EC branch carries one train per day at speeds ranging from 20 to 40 mph (NCDOT 2015a). The CSX railroad is a regional tier that runs from north of Kinston to Greenville, the AA branch (NCDOT 2015a). CSX has abandoned a portion of the railroad from the NCRR/NS in Kinston to near the NC 11 intersection with SR 1735 (Ferrell Road). The CSX freight line AA branch carries one train per day at a speed of 10 to 25 mph (FRA 2017).

A new single-track railroad (NCDOT STIP Project U-2928B) was constructed in 2012 to provide access from the GTP to the NCRR/NS. The new segment of railroad is approximately 5.7 miles long and was planned to carry freight into, and out of, the GTP for a variety of manufacturing and industrial facilities. The initial rail traffic was supposed to consist of large aircraft components moving at a relatively low frequency running from the Spirit AeroSystems site, within the GTP; however, Spirit AeroSystems has elected to use other shipping methods at lower costs.

No passenger rail service is operated or planned for the NCRR/NS or CSX, with the nearest passenger rail service available to the project study area provided by Amtrak in downtown Wilson, approximately 40 miles from the project. The Amtrak North Carolina Thruway bus service runs through Kinston and provides transportation to and from the Amtrak station in Wilson. The pick-up/drop-off point is at the Kinston Visitor's Center on US 70 (Amtrak 2018).

1.4.2.5.2 Airports

Built alongside the North Carolina GTP, the Kinston Regional Jetport is a public airport located 3 miles north of downtown Kinston. In 1999, ownership of the jetport was transferred to the GTP. The Kinston Regional Jetport has a lighted asphalt runway 11,500 feet in length and 150 feet in width and provides services as an air carrier charter, air transit charter, military operations, general aviation, cargo operations, and flight school training (North Carolina GTP 2018).

NC 148 (C.F. Harvey Parkway) provides direct access between US 70 and the Kinston Regional Jetport. Direct access from US 70 to this airport provides an opportunity for moving goods to and from the port at Morehead City using ground and air transportation options.

1.4.2.5.3 Public Transportation

Lenoir County Transit (LCT) provides transportation options to Lenoir County residents with support of the LCT Advisory Board, Lenoir County Board of Commissioners, and NCDOT Public Transportation Division (Lenoir County 2018). LCT provides general public and human services transportation using demand response and subscription scheduling. LCT is the primary provider of transportation services for Lenoir County Department of Social Services, Lenoir County Health Department, vocational rehabilitation, Council of Aging, and Eastpointe Mental

Health. LCT also provides transportation to and from work, Lenoir Community College, shopping trips, non-emergency medical transportation, and Woodmen Community Center, Neuseway Nature Center, and other points of interest.

Craven Area Rural Transit System (CARTS) provides public transportation services to human service agencies and the general public through fixed-route, subscription, demand response, and Americans with Disabilities Act of 1990 complementary paratransit service in Craven, Jones, and Pamlico counties.

Greyhound offers intercity bus transportation throughout the state and nationwide. The Lunch Box Bus Station on Martin Luther King Street in downtown Kinston serves Greyhound, which offers daily routes to major cities in North Carolina, including Goldsboro, Raleigh, New Bern, Fayetteville, Charlotte, Winston Salem, and Asheville (Greyhound Lines, Inc. 2018).

Other than the fixed-route intercity bus transportation services provided by Greyhound, no other bus service is provided along the existing US 70 corridor within the project study area that connects to the local transit services.

1.4.2.5.4 Pedestrian and Bicycle

The City of Kinston completed a *Comprehensive Pedestrian Plan* in February 2008 (City of Kinston 2008), and updated section 9 of this report, recommendations for priority pedestrian projects, programs, and policies in 2012 (City of Kinston 2012). Through a survey that was conducted as part of the pedestrian plan, citizens identified several factors that make walking in Kinston difficult or unpleasant. Factors identified included a lack of sidewalks, poor lighting, and hazardous conditions. The pedestrian plan identified and prioritized 66 projects that would help alleviate these obstacles to pedestrian movement. The most notable projects included a pedestrian bridge over the Neuse River, implementing pedestrian safety measures throughout the community, creating a greenway master plan, and developing a safe route to school program.

The Bicycling Lenoir Style Map (NCDOT n.d.) and the Kinston CTP Bicycle Map (NCDOT 2007a) show several NCDOT designated bicycle routes along the more lightly traveled and scenic roads in central Lenoir County and Kinston. The routes are marked by numbered bike route signs, and “Share the Road” signs are posted where traffic is heavier and more caution should be taken. None of the bike routes have designated bicycle lanes.

The Mountains-to-Sea Trail, which is part of the North Carolina State Trails Program, is a planned trail that runs through North Carolina from Clingmans Dome in the Great Smoky Mountains to Jockey’s Ridge State Park in the Outer Banks. Close to 700 miles of the planned 1,200-mile route are completed (Friends of Mountains-to-Sea Trail 2017). Within Lenoir County, the Mountains-to-Sea Trail is planned as a greenway trail along the Neuse River. Currently, only a small segment in downtown Kinston has been constructed.

1.4.3 Local Area Transportation Plans

The Lenoir County CTP was developed by Lenoir County, Kinston, La Grange, Pink Hill, the Eastern Carolina Rural Planning Organization, and NCDOT in September 2018 (NCDOT 2018a). The CTP is a long range multi-modal transportation plan that covers the needs of Lenoir County through 2045. The plan addresses highway, rail, bicycle, and pedestrian improvements, as well as public transportation. The plan references the Kinston Bypass.

CHAPTER 2
DESCRIPTION OF ALTERNATIVES CONSIDERED

2. DESCRIPTION OF ALTERNATIVES CONSIDERED

A discussion of the alternatives considered for the proposed action, the process of elimination of those alternatives not determined reasonable and feasible, and the basis for the selection of the alternatives carried forward for detailed study are provided in this chapter.

2.1 ALTERNATIVES STUDY PROCESS

The process of developing and evaluating alternatives for the Kinston Bypass project included formal coordination and consultation between NCDOT and the NEPA/Section 404 Merger Team. Information on what environmental and regulatory resource agencies are part of the Merger Team, as well as public involvement that has assisted in selecting alternatives, is in chapter 5.

Alternative concepts were evaluated for the proposed action to determine their reasonableness and feasibility and included the No-Build Alternative, the transportation demand management (TDM) alternative, the transportation system management (TSM) alternative, the mass transit/multi-modal alternative(s), and preliminary build alternatives.

Each alternative concept was first screened for its ability to meet the purpose of and need for the project. The development of the build alternatives that met the purpose of and need for the project was an iterative process that began with 95 preliminary alternatives and was eventually narrowed down to 12 detailed study alternatives (DSA). The evaluation criteria and steps taken to refine the alternatives are described in section 2.3.

2.2 ALTERNATIVE CONCEPTS

2.2.1 No-Build Alternative Concept

The No-Build Alternative normally includes short-term, minor restoration types of activities (safety and maintenance improvements, etc.) that maintain continuing operation of the existing roadway. The No-Build Alternative assumes the current transportation system evolves as planned in the Kinston CTP (NCDOT 2011b) and the 2018-2027 STIP (NCDOT 2017h) without implementation of the proposed action. With the exception of routine maintenance, no changes will take place along the existing corridor within the project study area. The No-Build Alternative also serves as the baseline comparative alternative for the design year (2040).

The No-Build Alternative would not improve regional mobility, connectivity, and capacity; therefore, it would not meet the primary need of the project. However, in accordance with NEPA (40 CFR 1502.14(d)) and FHWA guidance (FHWA 1987), the No-Build Alternative is given full consideration in the DEIS to provide a baseline for comparison with the DSAs.

Consistent with Appendix B of the USACE regulations at 33 CFR 325, USACE considers the No-Build Alternative to be the alternative that results in no construction requiring a USACE permit. This may be brought by either the applicant electing to modify the proposal to eliminate work under the jurisdiction of the USACE or by the denial of the permit. Based on the information available concerning the location and extent of the streams and wetlands in the project area, to construct the proposed action while completely avoiding impacts to jurisdictional

waters and wetlands and thus preclude the need for a USACE permit would not be reasonable and thus does not satisfy the applicant's purpose of and need for the project.

2.2.2 Transportation Demand Management Alternative Concept

The TDM alternative includes measures to improve the efficiency of the existing transportation system by changing traveler behavior. This alternative does not involve major capital improvements. The TDM alternative would include demand management strategies currently implemented in Lenoir County, such as staggered work hours, flex-time (employer focused), and ridesharing.

Ridesharing, such as carpools and vanpools, is generally viewed as more convenient than bus transit with regard to access, door-to-door travel times, and comfort. However, the ability of these voluntary programs to reduce traffic volumes on particular roadways is minimal.

The TDM measures would provide increased transportation choices in the area, but only for a small percentage of travelers that would take advantage of them. The TDM alternative would not improve regional mobility, connectivity, and capacity; therefore, it would not meet the need for the project. The TDM alternative does not meet the purpose of and need for the project and has been eliminated from further consideration.

2.2.3 Transportation System Management Alternative Concept

The TSM alternative concept includes low-cost, minor transportation improvements that maximize the efficiency of the existing system. There are two main types of TSM improvements – operational and physical.

Operational TSM improvements include traffic law enforcement, access control, signal coordination, turn prohibitions, speed restrictions, and signal phasing or timing changes. Operational TSM improvements would improve traffic flow along US 70. However, it is expected that US 70 would not show an appreciable increase in capacity in design year 2040 with operational improvements.

Physical TSM improvements include turn lanes, intersection realignment, improved warning and information signs, new signals or stop signs, and intersection geometric and signalization improvements. Physical TSM improvements are most effective in addressing site-specific capacity and safety issues. It is expected that TSM physical improvements would improve traffic flow in some areas along US 70 and would be able to provide a median-divided, multi-lane roadway. However, TSM improvements could not provide a full control of access facility that would be able to improve regional mobility, allow for high-speed travel, limit access to major crossroads by way of interchanges, or result in an appreciable increase in capacity.

Therefore, regional mobility, connectivity, and the traffic carrying capacity of US 70 would not improve. As a result, the TSM alternative does not meet the purpose of and need for the project and has been eliminated from further consideration.

2.2.4 Mass Transit/Multi-Modal Alternative Concept

The mass transit alternative concept would include bus or rail passenger service. A major advantage of mass transit is that it can provide high-capacity, energy-efficient movement in

densely traveled corridors. It also serves high-density areas by offering an option for automobile owners who do not wish to drive and those without access to an automobile. The multi-modal alternative concept would combine mass transit with roadway improvements.

LCT provides transit services to the general public using a van service. These services provide a demand response system service, picking passengers up at their homes, including paratransit options, and transporting them to a desired location from 6:00 a.m. to 6:00 p.m., Monday through Saturday (Lenoir County 2018). In addition to local transit service, Greyhound offers intercity bus transportation throughout the state and nationwide. The Union Bus Station on East Blount Street in downtown Kinston serves Greyhound. Greyhound offers one or two daily routes to all major cities in North Carolina (Greyhound Lines, Inc. 2018). During site visits to Kinston, neither the LCT van service nor Greyhound bus service was observed.

The Craven Area Rural Transit System (CARTS) provides public transportation services to human service agencies and the general public through subscription, demand response, and Americans with Disabilities Act of 1990 complementary paratransit service in Craven and Jones counties (Craven County 2019).

The Amtrak North Carolina Thruway bus service runs through Kinston and provides transportation to and from the Amtrak station in Wilson. The pick-up/drop-off point is at the Kinston Visitor's Center on US 70 (Amtrak 2018). This does not, however, connect to any of the local transit services previously described.

Other than the fixed-route intercity bus transportation services provided by Greyhound, there is no other bus service provided along the existing US 70 corridor within the project study area that connects to the local transit services.

This alternative concept (either new rapid transit or expanded bus service) would not divert enough vehicular traffic to improve traffic flow to any substantial degree on US 70, nor improve transportation within the project study area or the regional transportation system as a whole.

The mass transit/multi-modal alternative is typically considered for all major highway projects in urbanized areas with a population exceeding 200,000 people and when mass transit is referenced in regional plans. Based on the population of the demographic study area and municipalities located within the demographic study area (discussed in section 3.1.1), the inclusion of a mass transit/multi-modal alternative to alleviate traffic along the project corridor is not a viable option. The primary purpose of the proposed action is to improve regional mobility, connectivity, and capacity. Based on the low population density and lack of clustering of businesses, employment centers, and other destinations, transit is not a practicable option for improved regional connectivity. Combining a mass transit alternative with other modes also would not be practical. The mass transit element would add substantial costs to any alternative that includes road improvements, but would do very little to improve traffic flow and freight movement. Therefore, the mass transit/multi-modal alternative does not meet the purpose of and need for the project and has been eliminated from further consideration.

2.2.5 Build or Construction Alternatives Concept

The build or construction alternatives concept includes both improvement of existing roadways and alternatives on new location. This initial screening considers the overall concept of constructing a roadway and does not differentiate between alternative corridor locations.

The build or construction alternatives concept would improve regional mobility, connectivity, and capacity for US 70 between La Grange and Dover in a manner that meets the intent of the STC by providing a highway that would allow for high-speed travel, would consist of a median-divided multilane roadway, would limit access to major crossroads by way of interchanges, and would connect to the existing sections of US 70 that have full control of access near La Grange and Dover. In addition, this concept has the potential to reduce hurricane evacuation clearance time for residents and visitors who use the US 70 corridor during evacuation and has the potential to improve the mobility of armed forces located at Seymour Johnson Air Force Base and Marine Corps Air Station Cherry Point as a STRAHNET corridor.

This alternative concept meets the purpose of and need for this project; therefore, it was carried forward for further study.

2.3 PRELIMINARY ALTERNATIVE EVALUATION AND ANALYSIS

Preliminary alternative segments were developed using geographic information system (GIS) constraints mapping to avoid and minimize impacts to environmental features. The preliminary alternative segments were developed using standard avoidance and minimization measures to include avoidance and minimization of perennial streams, wetlands, cultural resources, and community resources. This process was begun by collecting the most recent GIS data from state and local agencies. A data dictionary was created and is included in Appendix B that lists the name of the layer, abstract, name located on AECOM's Kinston file geodatabase, geometry, coverage, and sources. The dictionary also includes whether each feature class was modified by AECOM, notes, modification dates, and modification descriptions.

The following sections describe the evaluation and refinement process for the preliminary alternatives and the DSAs.

2.3.1 Evaluation and Refinement of Preliminary Alternatives

Combining the preliminary alternative segments resulted in over 3,000 preliminary alternatives. In order to reduce the number of possible alternatives to a more manageable number, similar adjacent segments were consolidated. The consolidation of adjacent segments resulted in approximately 300 best fit segments. The best fit segments were then reviewed and modified to prohibit any non-allowable combinations (i.e., segments were not allowed to double back, go backwards, or make 90-degree turns). These modifications resulted in 89 segments, which were combined to create 95 preliminary alternatives. Impacts to environmental features were then calculated in GIS.

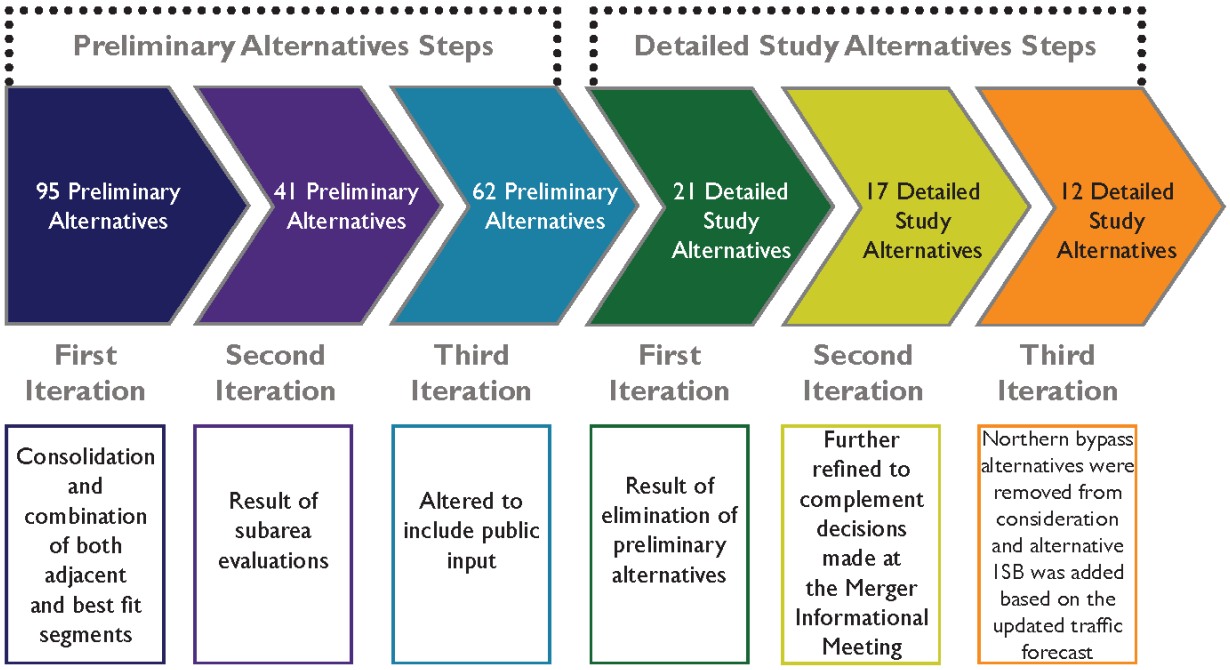
What is "Best Fit"?

A "best fit" segment or alignment is typically one that balances and minimizes overall environmental impacts to the extent practicable including impacts to residences and businesses, historic structures, and natural features such as wetlands, streams, and protected species habitat.

Segments with similar beginning and end points were compared to one another to identify segments with the least impacts. Impacts were calculated for GIS-based features. Since many of the screening features resulted in no impacts, major screening categories such as building impacts, floodplains, number of stream crossings, wetland impacts, and Hazard Mitigation Grant

Program (HMGP) properties were often used or relied on for comparison. Similar adjacent segments were consolidated, resulting in a best fit segment. Figure 2-1 shows an overview of the process.

Figure 2-1: Preliminary alternatives and detailed study alternatives evaluation and refinement process



Per request from the NEPA/Section 404 Merger Team, corridor widths were reduced from 1,000 feet to 500 feet for impact calculations. Merger Team members requested this change in order to avoid gross over-calculation of impacts associated with preliminary alternatives. All impacts were re-calculated based upon 500-foot corridors, even though there are common segments for many of the alternatives including upgrade to US 70 and some corridors contain portions of C.F. Harvey Parkway. The first iteration of preliminary alternatives segment combinations (95) is shown on Figure 2-2.

Using the results of the GIS-based impact analysis, subarea evaluations were performed to further eliminate segments. The subarea evaluations consisted of the examination of similar segments in small subsections of the project. Where segments had similar endpoints, a comparison was made to determine the segment with the least potential impact. The segment with the least impact remained, and all other segments were eliminated. In cases where impacts within a subarea would be similar or where competing resources were present, all segments remained.

70 KINSTON BYPASS
DEIS | R - 2553

Figure 2-2: Preliminary alternatives (first iteration)

Legend

- Project Study Area
- Alternative Segment
- Segment Breakpoint
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

Upon the completion of the subarea evaluations, the second iteration of preliminary alternatives resulted in 41 preliminary alternatives. The 41 preliminary alternatives consisted of 1 Upgrade Existing US 70 Alternative, 10 northern bypass preliminary alternatives, and 30 southern bypass preliminary alternatives. The northern bypass and southern bypass designations refer to the preliminary alternatives' location in relation to existing US 70. Graphics displaying the remaining segments and corresponding 41 preliminary alternatives were presented to local officials in July 2011 and at the second round of public meetings (known at the time as Citizens' Informational Workshop #2) held for public comment in September 2011. The second iteration of preliminary alternatives segment combinations (41) is shown on Figure 2-3.

2.3.1.1 Input from the Public

Upon receiving public input at Citizens' Informational Workshop #2, minor modifications were made to segment 26A to further minimize impacts. Four new segments – 5C, 27B, 39A, and 40A - were added for consideration, resulting in 62 preliminary alternatives. Updated impact calculations were performed for the additional 21 preliminary alternatives, as well as for the alternatives containing the modified segment, and presented to the Merger Team at the concurrence point (CP) 2 meeting on November 17, 2011. Concurrence Point 2 is the point at which DSAs to be carried forward are presented and agreed upon by the consulting agencies. The third iteration of preliminary alternative segment combinations (62) and the corresponding impact summary are included in Appendix C and are shown on Figure 2-4.

2.3.1.2 Preliminary Alternatives Eliminated

At CP2, the Merger Team performed another subarea analysis of the segments and agreed to eliminate the following segments or segment combinations from further consideration:

- Segment 29B due to high wetland impacts.
- Segment Combination 25B-28A-29A due to higher wetland impacts than Segment Combination 25A-27A. This also resulted in the elimination of Segment 24B.
- Segment Combination 23B-25A due to higher wetland impacts than Segment Combination 23A-26B.
- Segment 9A due to high wetland impacts. This also resulted in the elimination of Segments 5A and 8A.
- Segment 8B due to other similar options having less impacts to the Neuse River crossing and corresponding floodplains. This also resulted in the elimination of Segment 7B; however, the Merger Team requested a new segment be added named Segment 7C to be located south and parallel to Segment 7A. The intent of adding Segment 7C was to provide a segment farther away from the Kennedy Memorial Home Historic District campus core while trying to minimize the impacts to the multiple conservation easements south and east of Segment 7A.
- Segment 19A due to other similar options that have a more narrow and perpendicular crossing of the Neuse River crossing and corresponding floodplains. This also resulted in the elimination of Segments 18A and 39B.
- Segment 15A due to other more direct options that have fewer impacts to the Stonyton Creek natural system.

KINSTON BYPASS
DEIS | R - 2553

Figure 2-3: Preliminary alternatives (second iteration)

Legend

- Project Study Area
- DraftPreliminary Alternative
- Draft Route Option Segment Break Point
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

KINSTON BYPASS
DEIS | R - 2553

Figure 2-4: Preliminary alternatives (third iteration)

Legend

- Project Study Area
- Draft Preliminary Segments
- New Draft Route Option Segment
- Edited Draft Route Option Segment
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

Upon elimination of the above segments, the following 41 preliminary alternatives were eliminated from further study:

- Southern Bypass Corridors
  - 6, 13, 17, 19, 26, 33, 37, 39, 46 (due to elimination of Segment 29B)
  - 7, 14, 20, 27, 34, 40, 47 (due to elimination of Segment 25B-28A-29A)
  - 8, 9, 21, 22, 28, 29, 38, 41, 42, 48, 49 (due to elimination of Segment 23B-25A)
  - 23, 24, 25, 43, 44, 45 (due to elimination of Segments 5A, 8A, and 9A)
  - 15, 16, 18 (due to elimination of Segments 7B and 8B)
- Northern Bypass Corridors
  - 4, 55, 58, 59 (due to elimination of Segments 18A, 19A, and 39B)
  - 60 (due to elimination of Segment 15A)

2.3.1.3 Preliminary Alternatives Carried Forward

Upon elimination of the above preliminary alternatives, the following 21 preliminary alternatives were carried forward for further study as DSAs:

- Upgrade Existing US 70 Corridor
- Northern Bypass Corridors
  - 5, 56, 57
  - 2 (combined Corridors 2 and 3 as a result of creating bulged area for Segment Combinations 20A-21A and Segment 20B)
  - 53 (combined Corridors 53 and 54 as a result of creating bulged area for Segment Combinations 20A-21A and Segment 20B)
  - 61 (combined Corridors 61 and 62 as a result of creating bulged area for Segment Combinations 20A-21A and Segment 20B)
- Southern Bypass Corridors
  - 10, 11, 12, 30, 31, 32, 35, 36, 50, 51, 52
  - 63, 64, and 65 (new corridors created as a result of adding Segment 7C)

The first iteration of the DSAs is shown on Figure 2-5.

2.3.2 Reevaluation of Detailed Study Alternatives after CP2

Following CP2, the 21 DSAs selected for further evaluation were refined as the project transitioned from ArcMap/GIS software to computer aided design software. This allowed project engineers to look at specific interchange locations along secondary roadways and refine locations and alignments to further minimize impacts to personal property and natural resources.

KINSTON BYPASS
DEIS | R - 2553

Figure 2-5: Detailed study alternatives (first iteration)

Legend

- Project Study Area
- Detailed Study Alternatives Per Nov. 17, 2011 CP 2 Meeting
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

WAYNE COUNTY
GREENE COUNTY
PITT COUNTY
CRAVEN COUNTY
JONES COUNTY
LENOIR COUNTY
DUPLIN COUNTY
Grifton
Kinston
La Grange
Dover
Cove City
GTP
Contentnea Creek
Swift Creek
Neuse River
Falling Creek
Bear Creek
Southwest Creek
Jim Sutton Rd
Willie Measley Rd
Albert Sugg Rd
Barwick Station Rd
Caswell Station Rd
Wyse Fork Rd
13
903
258
123
148
11
118
70 BYP
70
55
70 BUS
58
111
41

The following is a brief description of shifts and changes to the DSA alignments that were approved at the Merger Informational Meeting held on March 14, 2012. The area numbers below correspond to numbers on Figure 2-6.

- **Area 1**: It is recommended a general area rather than a specific location be considered to allow for a best fit alignment to connect with US 70 in this area. Alignment was shifted to better accommodate proposed interchange with US 70 and existing railroad, while maintaining existing Willie Measley Road/Fields Station Road intersection.
- **Area 2**: Alignment was shifted to generally reduce impacts to residents and streams.
- **Area 3**: Alignment was shifted to improve spacing between proposed US 258 interchange and existing US 258/Institute Road intersection, improve the proposed crossing of Institute Road, reduce wetland impacts, and improve spacing between proposed NC 58 interchange and existing NC 58/Dawson Station Road intersection.
- **Area 4**: Alignment was shifted to reduce impacts to multiple farming operations along Airy Grove Church Road.
- **Area 5**: Alignment was shifted to improve proposed crossing of Airy Grove Church Road, provide more of a perpendicular crossing of Hugo Road (potential proposed interchange location), reduce residential impacts along Ferrell Road, reduce wetland impacts, and provide more of a perpendicular crossing of NC 11 (for proposed interchange) and existing railroad.
- **Area 6**: Alignment was shifted to improve spacing between proposed NC 55 interchange and existing NC 55/British Road intersection, reduce potential impact to a historic resource, and improve proposed grade-separated crossings at British Road and Tilghman Road.
- **Area 7**: Merger Team recommendations from CP2 meeting included creating a general area to allow for a best fit alignment for all northern bypass alternatives connecting to US 70 in this area. The northern bypass connection back to US 70 was slightly shifted to the west to increase distance between existing US 70 and the existing railroad to accommodate the proposed northern bypass interchange with US 70. This shift will reduce impacts to streams and wetlands, avoid multiple crossings of Tilghman Road, and increase spacing between the proposed northern bypass/US 70 interchange and the potential proposed interchange with US 70 at Dover. Generally, by increasing the interchange spacing, better traffic operations should result, thus maintaining the integrity of the proposed improvements.
- **Area 8**: Minor shifts were made to the alignment to improve road geometry while improving stream and wetland crossings.
- **Area 9**: Alignment was shifted to reduce stream impacts and wetland impacts, and minimize residential and farming operation impacts along Hugo Road and Wallace Family Road.
- **Area 10**: Alignment was shifted to eliminate crossing with North Dickerson Road, and minimize residential and farming operations impacts along Hugo Road and Wallace Family Road. The shift should also further minimize impacts to streams and wetlands.
- **Area 11**: Alignment was shifted to minimize residential impacts along Tilghman Mill Road, and to minimize stream, wetland, and business impacts near NC 11 (proposed interchange location).

70 KINSTON BYPASS
DEIS | R - 2553

Figure 2-6: Alignment discussion diagram

Legend

- Detailed Study Alternative Refinement Area
- Project Study Area
- Southern Detailed Study Alternatives
- Northern Detailed Study Alternatives
- Upgrade Existing Detailed Study Alternative
- Detailed Study Alternatives Per Nov. 17, 2011 CP 2 Meeting
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

0 1.5 3 Miles

N

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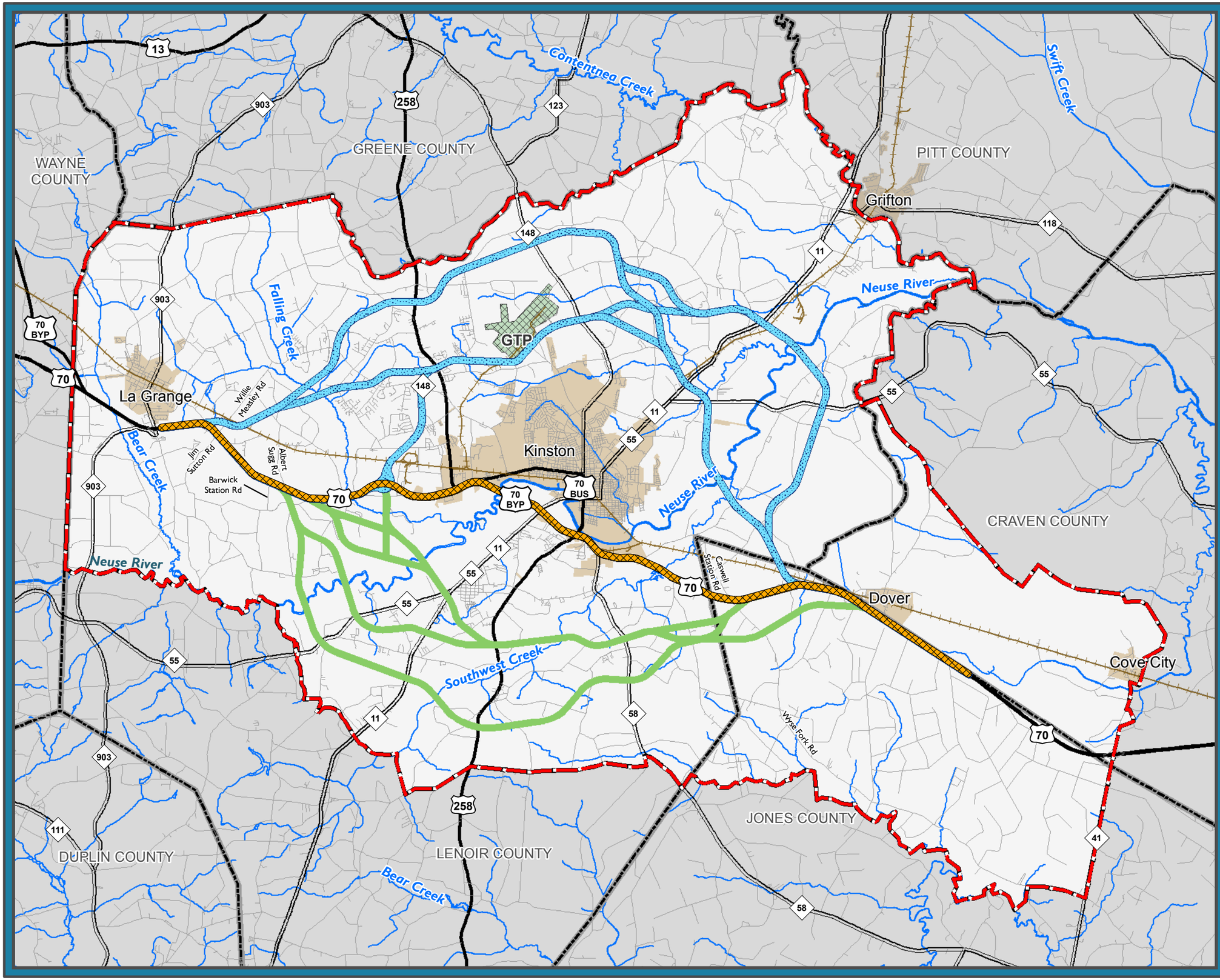
- **Area 12**: Alignment was shifted to minimize historic resource impacts and residential impacts along Neuse Road.
- **Area 13**: It is recommended a general area rather than a specific location be considered to allow for a best fit alignment to connect with US 70 in this area. Alignment was shifted to better accommodate proposed interchange with US 70, allowing for avoidance of the existing salvage yard and wetland system southwest of US 70. Shift will also allow for further minimization of stream, wetland, historic resource, and residential impacts near Bucklesberry and Pot Neck. In addition, the alignment shift will allow for a narrower crossing of the Neuse River natural system.
- **Area 14**: Alignment was shifted to provide more desirable crossings of secondary roadways such as NC 55, Jesse T. Bryan Road, NC 11, Joe Nunn Road, US 258, Patterson Road, and Woodington Road. As a result, continued efforts were made to further avoid and minimize impacts to streams, wetlands, and residents.
- **Area 15**: It is recommended a general area rather than a specific location be considered to allow for a best fit alignment to connect with US 70 in this area. Alignments were shifted to better accommodate the proposed interchange with US 70 and existing Wyse Fork Road/US 70 intersection. Shifting the proposed interchange location farther to the east along US 70 may allow the existing Wyse Fork Road/US 70 intersection to remain, which could avoid impacts and additional cost associated with reconnecting Wyse Fork Road, provide a benefit for emergency responders using Wyse Fork Road, and shift potential impacts to the proposed Wyse Fork Battlefield District towards the outer boundaries of the district.
- **Area 16**: Minor shifts were made to the alignment to improve road geometry while improving stream and wetland crossings. The shifts also provided an opportunity to improve spacing from the proposed NC 55 interchange to the existing NC 55/Albrittons Road intersection and from the proposed NC 11 interchange to the existing NC 11/Leslie Stroud Road intersection (and the associated community).
- **Area 17**: Minor shifts were made to the alignment to improve road geometry. The shifts provided an opportunity to further avoid historic resource impacts; improve spacing from the proposed NC 58 interchange to the existing NC 58/Southwood Road intersection; and include continued efforts to avoid/minimize impacts to streams, wetlands, residential pockets, and farming operations along the secondary roads (including a nursing home along NC 58).
- **Area 18**: Minor shifts were made to the alignment to improve road geometry, which provided an opportunity to reduce residential impacts along Burkett Road and to further minimize impacts to streams and wetlands.

As a result of the described changes to the alternatives that the Merger Team agreed to, the following pairs of alternatives were merged together: 10 with 11, 30 with 31, 50 with 51, and 63 with 64. The end result of this refinement process was the elimination of 4 DSAs, with 17 DSAs remaining. This second iteration of DSAs was presented to the public at a public meeting (known at the time as Citizens' Informational Workshop #3, held in May 2012) (Figure 2-7).



70 KINSTON BYPASS
DEIS | R - 2553

Figure 2-7:
Detailed study alternatives
(second iteration)

Legend

- Project Study Area
- Southern Detailed Study Alternatives
- Northern Detailed Study Alternatives
- Upgrade Existing Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

2.3.3 New Alternative Identified

A new alternative, known as Alternative 1SB (Upgrade Existing US 70 with Shallow Bypass), was developed following the development of the functional designs. During the design process, it was apparent that Alternative 1UE (Upgrade Existing US 70) would impact businesses along existing US 70, as well as impact the floodway associated with the Neuse River. The intent of adding Alternative 1SB as a DSA was to provide an alternative that would still stay on the existing US 70 corridor through a majority of the study area, but avoid the segments of existing US 70 that would have the highest number of relocated businesses and residences.

2.3.4 Refinement of Detailed Study Alternatives

The first CP2 meeting held in November 2011 included concurrence from the Merger Team on the alternatives to be carried forward for detailed study that satisfied the purpose of and need for the project. Due to the development of Alternative 1SB, a CP2 Revisited Merger Team meeting was held on January 16, 2014. The purpose of the meeting was to present information on the recently developed Alternative 1SB and to recommend the removal of the six remaining northern bypass alternatives.

Based on updated traffic forecasting performed in 2012 and 2013, the northern bypass alternatives would not draw as much traffic from existing US 70 as the southern bypass alternatives, and construction of a northern bypass alternative would result in the continued pressure to widen existing US 70 even after construction. Forecasts show that the southern bypass alternatives would draw more than twice the traffic of the northern bypass alternatives and existing US 70 would remain sustainable as a four-lane highway. A short, shallow southern bypass would be expected to draw the most traffic onto the Kinston Bypass from existing US 70, while still maintaining sustainable traffic volumes on upgraded sections of US 70.

A representative from the Eastern Carolina Rural Planning Organization was present at the meeting and reported that Alternative 1SB has the support of the local community. The Merger Team reached an agreement to add Alternative 1SB and eliminate the six northern bypass alternatives from further consideration.

Based on the changes agreed to by the Merger Team, the third iteration of the DSAs included 12 DSAs that would move forward for evaluation in the DEIS (Figure 2-8).

2.4 DETAILED STUDY ALTERNATIVES

Designs for the 12 DSAs were developed based upon the *Traffic Forecast Technical Memorandum, Kinston Bypass Alternatives Study, TIP Project R-2553, Lenoir, Jones & Craven Counties* and the *Traffic Capacity Analysis Report* (NCDOT 2016b, 2017i). Refer to section 1.4.1 for details on the history and comparison of traffic studies for the project. The level of design used to develop the DSAs included interchanges, obvious service roads, and areas where full control of access is being proposed. These designs have been used to evaluate impacts to the human and natural environments for each of the DSAs and are reported in detail in chapter 4. Information presented in this DEIS will be used, along with resource agency and public input, to assist in the selection of the applicant's preferred alternative.

KINSTON BYPASS
DEIS | R - 2553

Figure 2-8: Detailed study alternatives (third iteration)

Legend

- Project Study Area
- Detailed Study
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

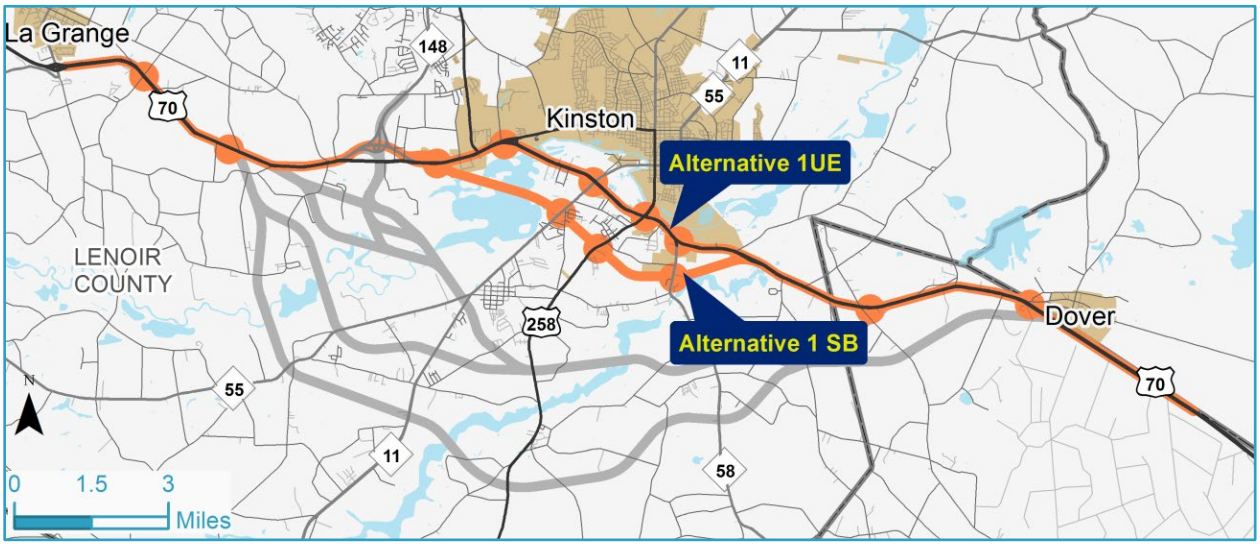
2.4.1 Descriptions of Detailed Study Alternatives

2.4.1.1 Alternatives 1UE and 1SB

Alternatives 1UE and 1SB begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange (Figure 2-9). Alternative 1UE follows existing US 70 for approximately 21 miles from the NC 903/US 70 interchange south of La Grange to the project terminus east of Dover and would upgrade the existing US 70 to a full control of access highway. The definition of upgrading an existing facility refers to a widening of the roadway to include adequate capacity to handle the forecasted traffic and provide for full control of access. Interchanges would provide access to other major roads and would be located at the following points:

- Willie Measley Road/Jim Sutton Road
- Albert Sugg Road/Barwick Station Road
- NC 148 (C.F. Harvey Parkway)
- US 258
- US 258/US 70 Business (West Vernon Avenue)
- NC 11/NC 55
- US 258 (South Queen Street)
- NC 58 (Trenton Highway)
- Wyse Fork Road (SR 1002)/Caswell Station Road (SR 1309)
- Old US 70 (West Kornegay Street)

Figure 2-9: Alternatives 1UE and 1SB



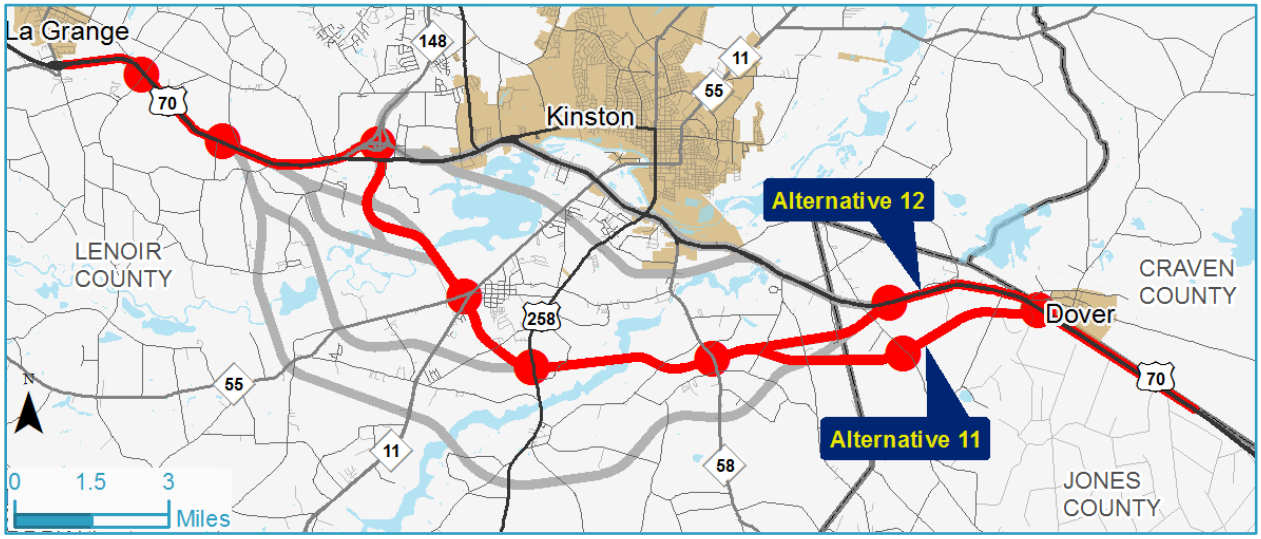
Alternative 1SB also begins at the NC 903/US 70 interchange in La Grange and would follow existing US 70 for approximately 7 miles to just east of NC 148 (C.F. Harvey Parkway). Interchanges would be located at Willie Measley Road/Jim Sutton Road, Albert Sugg Road/Barwick Station Road, and NC 148. A new interchange east of NC 148 would provide access to the shallow bypass section of Alternative 1SB, which would parallel existing US 70 to the south on new location for approximately 6.5 miles. Interchanges along Alternative 1SB would be located at NC 11/NC 55, US 258 (South Queen Street), and NC 58 (Trenton Highway). A new interchange east of Lenoir Community College would connect the shallow bypass back to existing US 70. Alternative 1SB would follow existing US 70 from this interchange east to the

project terminus east of Dover and would upgrade US 70 to a full control of access highway with interchanges at Wyse Fork Road (SR 1002)/Caswell Station Road (SR 1309) and Old US 70 (West Kornegay Street). Alternative 1SB is 21.1 miles in length.

2.4.1.2 Alternatives 11 and 12

Alternatives 11 and 12 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 7 miles to the NC 148/US 70 interchange (Figure 2-10). Interchanges would be located at Willie Measley Road/Jim Sutton Road, Albert Sugg Road/Barwick Station Road, and NC 148. At NC 148, both alternatives turn south and then east on new location for approximately 9.5 miles with interchanges at NC 11/NC 55, US 258, and NC 58. The alternatives cross NC 58 just south of Southwood Elementary School before diverging east of NC 58.

Figure 2-10: Alternatives 11 and 12



Alternative 11 continues eastward on new location with an interchange at Wyse Fork Road (SR 1002), approximately 1.25 miles south of existing US 70, before interchanging with existing US 70 near Old US 70 just west of Dover. Alternative 11 would include upgrades to existing US 70 between this interchange and the project terminus east of Dover. Alternative 11 is 23.2 miles in length.

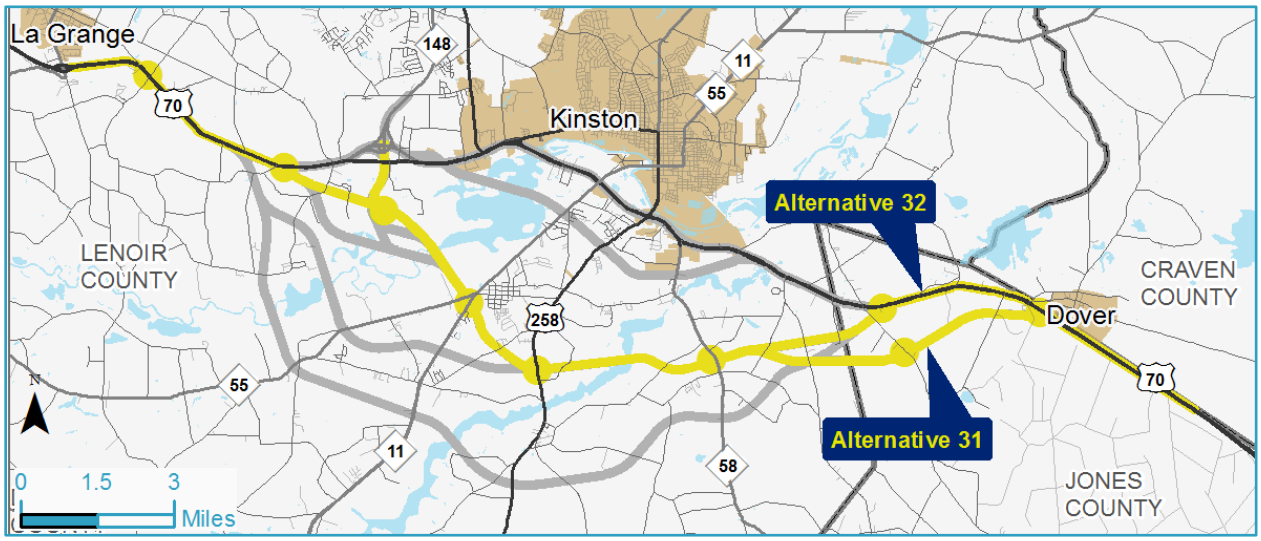
Alternative 12 would turn back to the north to interchange with existing US 70 just east of the Lenoir/Jones county line at Wyse Fork Road (SR 1002) and would upgrade existing US 70 to the project terminus east of Dover with an interchange at Old US 70 (West Kornegay Street). Alternative 12 is 23.4 miles in length.

2.4.1.3 Alternatives 31 and 32

Alternatives 31 and 32 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 4.5 miles, with an interchange at Willie Measley Road/Jim Sutton Road, to near where Harold Sutton Road intersects with existing US 70 (Figure 2-11). At this point, a new interchange would provide access to the new location alternatives, which would travel southeast on new location. A new

connector approximately 1.5 miles long would connect north to the US 70/NC 148 interchange. From the Neuse River crossing to US 58, Alternatives 31 and 32 are the same as Alternatives 11 and 12, including interchanges at NC 11/NC 55, US 258, and NC 58. East of NC 58, Alternative 31 is the same as Alternative 11, and Alternative 32 is the same as Alternative 12. Alternative 31 is 22 miles in length. Alternative 32 is 22.1 miles in length.

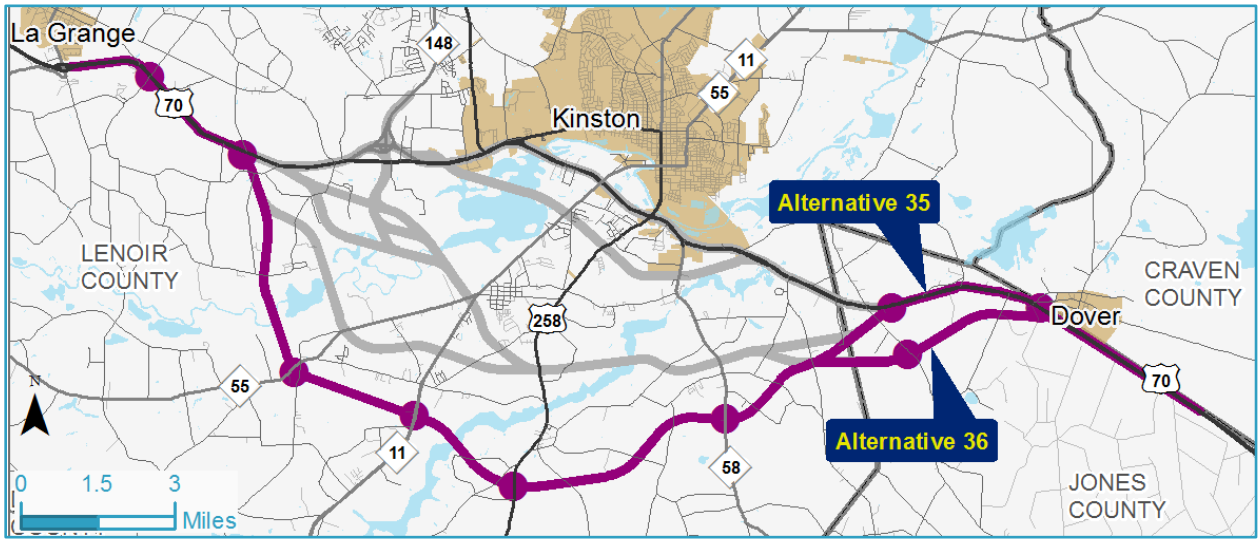
Figure 2-11: Alternatives 31 and 32



2.4.1.4 Alternatives 35 and 36

Alternatives 35 and 36 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 2.25 miles, with an interchange at Willie Measley Road/Jim Sutton Road, to Albert Sugg Road (Figure 2-12). A new interchange here would allow both alternatives to diverge onto new location and travel to the south. Interchanges would be located at NC 55 (about 4 miles west of the split with NC 11), NC 11 (about 2.75 miles south of the split with NC 55), US 258 (just north of Woodington Middle School), and NC 58 (just south of Southwood Road). The alternatives swing back to the north before diverging at Cobb Road. East of Cobb Road, Alternative 36 is the same as Alternatives 11, 31, 65, and 51. Alternative 36 is 25.0 miles in length. Alternative 35 continues northeast on new location, and from Wyse Fork Road eastward is the same as Alternatives 12, 32, 63, and 52. Alternative 35 is 25.3 miles in length.

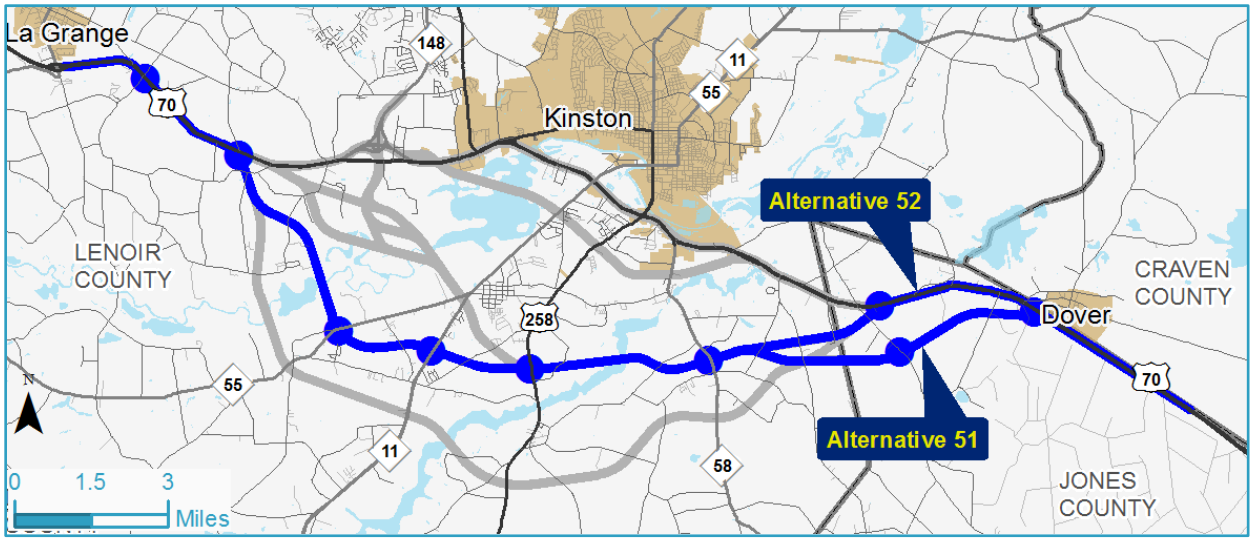
Figure 2-12: Alternatives 35 and 36



2.4.1.5 Alternatives 51 and 52

Alternatives 51 and 52 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 2.25 miles, with an interchange at Willie Measley Road/Jim Sutton Road, to Albert Sugg Road (Figure 2-13). A new interchange here would allow both alternatives to diverge onto new location and travel to the south. Interchanges would be located at NC 55 (about 2.75 miles west of the split with NC 11), NC 11 (about 1.5 miles south of the split with NC 55), and US 258. East of US 258, Alternative 51 is the same as Alternatives 11, 31, and 65, and Alternative 52 is the same as Alternatives 12, 32, and 63. Alternative 51 is 22.6 miles in length. Alternative 52 is 22.7 miles in length.

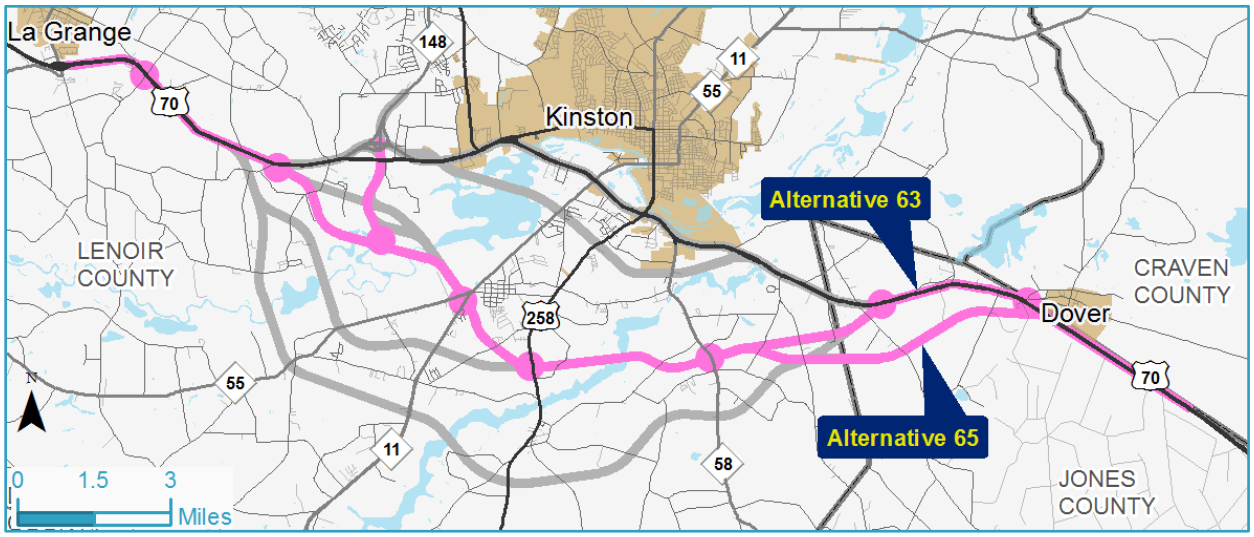
Figure 2-13: Alternatives 51 and 52



2.4.1.6 Alternatives 63 and 65

Alternatives 63 and 65 begin at the western terminus of the project at the NC 903/US 70 interchange south of La Grange and follow existing US 70 for approximately 4.5 miles, with an interchange at Willie Measley Road/Jim Sutton Road, to near where Harold Sutton Road intersects with existing US 70 (Figure 2-14). At this point, a new interchange would provide access to the new location alternatives, which would travel south and then east on new location. A new connector approximately 2 miles long would connect north to the US 70/NC 148 interchange. From east of the Neuse River crossing, Alternative 63 is the same as Alternatives 12 and 32, and Alternative 65 is the same as Alternatives 11 and 31. Alternative 63 is 22.2 miles in length. Alternative 65 is 22.1 miles in length.

Figure 2-14: Alternatives 63 and 65



2.4.2 Design Features for Detailed Study Alternatives

The following sections present the design level of service, design criteria, typical sections, and access control established for the development of the build alternatives.

2.4.2.1 Selection of Design Level of Service

The engineering profession generally accepts LOS D as a minimally acceptable operating condition. A minimum of LOS D is being used for design purposes for the project, but will not be used to screen or select alternatives. The determination of the number of lanes for the proposed action is based on the traffic volume that can be accommodated on the facility such that it meets LOS D or better in design year 2040. The traffic volume used in the analysis of traffic operations is the peak hour traffic volume for the roadway. The peak hour volume is adjusted to a flow rate based on terrain, heavy vehicle percentage, driver familiarity, and roadway characteristics. The flow rate is then used to calculate the density and LOS for the roadway.

2.4.2.2 Design Criteria

Design criteria for the DSAs are shown in Table 2-1.

Table 2-1: Design criteria

Route	US 70 Bypass	Alternative 1UE
Line	-Y14-	-Y15-
Traffic data		
Average daily traffic let year = 2020	21,800	42,800
Average daily traffic design year = 2040	27,600	47,000
Tractor trailer semi-truck	4	5
Duals	6	5
Design hourly volume	2,484	4,700
Directional	60	55
Classification	Freeway	Freeway
Terrain type	Level	Level
Design speed; mph	70	70/60
Posted speed; mph	65	65/55
Proposed right-of-way width	Minimum 235 feet	Minimum 185 feet
Control of access	Full	Full
Rumble strips (y/n)	N	N
Typical section type	4-lane divided	4-lane divided
Lane width	12 feet	12 feet
Sidewalks (y/n)	N	N
Bicycle lanes (y/n)	N	N
Median width	46 feet	Varies 23 feet to 46 feet
Median protected (guardrail/barrier)	N/A	N/A
Median shoulder width (total)	6 feet	Varies 6 feet to 11.5 feet
Median width	46 feet	46 feet
Outside without guard rail	12 feet	12 feet
Outside with guard rail	15 feet	15 feet
Outside paved shoulder width	10 feet	10 feet
Outside total/full depth paved shoulder	12 feet/10 feet	12 feet/10 feet

Note: Design assumptions compiled using NCDOT *Design Manual for Roadway Design* (NCDOT 2018i) and AASHTO 2011.

2.4.2.3 Typical Sections

Four proposed typical sections were developed for the DSAs and include the following options: a typical section without service roads (Figure 2-15), a typical section with a service road on one side (Figure 2-16), a typical section with a service road on both sides (Figure 2-17), and a typical section with a narrow median and a service road on both sides (Figure 2-18). The typical section with a narrow median and a service road on both sides is only used on Alternative 1UE to reduce property impacts in densely developed areas.

2.4.2.4 Structures

Each of the DSAs will include structures, often referred to as bridges, over hydraulic crossings. Major hydraulic crossings are those with a contributing drainage area requiring conveyance greater than a 72-inch pipe. Hydraulic crossings requiring less than or equal to the conveyance of a 72-inch pipe are considered minor crossings and are not included in the list of structures. For drainage areas requiring a triple box culvert, estimated bridge lengths were calculated for structure size comparison.

The NEPA/Section 404 Merger Team concurred on the size and location of the major hydraulic structures on April 17, 2014. A list and description of the proposed major hydraulic structures for the DSAs is provided in Appendix C. The locations of the proposed major hydraulic structures are shown on Figure 2-19 and Figure 2-20. More information can also be found in the *Hydraulic Analysis Report Addendum* (NCDOT 2017e).

2.4.2.5 Access Control

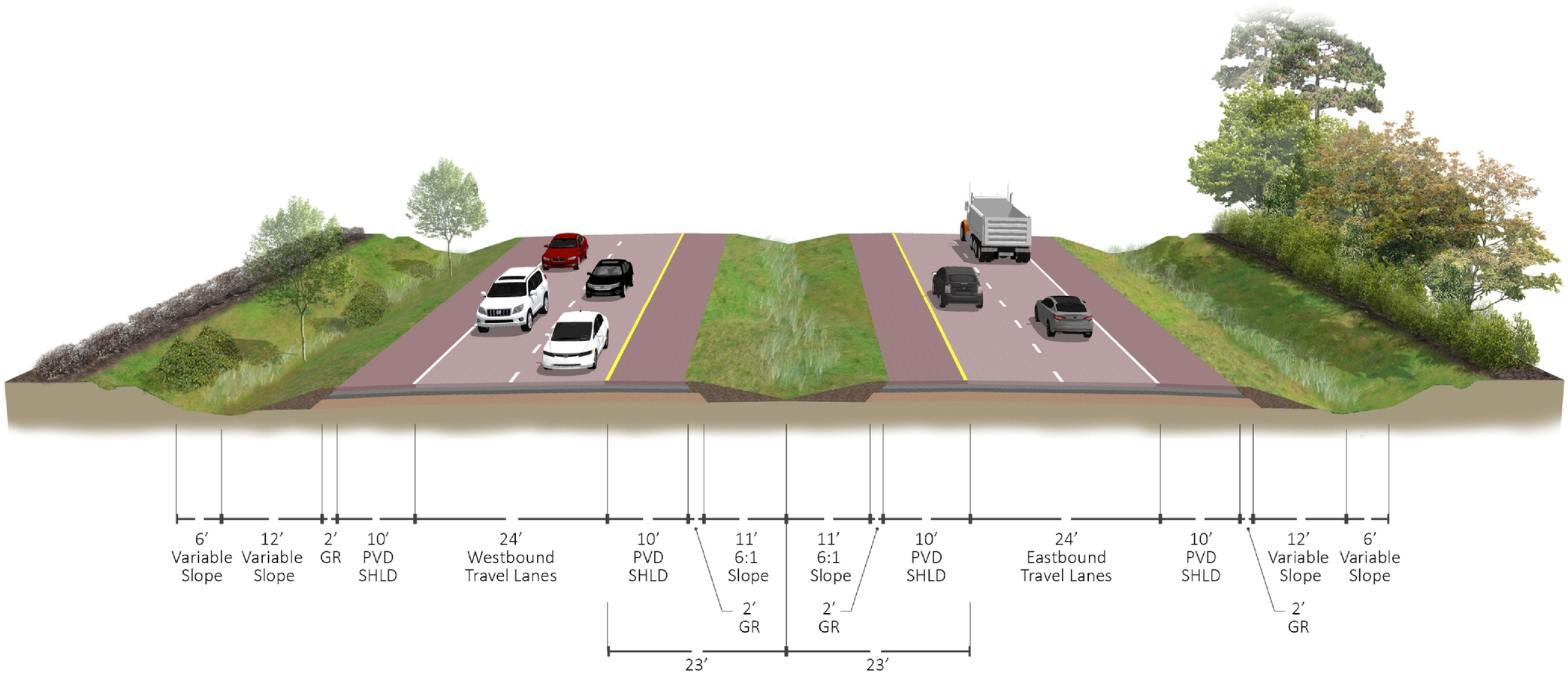
The required access control for interstates is specified as follows in *A Policy on Design Standards – Interstate System* (AASHTO 2011).

> "Access to the interstate system shall be fully controlled. The interstate highway shall be grade separated at all railroad crossings and select public crossroads. At grade intersections shall not be allowed. To accomplish this, the intersecting roads are to be grade separated, terminated, rerouted, and/or intercepted by frontage roads. Access is to be achieved by interchanges at select public roads.
>
> Access control shall extend the full length of ramps and terminals on the crossroad. Such control shall either be acquired outright prior to construction or by the construction of service roads or by a combination of both."

Access beyond the ramp terminals should be controlled by purchasing access rights, providing frontage roads, controlling added corner right-of-way areas, or prohibiting driveways. Such control should extend beyond the ramp terminal at least 30 meters (100 feet) in urban areas and 90 meters (300 feet) in rural areas. However, in areas of high traffic volume, where there exists the potential for development that would create operational or safety problems, longer lengths of access control should be provided (AASHTO 2011).

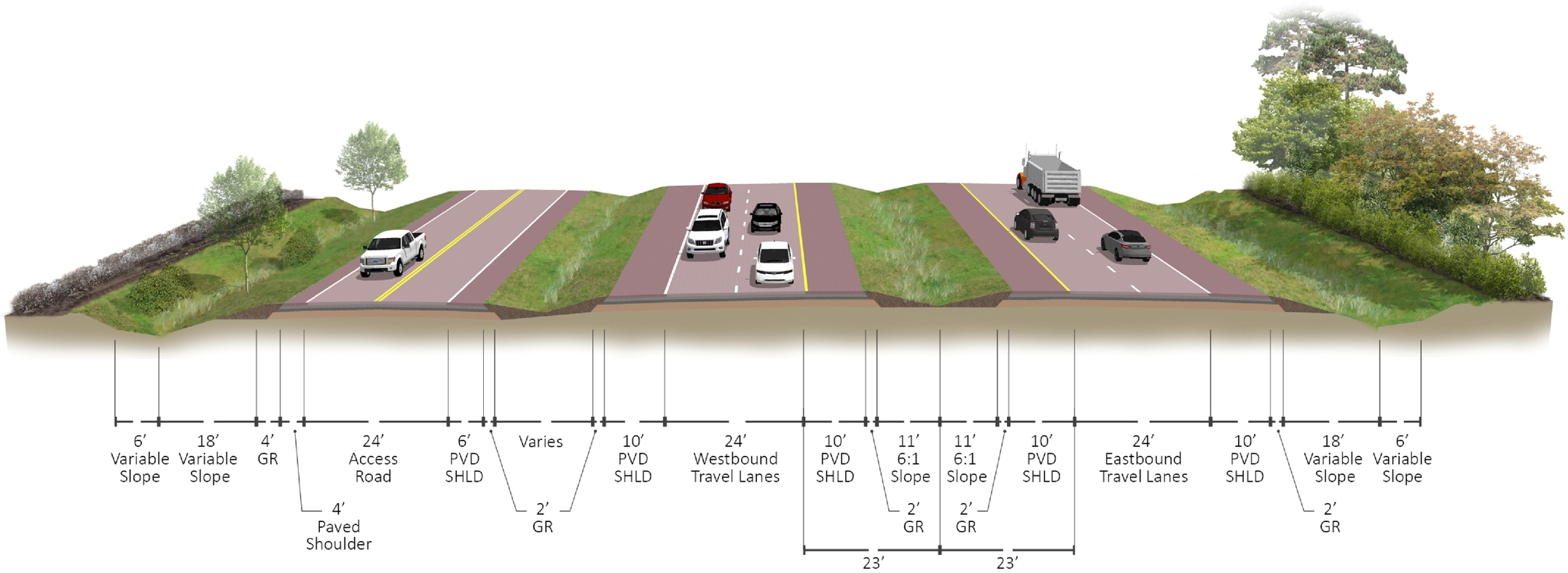
Source: AECOM

Figure 2-15:
Typical section without service road



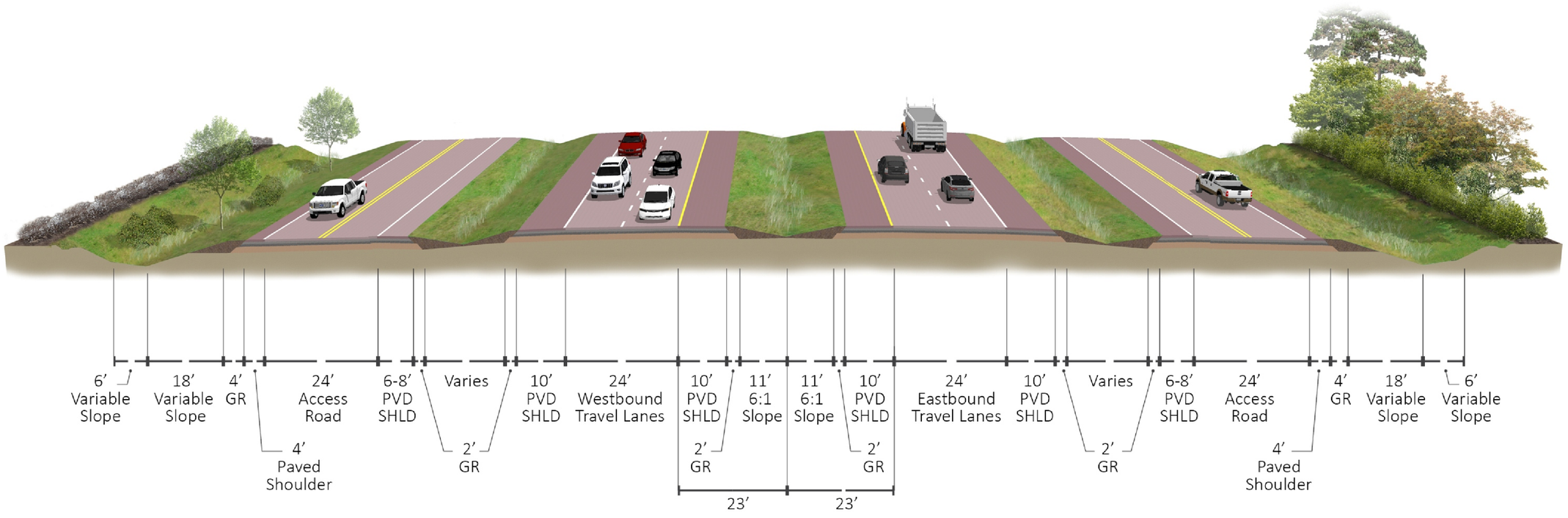
Source: AECOM

Figure 2-16:
Typical section with service road on one side



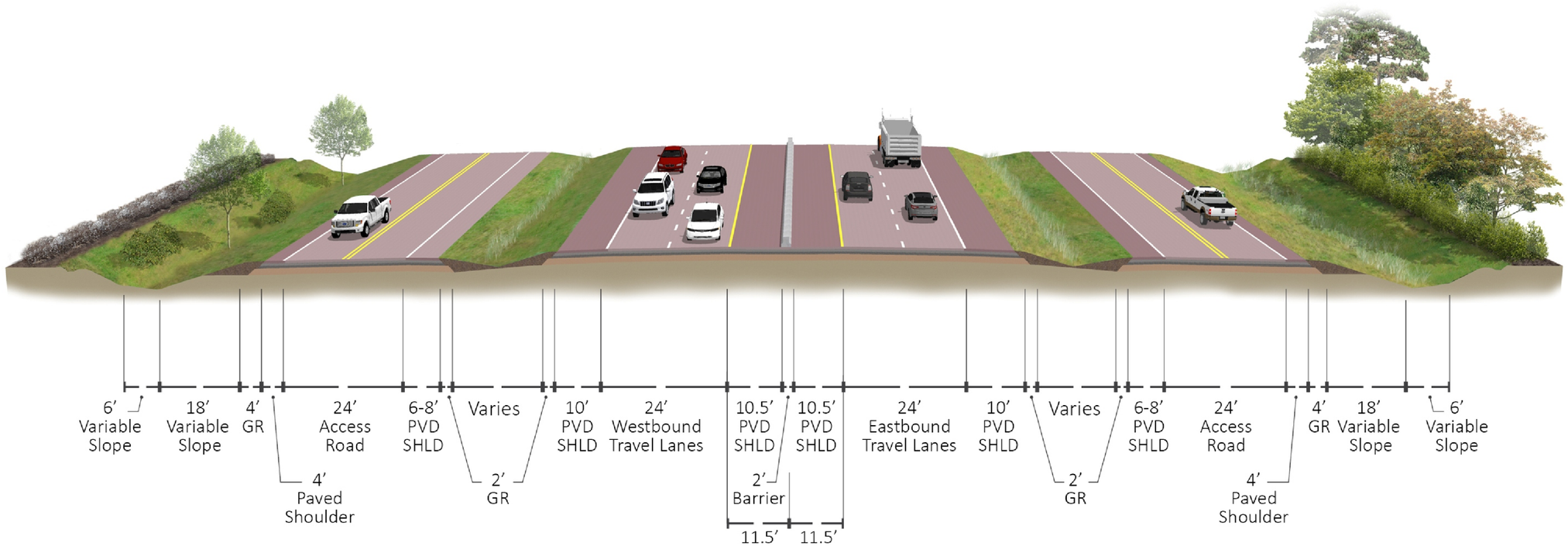
Source: AECOM

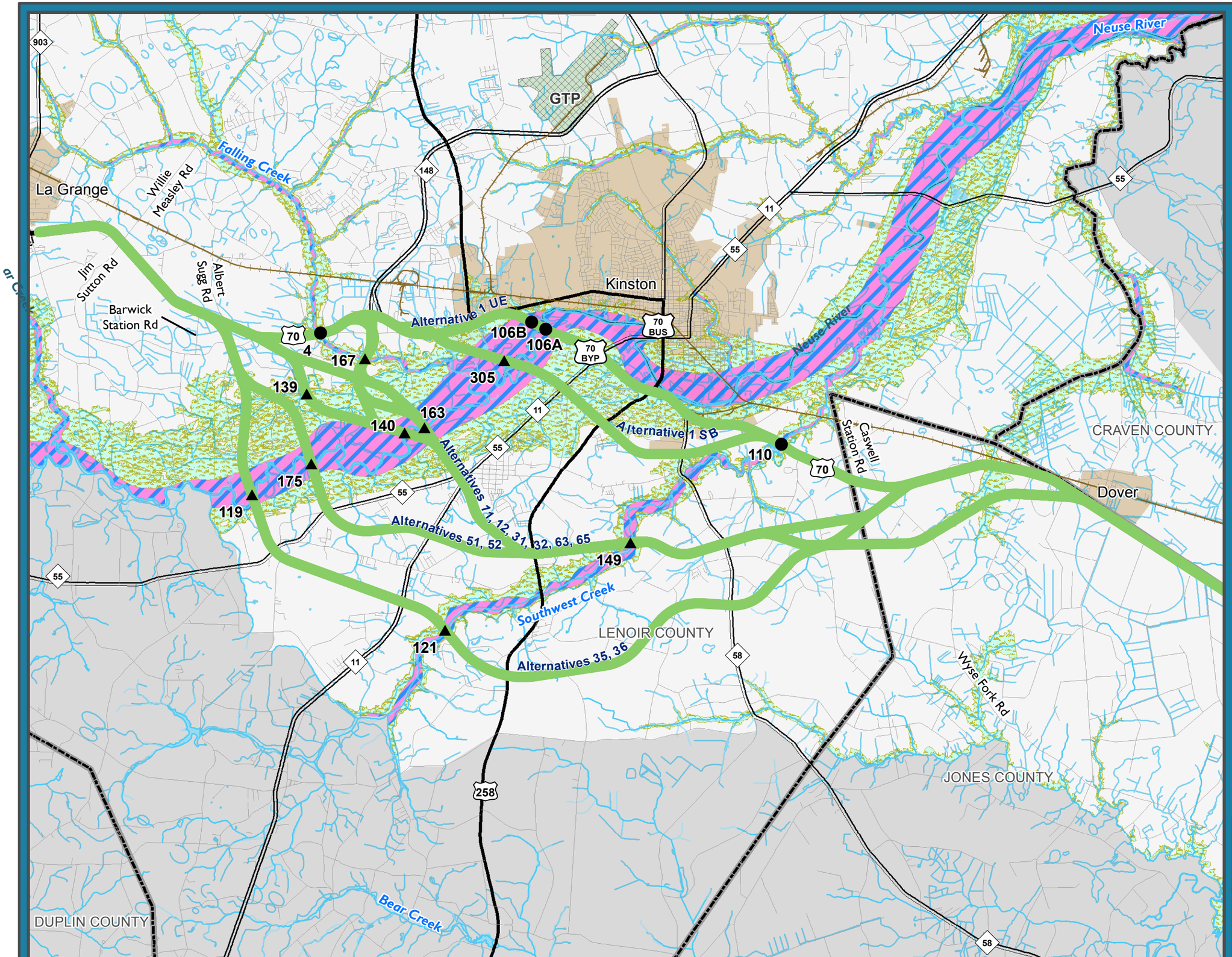
Figure 2-17:
Typical section with service road on both sides



Source: AECOM

Figure 2-18:
Typical section with narrow median and service road on both sides





70 KINSTON BYPASS
DEIS | R - 2553

Figure 2-19: Bridge locations

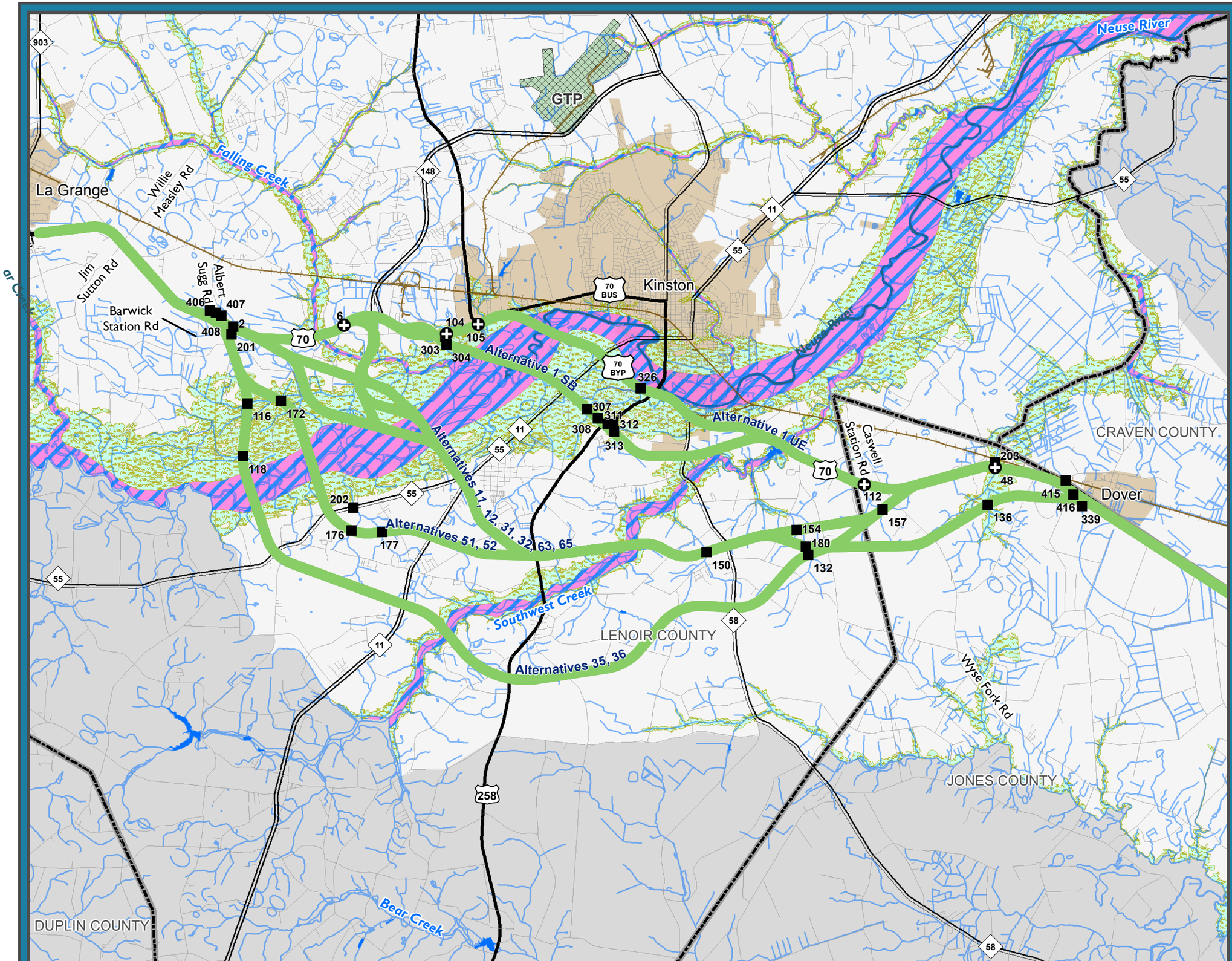
Legend

- Detailed Study Alternatives
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary
- Proposed Bridge Crossing
- Maintain Existing Bridge (with Potential Widening and/or Proposed Ramp/Service Rd. Bridge)
- Floodplain
- Floodway

0 1 2 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



70 KINSTON BYPASS
DEIS | R - 2553

Figure 2-20: Culvert locations

Legend

- Detailed Study Alternatives
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary
- Proposed Box Culvert Crossing
- Retain Existing Culvert (Extend as Needed)
- Floodplain
- Floodway

0 1.5 3 Miles N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

2.4.3 Traffic Forecasting and Traffic Operations Analysis

Upon selection of the 12 DSAs, it was determined an updated traffic forecast and traffic operations analysis would be developed for use in refining the designs, as discussed in section 2.3.4. The updated peak hour volumes from the traffic forecast were used in the operations analysis to determine interchange configurations, number of lanes, and LOS.

2.4.3.1 Traffic Forecasting

The traffic forecast used for this project was conducted and furnished to AECOM by NCDOT (NCDOT 2016b). Using the traffic forecast and NCDOT's Intersection Analysis Utility tool, a.m. and p.m. peak hour volumes were developed for all of the alternatives being evaluated.

2.4.3.2 Traffic Operations Analysis Methodology

The *Traffic Capacity Analysis Report* (NCDOT 2017i) highway capacity analyses were based on methodologies from the *Highway Capacity Manual* (TRB 2010). Traffic modeling software used in the capacity analyses was Synchro 9.1 and SimTraffic 9.1 (Build 910, Rev 24), FREEVAL-E Version 1.00, and HCS 2010 Version 6.80. The analyses were conducted in accordance with the latest *NCDOT Congestion Management Capacity Analysis Guidelines* for STIP projects (NCDOT 2015b).

2.4.3.3 Traffic Operations Analysis

All the US 70 elements, whether freeway, ramp, or intersection, are operating at LOS D or better for all alternatives. One or two minor movements on service roads across the entirety of the project are operating at LOS E, and the volume-to-capacity ratios are so low that the cost of implementing additional improvements would outweigh any benefit gained.

2.4.4 Project Costs

The construction and right-of-way costs for the DSAs are included in Table 2-2. More information on the right-of-way costs is in Appendix D.

Table 2-2: Project cost estimates per alternative

	Const. Cost (millions)	Intelligent Transportation System Cost	Right-of-way Cost (millions)	Utilities Cost (millions)	Wetland and Stream Mitigation Costs (millions)[a]	Total Cost
1UE	$245.90	$450,000	$183.07	$12.83	$12.94	$455,190,000
1SB	$292.80	$450,000	$123.71	$10.80	$12.25	$440,010,000
11	$284.10	$450,000	$78.33	$9.13	$12.13	$384,140,000
12	$299.00	$450,000	$85.05	$9.43	$13.39	$407,320,000
31	$284.20	$450,000	$63.50	$7.84	$12.29	$368,120,000
32	$288.90	$450,000	$66.99	$8.08	$13.55	$377,970,000
35	$290.40	$450,000	$65.49	$8.62	$13.94	$378,900,000
36	$297.80	$450,000	$64.20	$7.98	$12.81	$383,240,000
51	$296.20	$450,000	$54.56	$7.93	$11.72	$370,860,000
52	$275.80	$450,000	$57.38	$9.88	$12.98	$356,490,000
63	$355.90	$450,000	$64.01	$7.88	$13.44	$441,680,000
65	$358.90	$450,000	$61.18	$7.63	$12.18	$440,340,000

Source: NCDOT Roadway Design Unit, NCDOT Right of Way Unit, and NCDOT Utilities Unit; NCDEQ 2018d.

[a] Excludes stream buffer mitigation costs. Stream buffer zones will be mapped once the applicant's preferred alternative is selected and streams have been field-delineated.

CHAPTER 3
AFFECTED ENVIRONMENT

3. AFFECTED ENVIRONMENT

This chapter describes the existing conditions and characteristics of the project study area that could be affected by the proposed action. Information presented relates to the existing social, economic, cultural, physical, and natural environment settings. This chapter provides the basis for determining the specific impacts of each DSA, as discussed in chapter 4.

3.1 SOCIAL AND ECONOMIC RESOURCES

This section contains population, demographic, employment, community, and other social and economic information pertinent to the understanding of Lenoir, Craven, and Jones counties and the surrounding cities, towns, and communities within the project study area.

A Community Impact Assessment (CIA) was developed to gather information applicable to the social and economic resources in the study area (NCDOT 2018d). The CIA describes the existing conditions and trends of the area surrounding the Kinston Bypass project, inventories community resources, and includes the demographic data. The CIA is available on the project website. Consistent with NCDOT procedures, a direct community impact area (DCIA) and a demographic study area were defined in order to describe existing baseline conditions and determine potential project-related impacts to the human environment. The DCIA was created by buffering the DSAs by 1,000 feet. The demographic study area includes 16 block groups: 13 in Lenoir County, 1 in Jones County, and 2 in Craven County. The DCIA and the demographic study area are shown on Figure 3-1.

Community Impact Assessment

The CIA for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Direct Community Impact Area

The direct community impact area is the area surrounding the project that is likely to be directly affected in any way during, throughout, and after project construction.

Demographic Study Area

The demographic study area is defined to provide demographic characteristics for the census block groups surrounding the project. Census block groups are the smallest geographic area from the 2010 US Census and 2011-2015 American Community Survey, and provide demographic data for the populations and their attributes within the direct community impact area.

3.1.1 Population and Demographics

According to the US Census Bureau, between 2000 and 2016 the populations of Craven, Jones, and Lenoir counties experienced growth rates of 0.4, 2.8, and −3.2 percent, respectively. Based on projections from the North Carolina Office of State Budget, growth rates are expected to remain much lower than the state as a whole through 2035 (Table 3-1).

KINSTON BYPASS
DEIS | R - 2553

Figure 3-1:
Direct community impact area and demographic study area

Legend

- Project Study Area
- Direct Community Impact Area (DCIA)
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Demographic Study Area
- Block Group

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

Table 3-1: Population growth forecasts

Area	2010	2020	2016 (Estimate)	2035	Difference (2010 to 2035)	Percent Change (2010 to 2035)	Annualized Growth Rate (2010 to 2035)
Craven County	104,182	103,899	103,737	104,104	−78	−0.07%	0.0%
Jones County	10,075	10,355	10,354	10,354	279	2.77%	0.1%
Lenoir County	59,488	57,146	57,587	55,494	−3,994	−6.71%	−0.2%
North Carolina	9,574,344	10,619,432	10,155,942	12,327,153	2,752,809	28.75%	0.7%

Source: North Carolina Office of State Budget Management; US Census Bureau 2000, 2010, 2016

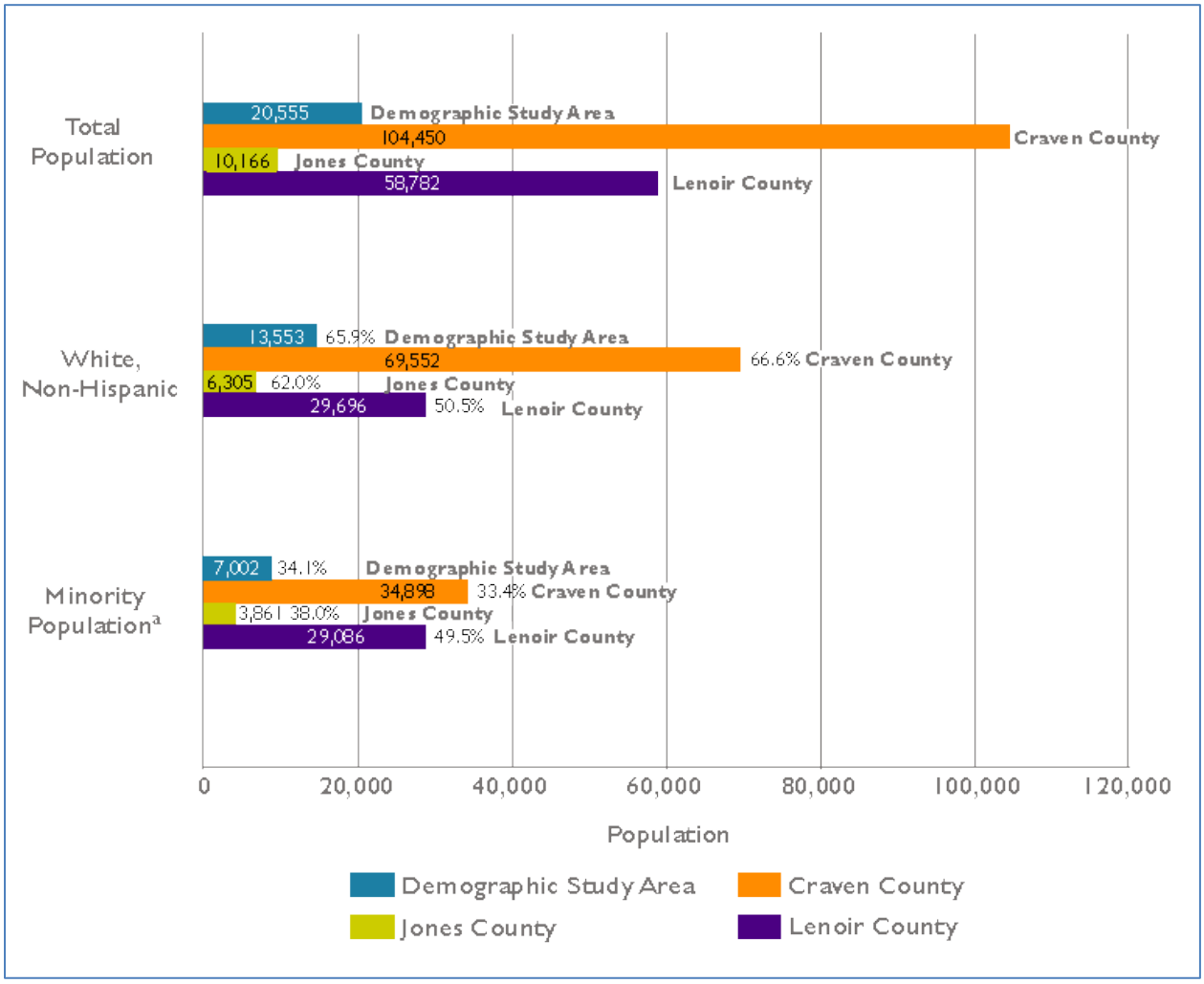
According to the American Community Survey (ACS), Lenoir County has a larger potential environmental justice (EJ) population, with 55.2 percent identifying themselves as White, 40.2 percent as African American, and the remaining 4.6 percent as Asian, Native Hawaiian/Pacific Islander, and mixed race. Table 3-2 and Table 3-3 compare the ethnic population and racial makeup of the demographic study area, Craven County, Jones County, and Lenoir County. Socioeconomic data on individual block groups is included in the CIA (NCDOT 2018d). Protected populations, including minority populations, are discussed further in section 3.1.7.

3.1.2 Housing

Lenoir County has over 27,000 housing units, 60 percent of which are single-family homes, 16 percent multi-family units, and 24 percent manufactured housing. Jones County has 4,863 housing units, of which 64.5 percent are single-family, 5 percent are multi-family, and 30.6 percent are manufactured housing, with nearly 15 percent of units vacant. Craven County has over 45,700 housing units, 71 percent of which are single-family homes, 14.5 percent multi-family units, and 14.5 percent manufactured housing. Lenoir and Jones counties have a lower median housing value ($93,000 and $93,900, respectively) than North Carolina ($140,000). Craven County's median housing value is $154,500.

According to the National Housing Preservation Database, Lenoir County has 1,076 affordable housing units and Craven County has 2,207 affordable housing units (Public and Affordable Housing Research Corporation 2017). The database includes an inventory of 10 federally assisted rental housing programs from the US Department of Housing and Urban Development and the US Department of Agriculture (USDA). Most of the affordable housing in Lenoir County is located within Kinston. A concentration of affordable housing units is also located in La Grange. In Craven County, most of the affordable housing is located in New Bern, which is located outside of the demographic study area. The National Housing Preservation Database does not include information for Jones County.

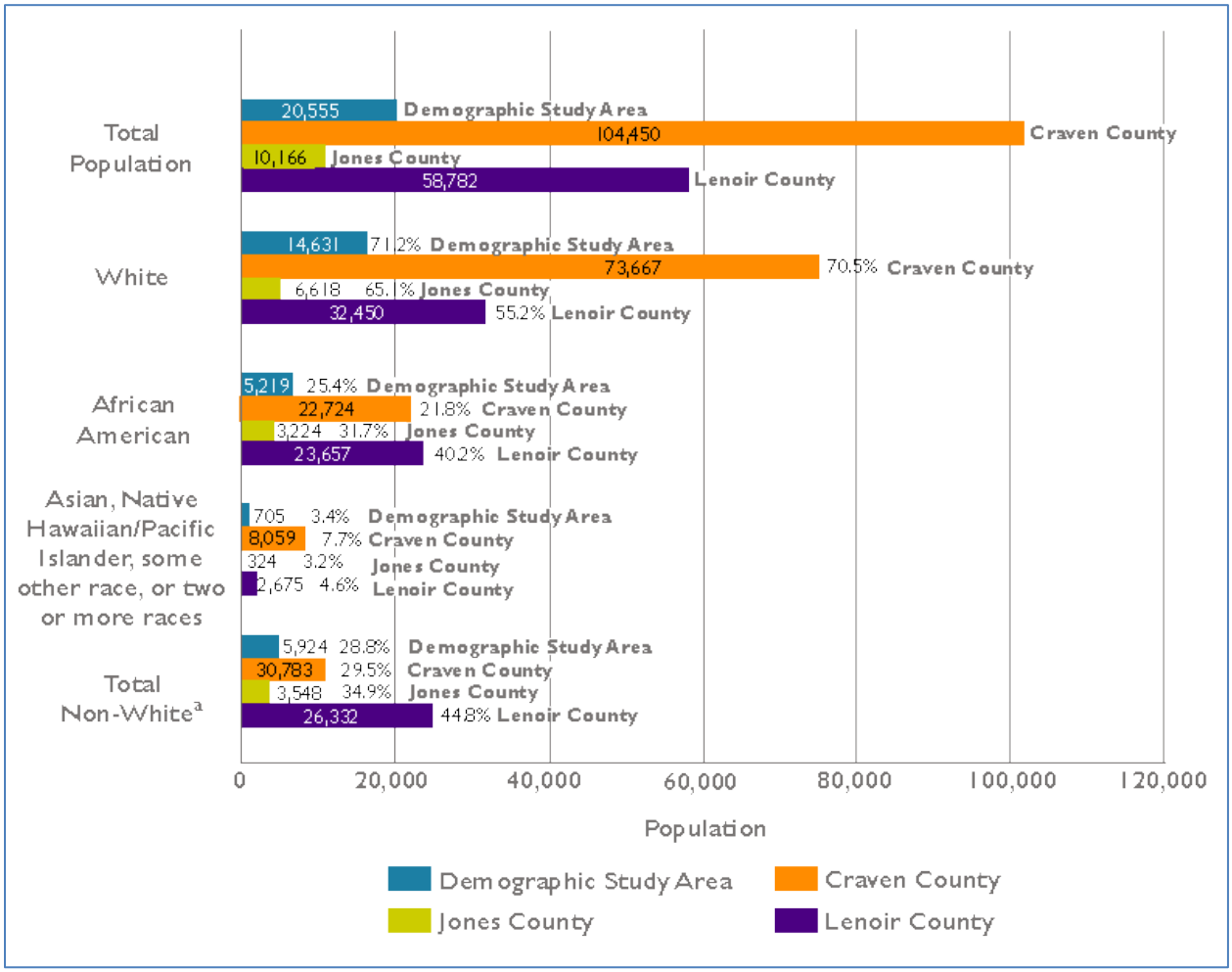
Table 3-2: Minority population



Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B03002, "Hispanic or Latino Origin by Race."

[a] Total non-White does not include Hispanic populations that are also White.

Table 3-3: Racial makeup



Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B02001, "Race."

[a] Total non-White does not include Hispanic populations that are also White.

3.1.3 Economics and Employment

The Economic Impact Assessment (EIA) prepared for the proposed action identified and assessed the project study area's current socioeconomic and market conditions, while also inventorying and assessing the businesses located within a quarter mile of US 70 and proposed routes for Alternatives 1SB and 51 (NCDOT 2018f). The EIA is available on the project website. The EIA chose the following four DSAs to analyze in the report:

- No-Build
- Alternative 1UE
- Alternative 1SB
- Alternative 51

Economic Impact Assessment

Economic impacts are the effects a project or policy has on the economy of a designated project area, measured in terms of the change in business sales, jobs, value added, income, or tax revenue.

The key components of the EIA include highway user impact analysis, business inventory, market assessment, and public outreach.

The EIA for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

These four DSAs were assessed in the EIA because it was determined that the differentiation of economic impacts from Alternatives 11, 12, 31, 32, 35, 36, 51, 52, 63, and 65 would be minimal, as they would be located along paths with similar land use and population and business density. Therefore, Alternative 51 was chosen as a representative alternative to be assessed in the EIA.

The EIA focused on analyzing the economic impacts to Lenoir County and the City of Kinston since all the economic activity that would be directly affected by the proposed action is within this area. Additional details regarding the methodologies are included in the EIA.

The North Carolina Department of Commerce Labor and Economic Analysis identifies the top employers in Craven, Jones, and Lenoir counties as those employers that have the largest number of employees. Table 3-4 shows the top 10 employers by employment range for Craven, Jones, and Lenoir counties.

Table 3-4: Top 10 employers by employment range in Craven, Jones, and Lenoir counties

County	Company Name	Industry	Employment Range
Craven	Department of Defense	Public Administration	1000+
Craven	Craven County Schools	Education & Health Services	1000+
Craven	Craven Regional Medical Center	Education & Health Services	1000+
Craven	BSH Home Appliances Corporation	Manufacturing	1000+
Craven	Moen Incorporated	Manufacturing	500-999
Craven	Wal-Mart Associates Inc.	Trade, Transportation, & Utilities	500-999
Craven	Craven County	Public Administration	500-999

County	Company Name	Industry	Employment Range
Craven	Marine Corps Community Services	Trade, Transportation, & Utilities	500-999
Craven	Craven Community College	Education & Health Services	500-999
Craven	City of New Bern	Public Administration	250-499
Jones	Jones County Board of Education	Education & Health Services	100-249
Jones	US Postal Service	Trade, Transportation, & Utilities	100-249
Jones	County of Jones	Public Administration	100-249
Jones	Craven Regional Medical Center	Education & Health Services	50-99
Jones	Brookstone Living Center LLC	Education & Health Services	50-99
Jones	Universal Mental Health Services	Education & Health Services	50-99
Jones	Home Health and Hospice Care Inc.	Education & Health Services	Below 50
Jones	Smithfield Foods Inc.	Manufacturing	Below 50
Jones	Tar Heel Health Care Services LLC	Education & Health Services	Below 50
Jones	Blue Rock Structures Inc.	Construction	Below 50
Lenoir	Sanderson Farms Inc.	Manufacturing	1000+
Lenoir	North Carolina Department of Health & Human Services	Public Administration	1000+
Lenoir	Lenoir County Schools	Education & Health Services	1000+
Lenoir	Smithfield Foods Inc.	Manufacturing	500-999
Lenoir	Lenoir Memorial Hospital Inc.	Education & Health Services	500-999
Lenoir	Spirit AeroSystems	Manufacturing	500-999
Lenoir	Aristofraft/Decora/Schrock	Manufacturing	500-999
Lenoir	County Administration	Public Administration	500-999
Lenoir	Electrolux Home Products Inc.	Manufacturing	500-999
Lenoir	City of Kinston	Public Administration	250-499

Source: US Census Bureau 2016; North Carolina Department of Commerce 2016

The historical unemployment trends for the counties that encompass the demographic study area and North Carolina are shown in Table 3-5. In general, the unemployment rate of the three counties mirrors the unemployment rate of North Carolina.

Table 3-5: Unemployment percentage for Craven, Jones, and Lenoir counties

	2000	2005	2010	2015	2017
Craven County	4.1%	4.7%	10.7%	6.1%	4.7%
Jones County	4.5%	4.9%	11.2%	5.8%	4.5%
Lenoir County	5.2%	5.8%	11.9%	6.3%	4.6%
North Carolina	3.7%	5.2%	10.8%	5.7%	4.6%

Source: US Bureau of Labor Statistics 2018

According to the ACS the mean commute times for workers in the three counties that encompass the demographic study area are 20.8 minutes for Craven County, 25.5 minutes for Jones County, and 21.5 minutes for Lenoir County. Table 3-6 shows the percentage of workers who are employed outside of the community where they reside.

Table 3-6: Percentage of workers employed outside their residential community

Area	Percentage Working Outside Place of Residence
Cove City	44.8
Dover	72.0
Jackson Heights	21.2
Kinston	13.8
La Grange	39.8
Craven County	16.6
Jones County	69.0
Lenoir County	23.0

Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015)

3.1.4 Economic Development

Lenoir County is home to a diverse array of businesses from agriculture and aerospace manufacturing, to biotech and pharmaceutical companies. According to the US Census Bureau's Longitudinal-Employer Household Dynamics Program (US Census Bureau 2018), the largest concentrations of jobs within Lenoir County are in downtown Kinston, at the C.F. Harvey Parkway interchange with US 70 (US 70 Industrial Park), and near the intersection of NC 58 and Airport Road (near Lenoir Memorial Hospital). Limited commercial enterprises exist within the Craven and Jones county areas within the project study area.

Highway market dependent businesses consist of retail and service businesses that obtain a major share of their business from non-local customers on a less planned or impulse basis. This is distinct from other businesses, which also rely on US 70 for customer access but are more

destinational for locals (or non-locals). The major highway market dependent businesses on US 70 consist of four business sectors:

- Food and beverage stores (grocery stores or mini-marts)
- Gasoline stores
- General merchandise stores (e.g., Walmart)
- Food services and drinking places (restaurants)

3.1.5 Median Income Values

According to the ACS, the median household income for the three counties that encompass the demographic study area is $47,985 for Craven County, $34,005 for Jones County, and $34,717 for Lenoir County. The median household income in Kinston is lower than Lenoir County ($28,060). Each county, as well as Kinston, lags behind the median household income for the state ($46,868). Within the demographic study area, block groups with higher incomes are located just west of Kinston and to the southwest of Kinston along NC 11 and NC 55.

3.1.6 Communities and Neighborhoods

3.1.6.1 Lenoir County

Two towns/cities are located within the DCIA in Lenoir County: La Grange and Kinston. La Grange is a small town west of Kinston and north of US 70, with a population of approximately 3,000. La Grange has a small town center with minimal commercial/retail shops. The City of Kinston is centrally located in Lenoir County where several state and US highways intersect (US 70, US 258, NC 11, NC 55, NC 58). Kinston has been the county seat of Lenoir County since its formation in 1791.

The NC 11/55 corridor contains a mixture of residential, commercial, industrial, and community uses. Jackson's Crossroads, located where NC 11 and NC 55 split, has a shopping center and residential development. A notable feature in this area includes a house listed on the National Register of Historic Places (NRHP). A large cluster of single-family residences is located on the eastern side of NC 11/55 at Tyree Road.

Other single-family residential clusters are located in the unincorporated communities identified by the US Geological Survey (USGS) in the geographic names information system (GNIS), which include Albrittons, Bucklesberry, Little Baltimore, Sandy Bottom, Southwood, and Woodington (USGS 2018a). There are also several manufactured home parks.

Loftin's Crossroads is located in the southeastern portion of the DCIA at the intersection of NC 58 and Elijah Loftin Road. Loftin's Crossroads/Southwood has been identified as an activity center and contains a convenience grocery store and Southwood Elementary School is just north of the community.

Other residential areas within Lenoir County include a neighborhood along Cedar Dell Lane, just off of Kennedy Home Road located southwest of the C.F. Harvey interchange, the Howard Place Drive neighborhood, which is located off of NC 11, and the Murray Circle neighborhood, located along Whaley Road south of US 70.

3.1.6.2 Craven County

Craven County includes the Town of Dover. The Town of Dover has a population of approximately 400 and is marked by a clustering of residential development with a few community facilities. The area bounded by US 258 to the west, US 70 to the north, and NC 41 to the east is predominately agriculture and forestry interspersed with rural residential land uses.

3.1.6.3 Jones County

There are no towns within the DCIA in Jones County; however, the crossroad community of Wyse Forks is located near Wyse Fork Road and US 70. Wyse Forks consists of residences, community facilities, and a convenience store along Wyse Fork Road.

3.1.7 Protected Populations

3.1.7.1 Environmental Justice Populations

Based on demographic data available from the US Census ACS 5-year estimates (2011-2015) and NCDOT guidance, thresholds are used to determine the presence of EJ populations at the block group level. The thresholds are determined based upon the percentage of minorities and low income populations living in a block group compared to the overall county average. This analysis will be updated during the completion of the Final Environmental Impact Statement (FEIS) with the most recently available data from the US Census.

The standard of practice used by NCDOT for determining the presence of minority populations is when the percentage of minorities in a block group is 10 percentage points above the county average, or 50 percent, whichever is less. For this project, it was determined that the minority threshold is 43.4 percent for Craven County, 48 percent for Jones County, and 50 percent for Lenoir County.

Two block groups within the demographic study area surpass the minority thresholds for the presence of EJ, both of which are in Lenoir County. The block groups are census tract 103, block group 1 (100 percent minority population) and census tract 107, block group 1 (60.7 percent minority population). The minority populations by block group for the demographic study area are provided in Table 3-7. The location of these block groups is shown on Figure 3-2 and Figure 3-3.

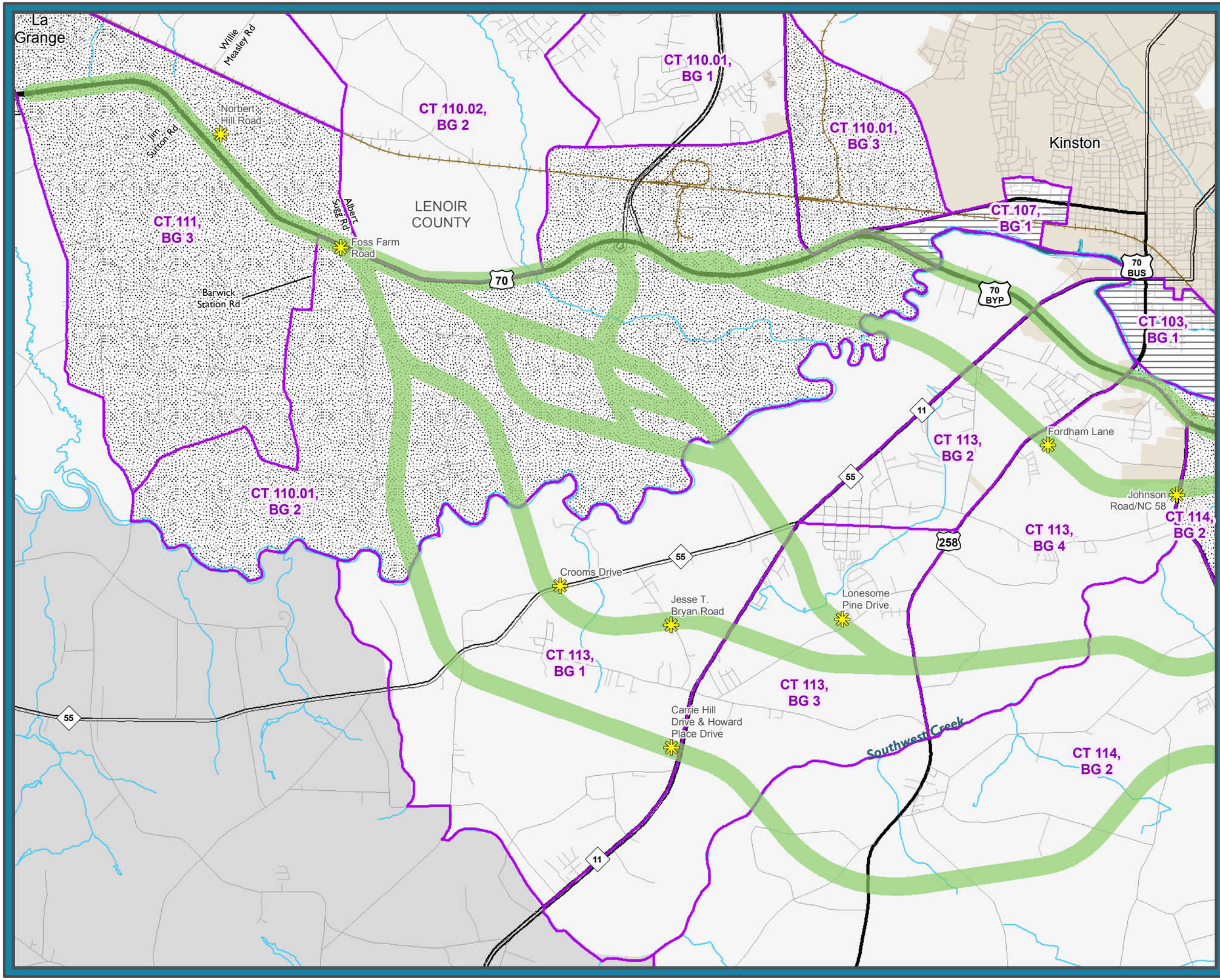
Table 3-7: Minority populations by block group

County	Geography	Total Population	White, Non-Hispanic (#)	White, Non-Hispanic (%)	Minority Population (#) [a]	Minority Population (%)[a]
Craven	CT 9603, BG 3	600	345	57.5%	255	42.5%
Craven	CT 9603, BG 4	1,553	1,019	65.6%	534	34.4%
Jones	CT 9203, BG 1	1,306	786	60.2%	520	39.8%
Lenoir	CT 103, BG 1	780	-	0.0%	780	100.0%
Lenoir	CT 107, BG 1	759	298	39.3%	461	60.7%
Lenoir	CT 110.01, BG 1	2,361	1,850	78.4%	511	21.6%
Lenoir	CT 110.01, BG 2	1,104	596	54.0%	508	46.0%
Lenoir	CT 110.01, BG 3	1,040	669	64.3%	371	35.7%
Lenoir	CT 110.02, BG 2	1,625	1,305	80.3%	320	19.7%
Lenoir	CT 111, BG 3	1,354	888	65.6%	466	34.4%
Lenoir	CT 113, BG 1	1,581	896	56.7%	685	43.3%
Lenoir	CT 113, BG 2	1,452	791	54.5%	661	45.5%
Lenoir	CT 113, BG 3	1,348	952	70.6%	396	29.4%
Lenoir	CT 113, BG 4	551	385	69.9%	166	30.1%
Lenoir	CT 114, BG 2	1,424	1,242	87.2%	182	12.8%
Lenoir	CT 114, BG 3	1,717	1,531	89.2%	186	10.8%
n/a	Total for demographic study area	20,555	13,553	65.9%	7,002	34.1%
n/a	Craven County	104,450	69,552	66.6%	34,898	33.4%
n/a	Jones County	10,166	6,305	62.0%	3,861	38.0%
n/a	Lenoir County	58,782	29,696	50.5%	29,086	49.5%
n/a	North Carolina	9,845,333	6,324,373	64.2%	3,520,960	35.8%

Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B03002, "Hispanic or Latino Origin by Race."

- Above EJ threshold

[a] Minority population includes all races that are non-White and Hispanic populations that are also White.



70 KINSTON BYPASS
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Figure 3-2: Environmental justice populations - A

Legend

- Detailed Study Alternative
- Observed EJ Population
- Block Group Within the Demographic Study Area
- Block Group Above Both Low-Income and Minority Threshold
- Block Group Above the Low-Income Threshold
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

0 0.75 1.5 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

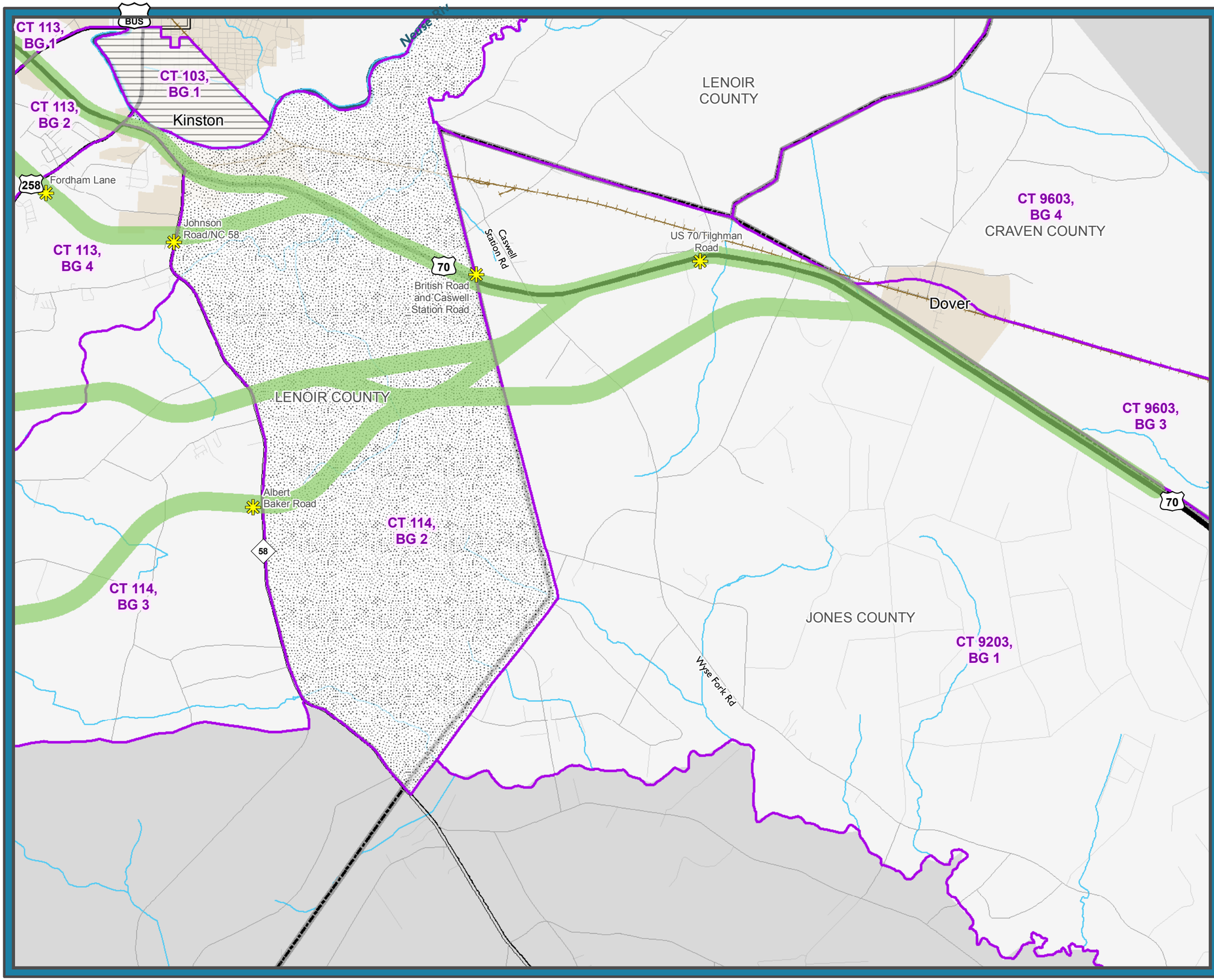

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Figure 3-3: Environmental justice populations - B

Legend

- Detailed Study
- Observed EJ Population
- Block Group Within the Demographic Study Area
- Block Group Above Both Low-Income and Minority Threshold
- Block Group Above the Low-Income Threshold
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

0 0.75 1.5 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

For low-income populations the standard of practice used by NCDOT for determining EJ populations is when the population of any of the poverty categories equals or exceeds 25 percent or when it is less than 25 percent, but exceeds the county average by 5 percentage points. The poverty categories within the census are below poverty, very poor (income is less than 50 percent of the poverty level), and near poor (income is 100 to 149 percent of the poverty level).The low-income threshold of each county for each category is established as the lower of 25 percent or 5 percentage points higher than the county average. The low income threshold is 20.6 percent for Craven County, 25 percent for Jones County, and 25 percent for Lenoir County. Very poor populations (under 50 percent of the poverty level) were identified and compared to the county rate for EJ screening. The very poor threshold is 12.1 percent for Craven County, 14.8 percent for Jones County, and 14.3 percent for Lenoir County. Populations that are considered near poor (between 100 and 149 percent of the poverty level) were identified and compared to the county rate. The near poor threshold is 15 percent for Craven County, 17.8 percent for Jones County, and 21.3 percent for Lenoir County.

Block groups that surpass one or more of the EJ thresholds for poverty are shown in Table 3-8 and on Figure 3-2 and Figure 3-3 and include the following:

- Census tract 103, block group 1
- Census tract 107, block group 1
- Census tract 110.01, block group 2
- Census tract 110.01, block group 3
- Census tract 111, block group 3
- Census tract 114, block group 2

Table 3-8: Block groups above the environmental justice poverty threshold

County	Census Tract, Block Group	Total Population for Whom Poverty Status is Determined	Below Poverty Level (#)	Below Poverty Level (%)	Very Poor: Under 50% of Poverty Level (#)	Very Poor: Under 50% of Poverty Level (%)	Near Poor: Between 100% and 149% of Poverty Level (#)	Near Poor: Between 100% and 149% of Poverty Level (%)
Craven	CT 9603, BG 3	600	68	11.3%	34	5.7%	23	3.8%
Craven	CT 9603, BG 4	1,521	229	15.1%	45	3.0%	174	11.4%
Jones	CT 9203, BG 1	1,306	174	13.3%	112	8.6%	72	5.5%
Lenoir	CT 103, BG 1	780	537	68.8%	292	37.4%	99	12.7%
Lenoir	CT 107, BG 1	759	228	30.0%	16	2.1%	159	20.9%
Lenoir	CT 110.01, BG 1	2,327	340	14.6%	159	6.8%	174	7.5%
Lenoir	CT 110.01, BG 2	1,091	88	8.1%	33	3.0%	285	26.1%
Lenoir	CT 110.01, BG 3	1,040	274	26.3%	252	24.2%	82	7.9%
Lenoir	CT 110.02, BG 2	1,625	184	11.3%	27	1.7%	191	11.8%
Lenoir	CT 111, BG 3	1,354	268	19.8%	200	14.8%	233	17.2%
Lenoir	CT 113, BG 1	1,581	34	2.2%	-	0.0%	208	13.2%
Lenoir	CT 113, BG 2	1,452	358	24.7%	12	0.8%	289	19.9%
Lenoir	CT 113, BG 3	1,348	90	6.7%	42	3.1%	156	11.6%
Lenoir	CT 113, BG 4	551	-	0.0%	-	0.0%	41	7.4%
Lenoir	CT 114, BG 2	1,422	200	14.1%	50	3.5%	329	23.1%
Lenoir	CT 114, BG 3	1,717	416	24.2%	106	6.2%	294	17.1%
n/a	Total for demographic study area	20,474	3,488	17.0%	1,380	6.7%	2,809	13.7%
n/a	Craven County	100,560	15,664	15.6%	7,163	7.1%	10,071	10.0%

County	Census Tract, Block Group	Total Population for Whom Poverty Status is Determined	Below Poverty Level (#)	Below Poverty Level (%)	Very Poor: Under 50% of Poverty Level (#)	Very Poor: Under 50% of Poverty Level (%)	Near Poor: Between 100% and 149% of Poverty Level (#)	Near Poor: Between 100% and 149% of Poverty Level (%)
n/a	Jones County	10,116	2,173	21.5%	990	9.8%	1,296	12.8%
n/a	Lenoir County	57,746	13,401	23.2%	5,385	9.3%	9,384	16.3%
n/a	North Carolina	9,592,619	1,667,465	17.4%	725,635	7.6%	1,049,151	10.9%

- Above EJ threshold

In order to identify the presence of EJ populations at a more granular level, data on minority populations at the block level from the 2010 Decennial Census were evaluated using the same thresholds used for the block group analysis (43.4 percent for Craven County, 48 percent for Jones County, and 50 percent for Lenoir County). In addition, locations of EJ populations from observations, information provided by local officials, and EJ residential areas identified with the US Environmental Protection Agency's (USEPA) EJ Screening and Mapping Tool have also been included. As a result of block level analysis and field visits, the following locations of potential EJ populations within the DCIA have been identified and are also shown on Figure 3-2 and Figure 3-3.

- **Norbert Hill Road**: The Norbert Hill Road residential area, located on Norbert Hill Road between US 70 and Gregg Drive, contains low-income populations.
- **Foss Farm Road** (census tract 110.01, block group 2): The Foss Farm Road residential area, located on US 70 between Barwick Station Road and Albert Sugg Road, contains concentrations of minority and low-income populations.
- **Crooms Drive**: The Crooms Drive residential area, located on Crooms Drive off of NC 55, contains low-income populations.
- **Jesse T. Bryan Road**: The Jesse T. Bryan Road residential area, located off of Jesse T. Bryan Road and Barwick Road, contains low-income populations.
- **Carrie Hill Drive and Howard Place Drive**: The Carrie Hill Drive and Howard Place Drive residential area, located off of NC 11, contains low-income populations.
- **Lonesome Pine Drive**: The Lonesome Pine Drive residential area, located on Lonesome Pine Drive between Joe Nunn Road and Randy Road, contains low-income populations.
- **Albert Baker Road** (census tract 114, block group 3): The Albert Baker Road residential area, located on Albert Baker Road off of NC 58, contains concentrations of minority and low-income populations.
- **Fordham Lane** (census tract 113, block group 4): The Fordham Lane residential area, located on Fordham Lane off of US 258, contains a minority and low-income populations.
- **Johnson Road/NC 58** (census tract 113, block group 4): The Johnson Road/NC 58 residential area contains a minority population.
- **British Road and Caswell Station Road** (census 9203, block group 1 and census tract 114, block group 2): A minority residential area is located in the British Road and Caswell Station Road area, located on the north side of US 70 between British Road and Caswell Station Road.
- **US 70/Tilghman Road**. A cluster of housing that contains potential minority and low-income populations is located on the southern side of US 70 just west of its junction with Tilghman Road.

3.1.7.2 Limited English Proficiency

Limited English proficiency (LEP) individuals are defined by the US Census Bureau as speaking English less than very well. The US Department of Justice (USDOJ) LEP Safe Harbor policy (2002) requires that vital public involvement materials be translated if certain LEP population thresholds are surpassed. The thresholds set by NCDOT projects are 5 percent of the demographic study area or 1,000 individuals, whichever is less. If the thresholds are not met, but there is a notable LEP population, language assistance is required in the form of interpreters, local area contacts, and/or media campaigns. NCDOT defines a notable LEP population as being greater than 50 persons within a block group who speak English less than very well.

According to the US Census Bureau, 485 Spanish-speaking adults speak English less than very well in the demographic study area (3 percent of the total population). This total does not meet the USDOJ Safe Harbor policy threshold of 1,000 persons or 5 percent of the demographic study area. However, census data indicate a Spanish-speaking population exceeding 50 persons within the demographic study area that may require language assistance. Three block groups surpass the threshold for EJ LEP:

- Census tract 9603, block group 4 (Craven County)
- Census tract 113, block group 2 (Lenoir County)
- Census tract 113, block group 3 (Lenoir County)

To date, in order to satisfy the requirements of Executive Order 13166, Spanish interpreters have been available at public meetings and key project information has been translated into Spanish. The *Public Involvement Plan* for this project provides a summary of all language assistance actions that have taken place to date (NCDOT 2018h). The language assistance in Spanish for public involvement activities related to the proposed action will continue.

3.1.8 Community Facilities and Resources

Community facilities within the project study area include cemeteries, civic buildings, schools, churches, and an emergency services center. These facilities are important to the cultural, spiritual, health, and educational needs, and the overall quality of life for residents of Lenoir, Craven, and Jones counties. An overview map of the community features within the project study area is shown on Figure 3-4 and Figure 3-5.

The 2018 CIA identified 9 cemeteries and 21 churches within the DCIA (NCDOT 2018d). Three schools are located in the project study area, Southwood Elementary, Lenoir County Early College, and Woodington Middle School. The Woodmen of the World Lodge is located on US 70 at Whaley Road. The Kennedy Memorial Home, on Kennedy Home Road, is run by the Kinston Area Family Services branch of the organization Baptist Children's Homes. The towns of Dover and Cove City each have three churches, fire departments, and small stores. Cove City has a public library.

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Figure 3-4: Community features - A

Legend

- Detailed Study Alternatives
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Community Features

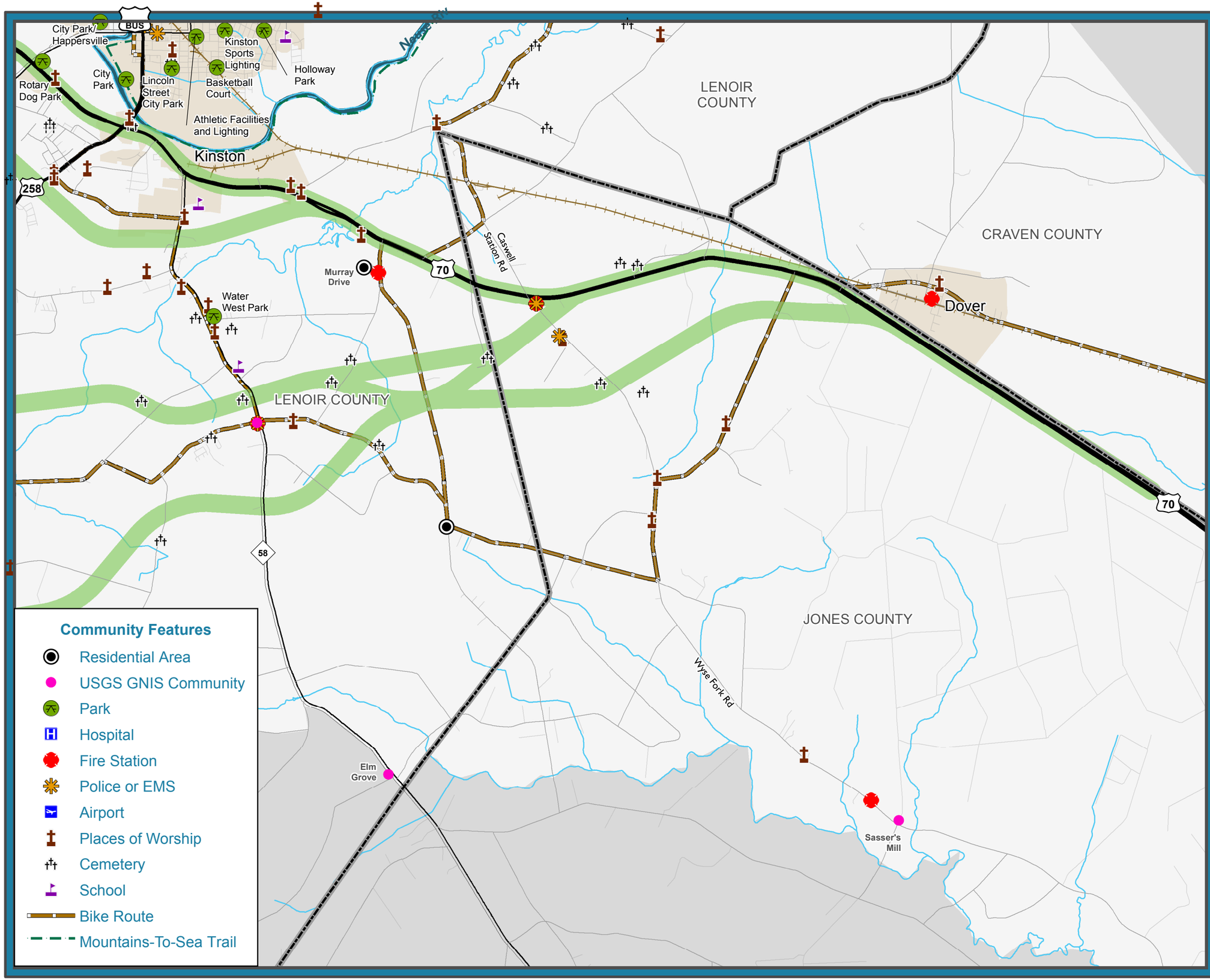
- Residential Area
- USGS GNIS Community
- Park
- Hospital
- Fire Station
- Police or EMS
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail

0 0.75 1.5 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

La Grange
Willie Measley Rd
Little Baltimore
Jim Sutton Rd
Albert Sugg Rd
LENOIR COUNTY
Barwick Station Rd
Cedar Dell
Bucklesberry
Sandy Bottom
Albrittons
Howard Place Drive
Southwest Creek
Woodington
Jackson Heights
NC 11/ NC 55
Kinston
City Park
Barnet Park
Lions Water Adventure
Governor Richard Caswell Memorial Park
Bill Faye Park
Parks and Recreation Office
Fairfield Park
Emma Webb Park
Grainger Stadium
Neuseway Park
City Park/ Happersville
Rotary Dog Park
Lincoln Street City Park
Athletic Facilities and Lighting
Water West Park
70
70 BUS
70 BYP
55
11
258



Community Features

- Residential Area
- USGS GNIS Community
- Park
- Hospital
- Fire Station
- Police or EMS
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail

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DEIS | R - 2553

Figure 3-5:
Community features - B

Legend

- Detailed Study Alternatives
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

0 0.75 1.5 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

3.2 RECREATION AREAS

3.2.1 Bicycle and Pedestrian

Bicyclists are most likely to be found along the six bicycle routes that have been designated by NCDOT and mapped in the CTP in Lenoir County (Figure 3-4 and Figure 3-5), although no roads have dedicated bicycle lanes or wide paved shoulders. The Mountains-to-Sea Trail, a trail that runs through North Carolina from the Great Smoky Mountains to the Outer Banks, passes through the DCIA. This trail is a part of the North Carolina State Trails Program.

The route names and descriptions for the designated bicycle routes are:

- **County Loop**. A 59-mile route that circles Lenoir County and the four spoke routes, along the Mountains-to-Sea Trail to the west and south, Cobb, Neuse, and Faulkner roads to the east, and Cameron Langston, Taylor Heath, and Institute roads to the north.
- **Loftin's Spoke**. An 8-mile route from downtown Kinston to Loftin's Crossroads along US 258, Collier-Loftin Road, and NC 58.
- **Garden Spot Spoke**. A 16-mile route from Kinston northwest to Institute along Carey, Rouse, Shackleford, Poole, and Institute roads.
- **Connector Spoke**. An 11-mile connector route running between the County Loop and the town of Pink Hill in the south of Lenoir County. This route is primarily outside of the project study area.
- **Oak Tree Spoke**. A 15-mile route from Kinston northeast to Grifton along Heritage, Briery Run, Wallace Family, Cameron Langston, Sharon Church, and Grifton Hugo roads.
- **Tractor Spoke**. A 29-mile route from Kinston southwest to Pink Hill along Banks School, Kennedy Home, Pine Bush, Hardy Bridge, Smith Grady, and Old Pink Hill roads.

3.2.2 Parks and Recreation

The Kinston/Lenoir County Parks and Recreation Department maintains multiple park and recreation facilities. Within the DCIA, the Kinston Rotary Dog Park is located on NC 11/55 just north of US 70 (West New Bern Road) south of downtown Kinston, and the Governor Richard Caswell Memorial Park is located at 2612 West Vernon Avenue in Kinston just east of the US 70 Bypass split.

In addition to county parks, several neighborhood parks, community centers, a golf course, and tennis courts are located throughout the project study area. The Woodmen of the World Lodge on US 70 at Whaley Road and West Water Park on Strawberry Branch Road in Kinston are private recreational resources in the project study area.

There are no parks in the Craven or Jones counties portions of the DCIA. No Section 6(f) resources are located within the project study area.

Several historic areas associated with Civil War battles, including the First Battle of Kinston and the Wyse Fork Battlefield, are located near the existing US 70 corridor. The First Battle of Kinston is comprised of four archaeological sites. The Wyse Fork Battlefield historical area covers approximately 4,069 acres southeast of Kinston and is crossed by existing US 70. This

area includes several important historical sites associated with the 1865 Battle of Wyse Fork and is listed on the NRHP. The Blue-Gray Parkway, a designated scenic byway for its historical significance relating to the Civil War, runs south of the project study area.

3.3 LAND USE AND TRANSPORTATION

3.3.1 Existing Land Use

Land use within the project study area is primarily agricultural, with some commercial and industrial areas mixed with scattered rural single-family residential. The dominant natural features are the Neuse River and its associated floodplains and wetland system.

3.3.2 Land Use Plans and Zoning

Portions of the project study area are within the planning jurisdictions of Lenoir County, the Town of La Grange, City of Kinston, Jones County, and Craven County (Figure 3-6). These local governments have adopted land use plans, Coastal Area Management Act (CAMA) Land use plans, and comprehensive plans that set forth policies to guide land use in their respective jurisdictions.

3.3.2.1 Lenoir County

The Lenoir County *Land Use Plan* was adopted in 2001 and applies to areas of the project study area that are in Lenoir County and outside municipal limits (Lenoir County 2001). The goals of the county's plan were developed around four points: economic development and job creation, farming and rural landscape, safe and efficient transportation, and quality residential communities. The *Land Use Plan* references the plans for the Kinston Bypass project.

The Lenoir County *Flood Damage Prevention Ordinance* is intended to minimize both public and private losses due to flood conditions (Lenoir County 2003a). The ordinance includes standards for development in the floodway or floodplain. Major provisions of the ordinance include the following:

- Restrict or prohibit uses that are dangerous to health, safety, and property due to water or erosion hazards, or that result in damaging increases in erosion or floor heights or velocities.
- Require that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction.
- Regulate through a floodplain development permit the alteration of natural floodplains, stream channels, and natural protective barriers that accommodate flood waters.
- Control filling, grading, dredging, and other development that may increase erosion or flood damage.
- Prevent or regulate the construction of flood barriers that will unnaturally divert flood waters or that may increase flood hazards to other lands.

70 KINSTON BYPASS
DEIS | R - 2553

Figure 3-6: Planning jurisdictions

Legend

- Project Study Area
- Detailed Study Alternatives
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary
- GTP Planning Jurisdiction
- Kinston ETJ
- La Grange ETJ

0 1.5 3 Miles

N

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

WAYNE COUNTY
GREENE COUNTY
PITT COUNTY
CRAVEN COUNTY
JONES COUNTY
LENOIR COUNTY
DUPLIN COUNTY
Grifton
Kinston
La Grange
Dover
Cove City
GTP
Congentnea Creek
Swift Creek
Neuse River
Falling Creek
Bear Creek
Southwest Creek
Willie Measley Rd
Jim Sutton Rd
Albert Sugg Rd
Barwick Station Rd
Caswell Station Rd
Wyse Fork Rd
13
903
258
123
148
11
118
55
70
70 BYP
70 BUS
58
41
111

The Lenoir County *Watershed Protection Ordinance* applies to a portion of the southwest area of the project study area (Lenoir County 2003b). It establishes density and intensity standards for residential and nonresidential development within the WS IV-CA (critical areas) and WS IV-PA (protected areas) of the watershed.

The Lenoir County *Zoning Ordinance* applies to areas of the project study area that are in Lenoir County and outside municipal limits (Lenoir County 2003c). The zoning ordinance contains three zoning districts: rural, commercial, and industrial. The zoning district standards apply to sites within the district and require minimum standards for the buildings, setbacks, driveways, and permitted and special uses. The county has separate ordinances, including flood damage and prevention ordinance, subdivision ordinance, watershed protection ordinance, and several others that regulate nuisance activities.

Lenoir County adopted the Voluntary Agricultural District (VAD) Ordinance in 2013 (Lenoir County 2013). The Lenoir County Voluntary Agricultural District Board governs the VAD Ordinance. There is one VAD, comprised of two properties, (PIN) 450200425447 and 450200523932, which is located in the portion of the DCIA in Lenoir County.

3.3.2.2 City of Kinston

In October 2015, Kinston adopted *Plan Kinston: Enhancing Perceptions, Promoting Growth, and Moving Forward*, as its comprehensive plan, which is used as the legal basis for land use regulations as well as a guide for city budgeting (City of Kinston 2015). The future land use map provided in the document defines much of the land adjacent to major highways in the project study area as mixed use. Other prominent land uses in the corridor are rural-residential and industrial.

The map also illustrates where in Kinston's city limits an extraterritorial jurisdiction (ETJ) is considered a flood hazard or wetland; much of the land surrounding US 70 receives this classification. This overlay is not considered a future land use category but displays potential environmental constraints to development in certain areas. The plan calls for stringent development standards, potential wetland mitigation, and compliance with the Lenoir County *Flood Damage Prevention Ordinance* in flood hazard and wetland areas.

Kinston also uses the *Unified Development Ordinance* as a basis for land development (City of Kinston 2017a). This ordinance applies to areas within the municipal limits of Kinston and within Kinston's ETJ. The zoning section has three broad categories of land uses: residential, commercial, and industrial. Each category has several subcategories of land uses. The objectives of the zoning ordinance are to guide appropriate use and development of parcels in a manner in which land uses would be compatible to neighboring parcels, topographic features, natural habitat, and infrastructure. The City of Kinston *Unified Development Ordinance* was adopted in November 2013 and updated in November 2017.

New development activities in the City of Kinston are required to meet nutrient reduction goals by implementing planning strategies and best management practices per the Neuse River Basin-Nutrient Sensitive Waters Management Strategy: Basinwide Stormwater Requirements (15A NCAC 02B .0235). Development activities cannot exceed certain nitrogen load loading rates. Secondly, there can be no net increase in peak flow leaving a development site compared to pre-development conditions for the 2-year, 24-hour storm event. Lastly, a 50-foot riparian buffer

must be maintained on all sides of intermittent and perennial streams, ponds, lakes, and estuaries in the Neuse River basin. The City of Kinston has implemented a stormwater permitting program for areas in its municipal jurisdiction for compliance with the Neuse River Basin-Nutrient Sensitive Waters Management Strategy: Basinwide Stormwater Requirements.

3.3.2.3 Town of La Grange

La Grange adopted its *Zoning Ordinance* in 2010 and it applies to land within the municipal boundary of La Grange and its ETJ. The majority of the land along existing US 70 is zoned Agriculture-Residential and Highway Commercial. The purpose of the Agriculture-Residential zone is to promote the rural character of the land and to provide open space. The purpose of the Highway Commercial zone is to cluster and encourage commercial and larger scale development that is intended to cater to vehicular traffic along the corridor (Town of La Grange 2010).

La Grange adopted its *Land Use Plan* in 2008 and it applies to land within the municipal boundary of La Grange and within its ETJ. The plan establishes the policies for regulating land use within the town. The *Land Use Plan* complements the La Grange *Zoning Ordinance*. The area around Willie Measley Road is projected to support heavy industrial use in the future (Town of La Grange 2008).

3.3.2.4 Craven County

Craven County does not implement county-wide zoning. Separate ordinances regulate subdivisions, manufactured home parks, flood damage prevention, off-premise signs, and on-site septic systems. Craven County also enacted ordinances that address encroachment issues at the Marine Corps Air Station Cherry Point and the Coastal Carolina Regional Airport. Craven County adopted a CAMA *Core Land Use Plan* in 2009 that establishes land use policies to guide development in the CAMA major and minor permitting process. Policies also address the need to guide development along the US 70 Corridor by enacting a corridor zoning ordinance (Craven County 2009).

Craven County, the Town of Dover, and Cove City are subject to the stormwater management requirements for development in coastal counties under the State Stormwater Guidelines (15A NCAC 02H .1005) and the 20 Coastal Counties Stormwater Law (15A NCAC 02H .1019). In Craven County, including the Town of Dover and Cove City, development activities are reviewed for compliance with the State Stormwater Program by the NCDWR Regional Office in Washington.

Craven County adopted the VAD Ordinance in January 2009. The Craven County Agricultural Advisory Board administers the VADs. There are no VADs in the portion of the DCIA in Craven County.

3.3.2.5 Jones County

The *Jones County Land Use Plan* was adopted on July 1, 2013, and establishes goals for the County's future land use, and implementation strategies for achieving the goals. Goals identified in the *Jones County Land Use Plan* are centered on future land use, agricultural preservation, transportation, environmental resources, and economic development. The plan references the 2009-2015 STIP; therefore, the Kinston Bypass project is not identified as a planned

transportation improvement project since the project was put on hold during this time (Jones County 2013).

Jones County does not implement county-wide zoning. The county does have a subdivision ordinance and a building code.

Jones County adopted the VAD Ordinance in 2007. The Jones County Voluntary Agricultural District Board governs the VAD Ordinance. There are no VADs in the portion of the DCIA in Jones County.

3.3.2.6 Resilient Redevelopment Plans

After flooding from Hurricane Matthew affected North Carolina in October 2016, the North Carolina General Assembly established the Resilient Redevelopment Program initiative as part of the 2016 Disaster Recovery Act (Session Law 2016-124). The plans for Lenoir, Craven, and Jones counties were completed in May 2017 and identify storm impacts, needs and opportunities, and strategies for rebuilding more resilient communities (Craven County 2017a; Jones County 2017; Lenoir County 2017a). The plans formulate revitalization projects for housing, infrastructure, economic development, and the environment for communities damaged by Hurricane Matthew. The plans address recovery and redevelopment projects and prioritize those for any supplemental disaster relief funding received from the federal government. Lenoir County's plan includes five top ranked projects that focus on housing improvements, are county-wide, and are not site specific. Jones County's plan includes five top ranked projects that focus on acquisition of flood-prone properties and residential dwellings. Craven County's plan prioritizes three infrastructure projects for roadway, rail and emergency shelter retrofits, and two housing projects to elevate residential units that are outside of the project study area.

3.3.2.7 Floodplain Resolution

The City of Kinston, Town of La Grange, Lenoir County, and US 70 Corridor Commission presented a "Resolution Requesting Greater Efforts to Avoid Flooding Impacts within the Lower Neuse Basin" (Craven County 2017b). The resolution cites the damage caused by Hurricane Matthew and requests the State of North Carolina and appropriate federal agencies "engage, develop and financially support greater efforts to avoid devastating damages to persons and property in the Lower Neuse Basin through the implementation of flood control measures." The resolution also requests that specific consideration be given to, among other issues, additional mitigation by NCDOT to address stormwater impacts from highway construction.

3.3.3 Transportation Planning

3.3.3.1 Local and Regional Plans

3.3.3.1.1 Lenoir County Comprehensive Transportation Plan

The Lenoir County CTP was developed by Lenoir County, Kinston, La Grange, Pink Hill, the Eastern Carolina Rural Planning Organization, and NCDOT in September 2018 (NCDOT 2018a). The CTP is a long range multi-modal transportation plan that covers the needs of Lenoir County through 2045. The plan addresses highway, rail, bicycle, and pedestrian improvements, as well as public transportation. The plan references the Kinston Bypass.

3.3.3.1.2 City of Kinston Comprehensive Pedestrian Plan

Kinston completed a *Comprehensive Pedestrian Plan* in February 2008 (City of Kinston 2008). Through a survey that was conducted as part of the planning study, citizens identified several factors that make walking in Kinston difficult or unpleasant, including the lack of sidewalks, poor lighting, and hazardous conditions. The *Comprehensive Pedestrian Plan* identifies and prioritizes 63 projects that will help alleviate these conditions. The most notable projects include constructing a pedestrian bridge over the Neuse River, implementing pedestrian safety measures throughout the community, creating a greenway master plan, and developing a safe route to school program. The plan also identifies pedestrian program recommendations as priority programs to be implemented. Programs include Safe Routes to School program, spot program to address problems at specific locations, sidewalk maintenance program, greenway master plan, annual safety roadshow, and pedestrian and motorist education and enforcement activities. The plan includes figures identifying the recommended and potential Safe Route to School zones, sidewalks, and greenways.

3.3.3.1.3 Jones County Comprehensive Transportation Plan

The 2016 Jones County CTP includes the Kinston Bypass and the need to upgrade US 70 to freeway standards in Jones County (NCDOT 2016a). The Jones County CTP is a cooperative effort among representatives of Jones County; the municipalities of Trenton, Maysville, and Pollocksville; the Eastern Carolina Rural Planning Organization; and the NCDOT.

3.3.3.1.4 Craven County Comprehensive Transportation Plan

A CTP is underway for Craven County and a document that describes what the CTP will address was published on November 8, 2017 (NCDOT 2017a). This CTP will aid in determining the transportation needs based on local vision, expected future population and employment growth, and locally adopted plans for Craven County.

3.3.3.2 Statewide Plans

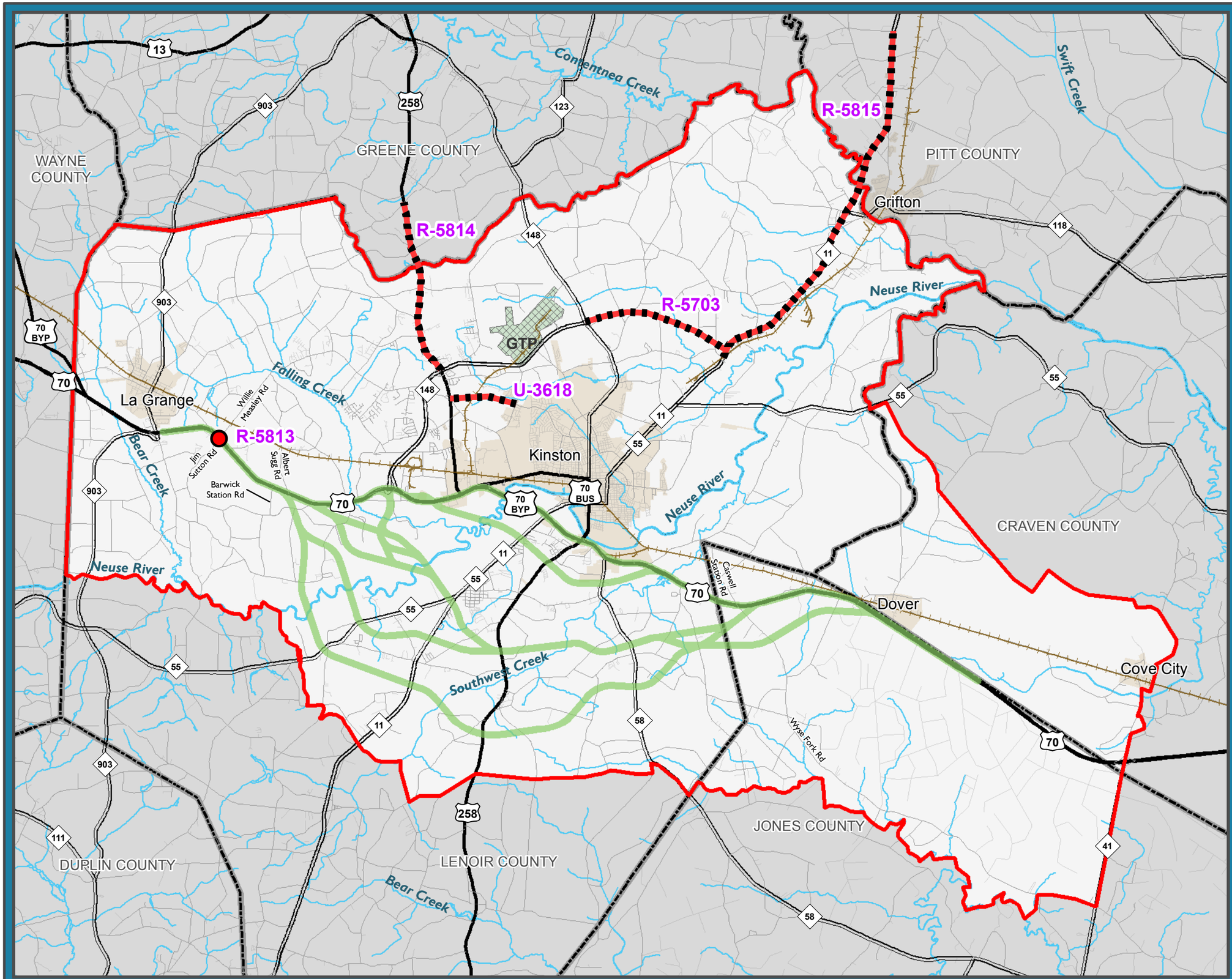
The Strategic Transportation Investments (STI) law, passed in 2013, allows NCDOT to use its funding more efficiently and encourages thinking from a statewide and regional perspective while also working to meet local needs. STI established the Strategic Mobility Formula, which uses data-driven scoring and local input to prioritize projects and develop NCDOT's STIP. Projects in the STIP were determined based on strategic prioritization at the statewide, regional, and division levels, as well as public feedback and other factors. The Kinston Bypass is included as project number R-2553 in NCDOT's 2018-2027 STIP (NCDOT 2017h). STIP projects in and around the proposed action are listed in Table 3-9. The general locations of the STIP projects are shown on Figure 3-7.

Table 3-9: Other STIP projects in the vicinity of the project study area

STIP No.	Type	Description	Schedule – Fiscal Year
R-5703	Regional	NC 148, NC 58 To NC 11. Construct multi-lane facility on New Location.	Construction – 2018
R-5813	Division	US 70, SR 1227 (Jim Sutton Road)/SR 1252 (Willie Measley Road)	Right-of-way –2023 Construction – 2025
R-5814	Division	SR 1101 (Browntown Road) to SR 2010 (C. F. Harvey Parkway). Widen to multi-lanes.	Right-of-way –2023 Construction – 2025
R-5815	Division	Proposed Greenville Southwest Bypass to Proposed Harvey Parkway Extension. Upgrade to interstate standards	Right-of-way – 2025 Construction – 2027
U-3618	Division	SR 1572 (Rouse Road) To US 258. Construct multi-lanes on new location.	Right-of-way – 2022 Construction – 2024

Source: NCDOT 2017h

Figure 3-7:
STIP projects in the vicinity of the project study area



Legend

- Project Study Area
- Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary
- STIP Project
- STIP Project

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

3.4 CULTURAL RESOURCES

3.4.1 Historic Architectural Resources

Historic Architecture Eligibility Evaluation Report

The Historic Report for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

In compliance with the requirements of Section 106 of the National Historic Preservation Act and the implementing regulations of 36 CFR 800, AECOM conducted a two-phase inventory and assessment of potential historic architectural resources within the Kinston Bypass project's area of potential effects (APE). The APE is defined as the geographic area or areas within which a project may cause changes to the character or use of historic properties. The first phase was completed in May 2017 and the second phase, which resulted in a *Historic Architecture Eligibility Evaluation Report* (Historic Report) (NCDOT 2017d), was completed in September 2017. The Historic Report is available on the Kinston Bypass project website. Following review of the Historic Report and consultation among NCDOT, the North Carolina State Historic Preservation Office, and the USACE, it was determined that 15 historic properties within the APE were NRHP-listed, NRHP-eligible, or contributing components within an NRHP-listed historic district (NCDOT 2017c). The identity and NRHP status of these resources is summarized in Table 3-10. The location of the properties is depicted on Figure 3-8.

Table 3-10: NRHP listed and eligible historic architectural resources

HPO Site #	Property Name	NRHP Status (Year)	NRHP Criteria [a]	Map ID # [b]
JN-0306	Wyse Fork Battlefield	Listed (2017)	A, D	15
LR-1203	Kelly's Millpond Site	Determined eligible (1990), listed as contributing building to Wyse Fork Battlefield (2017)	D, Contributing	13
LR-1197	Cobb-King-Humphrey House	Listed as contributing building to Wyse Fork Battlefield (2017), determined individually eligible (2017)	A, C, Contributing	12
LR-1550	Kelly's Pond Fire Lookout Tower	Determined eligible (2017)	A, C	14
LR-1185	Wooten-Whaley House (John Council Wooten House)	Listed as contributing property to Wyse Fork Battlefield (2017)	Contributing	8

HPO Site #	Property Name	NRHP Status (Year)	NRHP Criteria [a]	Map ID # [b]
LR-1186	Robert Bond Vause House	Listed as contributing property to Wyse Fork Battlefield (2017)	Contributing	9
LR-0008	Dempsey Wood House	Listed (1971)	C	3
LR-1040	Croom Meeting House	Determined eligible (2017)	A, C	7
LR-0927	James A. & Laura McDaniel House ("Maxwood")	Determined eligible (1998)	C	6
LR-1189	Kennedy Memorial Home Historic District	Listed (2009)	A	10
LR-0001	Cedar Dell (Kennedy Memorial Home)	Listed (1971)	C	1
LR-0703	Dr. James M. Parrott House ("The Grove")	Determined eligible (1998)	B, C	5
LR-0700	Henry Loftin Herring Farm	Determined eligible (1998)	A, C	4
LR-0005	Jesse Jackson House	Listed (1971)	C	2
LR-1195	Elijah Loftin Farm (Mossy Oaks)	Determined eligible (2017)	C	11

Source: NCDOT 2017c

HPO: Historic Preservation Office

[a] NRHP criteria are as follows:

A. That are associated with events that have made a significant contribution to the broad patterns of our history.

B. That are associated with the lives of significant persons in our past.

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

D. That have yielded or may be likely to yield, information important in history or prehistory.

[b] Map ID # refers to Figure 3-8.

Number	LR Number	Status	Name
1	LR-0001	NRHP	Cedar Dell (Kennedy Memorial Home)
2	LR-0005	NRHP	Jesse Jackson House
3	LR-0008	NRHP	Dempsey Wood House
4	LR-0700	Determined NRHP Eligible	Henry Loftin Herring Farm
5	LR-0703	Determined NRHP Eligible	Dr. James M. Parrot House ("The Grove")
6	LR-0927	Determined NRHP Eligible	James A. & Laura McDaniel House ("Maxwood")
7	LR-1040	Determined NRHP Eligible	Croom Meeting House
8	LR-1185	NRHP - Contributing Member	Wooten-Whaley House (John Council Wooten Hose)
9	LR-1186	NRHP -Contributing Member	Robert Bond Vause House
10	LR-1189	NRHP	Kennedy Memorial Home Historic District
11	LR-1195	Determined NRHP Eligible	Elijah Loftin Farm (Mossy Oaks)
12	LR-1197	Determined NRHP Eligible - Contributing Member	Cobb-King-Humphrey House
13	LR-1203	Determined NRHP Eligible - Contributing Member	Kelly's Millpond Site
14	LR-1550	Determined NRHP Eligible	Kelly's Pond Fire Lookout Tower
15	JN-0306	NRHP	Wyse Fork Battlefield

70 KINSTON BYPASS
DEIS | R - 2553

Figure 3-8:
Historic architectural resources

Legend

- Project Study Area
- Detailed Study Alternatives
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

Eligible Resources

- NRHP Listed
- Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefield

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

3.4.2 Archaeological Resources

Archaeological Report

The Archaeological Report for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

The methods and findings of the archaeological background investigations conducted for the Kinston Bypass project are reported in detail in the *Revised Terrestrial Archaeological Resources Predictive Model for the Administrative Action State Environmental Impact Statement, Kinston Bypass, Lenoir, Jones and Craven Counties, North Carolina; October 2017 Update* (Archaeological Report) (NCDOT 2017g). The Archaeological Report for the Kinston Bypass is available on the project website. A summary of the archaeological studies described in the report are presented in this section.

Background research and analysis were used in conjunction with a descriptive predictive model to identify areas of high- and low-probability for containing archaeological sites. Variables used for the predictive model included soil drainage, proximity to water, topographic setting, proximity to historic roads, previously recorded Civil War historic resources, and disturbed/developed areas. In-river archaeological resources were not formally considered in the terrestrial model. Underwater archaeological studies will be conducted once the applicant's preferred alternative is selected to define specific river crossing locations (NCDOT 2017g).

The report determined that poorly drained soils are considered to have a low probability for the presence of archaeological sites and excessively drained soils have a high probability. Other high probability areas include the following:

- Areas within 100 meters (328 feet) on either side of permanent water
- Topographic features such as small rises in floodplains, bluff edge of uplands adjacent to the Neuse River, and the edge of pocosins/Carolina bays
- Areas within 100 meters (328 feet) of historic roads
- NRHP boundaries of Civil War-related resources (battlefields)

With the exception of Civil War sites, areas that have had activities associated with intense development will be classified as low-probability regardless of other variables.

Previously recorded Civil War historic sites include the First Battle of Kinston (December 1862) and the Battle of Wyse Fork (March 1865). Five areas where various battles took place during the First Battle of Kinston of 1862 have been determined. Sites 1, 2, and 4 are located within the project study area along US 258, Site 3 is located along NC 58, south of Will Baker Road, and Site 5 is located north of US 70, along Tower Hill Road. These locations were listed on the NRHP in 2006. Two more areas on either side of the Neuse River containing nineteenth century bridge pilings have also been included in the First Battle of Kinston resource; however, these were not listed on the NRHP with the other areas. In addition, a large area where the Battle of Wyse Fork of 1865 took place has been demarcated and was listed on the NRHP in July 2017 under criteria A and D (NCDOT 2017g). Through coordination with the North Carolina State Historic Preservation Office (HPO), archaeological field work will be conducted once the applicant's preferred alternative is selected as part of the HPO review and approval of the archaeological predictive model (see coordination letter dated June 22, 2009 in Appendix E).

3.5 VISUAL QUALITY AND AESTHETICS

The project study area is located in a rural area of the coastal plain of North Carolina. Topography within the project study area is relatively flat with elevations ranging from 14 to 30 feet above mean sea level. The dominant natural features within the project study area include the Neuse River and its associated floodplains and wetland systems.

The study area surrounding the existing US 70 Corridor is primarily comprised of highway commercial businesses, signage, and parking and lighting for those businesses. The area surrounding the new location DSAs is mostly an agricultural landscape that contains agricultural, forestry, open space, and rural residential land uses reflecting a long history of farming and forestry.

3.6 NATURAL RESOURCES

A GIS-based Natural Resources Technical Report (NRTR) was prepared for the Kinston Bypass (NCDOT 2017b). The NRTR for the Kinston Bypass is available on the project website. The NRTR study area extends 1 mile of the outside edge of each DSA corridor, and includes all areas between DSA corridors. The NRTR study area is approximately 211 square miles (135,146 acres).

Natural Resources Technical Report

The NRTR for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Impact calculations and evaluations in both the NRTR and the DEIS are based on GIS data and are presented in chapter 4. Field verifications took place as part of the NRTR process and are described in the NRTR for each resource type (e.g. wetlands, streams, endangered species). Refer to the NRTR for details on specific methodologies used to perform analyses within the NRTR document.

3.6.1 Geology, Topography, Soils

The project study area lies in the Southeastern Plains and Middle Atlantic Coastal Plain physiographic regions of North Carolina and straddles the following North Carolina Level IV ecoregions: Southeastern Floodplains and Low Terraces, Carolina Flatwoods, and Rolling Coastal Plain (Griffith et al. 2002).

Southeastern Floodplains and Low Terraces are derived from Quaternary alluvial gravelly sand, sandy gravel, silt, and clay. Topography in these regions consists of major river floodplains and associated low terraces, low gradient streams with sandy and silty substrates, oxbow lakes, ponds, and swamps. The Carolina Flatwoods regions consist of Pleistocene and Pliocene marine sand, silt, and clay; Tertiary sand, silt, clay, and limestone; and some Cretaceous sand, silt, and clay. The topography is characterized by flat plains on lightly dissected marine terraces, swamps, low gradient streams with sandy and silty substrates, and Carolina bays. The Rolling Coastal Plain consists of Quaternary sand and clay decomposition residuum; middle and early Pleistocene marine sand, silt, and clay; Pliocene clay and sand; and saprolite and some Piedmont rock outcrops on side slopes. The topography typically consists of dissected irregular plains and smooth plains and broad interstream divides with gentle to steep side slopes dissected by

numerous small, low to moderate gradient sandy streams and major river floodplains and associated terraces (Griffith et al. 2002).

Elevations within the project study area range from 6 to 38 feet above mean sea level. The Neuse River flows through the project study area. The NRTR study area consists of portions of Lenoir, Jones, and Craven counties. The Lenoir County Soil Survey (USDA Natural Resources Conservation Service [NRCS] 2017c) identifies 38 soil types within the NRTR study area, the Jones County Soil Survey (USDA NRCS 2017b) identifies 20 soil types within the NRTR study area, and the Craven County Soil Survey (USDA NRCS 2017a) identifies 11 soil types within the NRTR study area. Appendix F contains a list of the soil types present within the NRTR study area.

3.6.2 Surface Water and Water Quality

3.6.2.1 Surface Water Characteristics

Water resources in the NRTR study area are part of the Neuse River basin and are contained within USGS hydrologic units 03020202, 03020203, and 03020204 and North Carolina Division of Water Resources (NCDWR) subbasins 03-04-05, 03-04-07, 03-04-08, and 03-04-11 (Figure 3-9). The NRTR study area includes 33 named streams and numerous unnamed tributaries to each of these named streams. The NRTR study area also includes one unnamed tributary to Mosley Creek, two unnamed tributaries to Jumping Run, and two unnamed tributaries to Rattlesnake Branch; however, these three named streams themselves do not flow within the project study area. Figure 3-10 shows the locations of these water resources. A list of the water resources and information on the classification of the water resources is located in Appendix F.

Hydrologic Unit Code

A sequence of numbers that identify a hydrologic feature like a river, river reach, lake, or watershed. The eight-digit hydrologic unit code identifies the region, subregion, basin, and subbasin of the hydrologic feature.

Subbasins

The North Carolina Division of Water Quality subdivides all river basins into subbasins. A river basin is the portion of land drained by a river and its tributaries. Each subbasin has its own characteristics.

3.6.2.2 Water Quality

North Carolina streams are assigned a best usage classification by the NCDWR, which reflects water quality conditions and potential resource use. Unnamed tributaries receive the same classification as the streams to which they flow. Appendix F contains the named water resources within the NRTR study area and the named water resources outside of the NRTR study area that have tributaries within the NRTR study area. The Best Usage Classification and Designation column in Appendix F, Table F-2 contains the assigned NCDWR best usage classification as well as other notable water designations. These include Class C Waters (C), Nutrient Sensitive Waters (NSW), Swamp Waters (Sw), Anadromous Fish Spawning Areas (AFSA), Inland Primary Nursery Areas (IPNA), and waters within a water supply watershed (WS-IV).

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Figure 3-9: Project study area watersheds

Legend

- Project Study Area
- Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary

USGS Hydrologic Unit

- 03020202
- 03020203
- 03020204

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

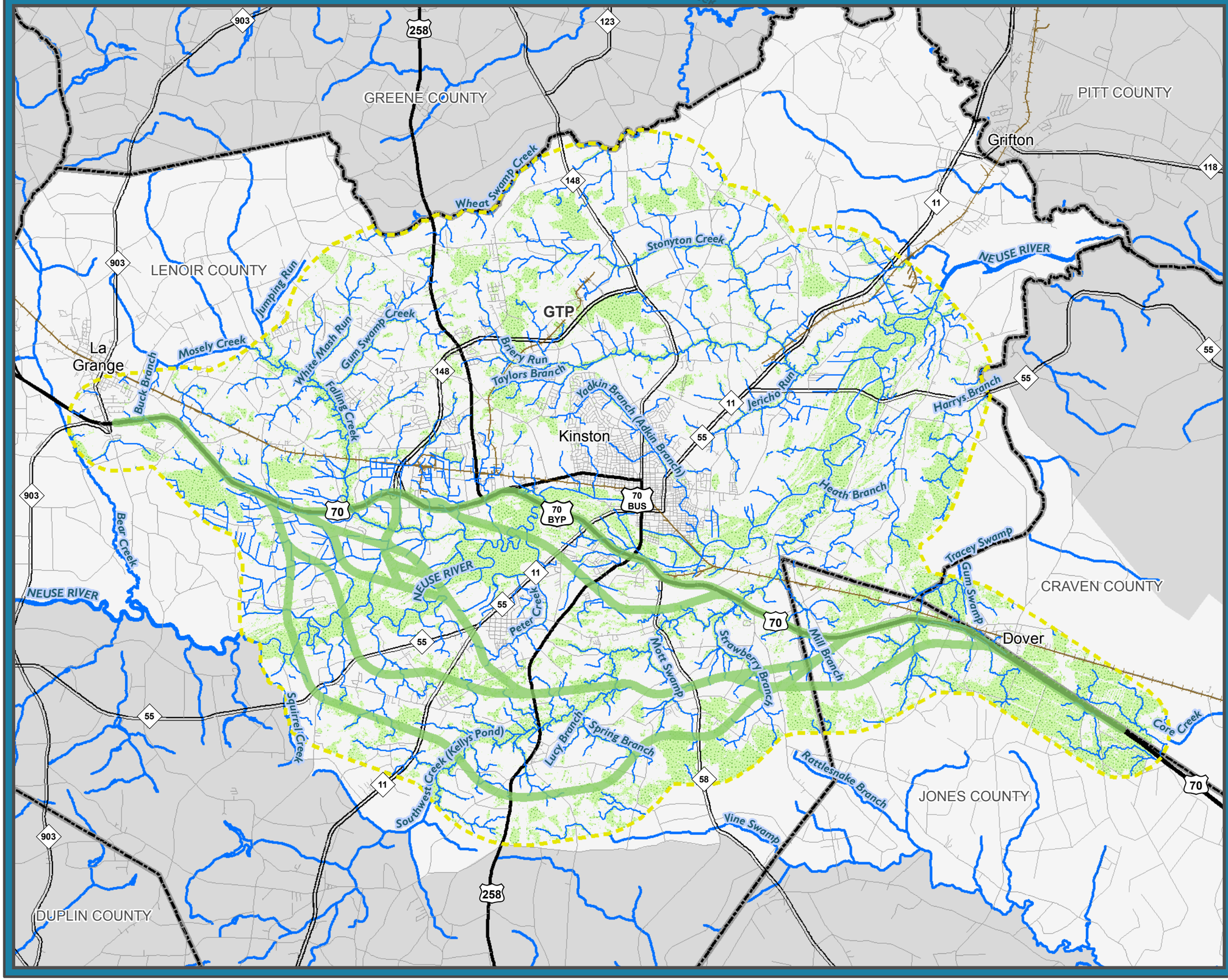

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Figure 3-10:
Water resources

Legend

- NRTR Study Area
- Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Major Stream/River
- County Boundary
- NRTR Modeled Stream
- NRTR Modeled Wetland

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

Craven County is 1 of the 20 coastal counties covered by the CAMA, and shellfish growing area designations are reserved for waterbodies within the 20 coastal counties. Lenoir and Jones counties are not considered coastal counties and, therefore, are not considered for shellfish growing area designation (NCDEQ 2017c). In Craven County, the Trent River and a portion of the Neuse River on the boundary of the project study area are considered shellfish growing areas.

Appendix F also provides information on whether water resources within the NRTR study area are within a Federal Emergency Management Agency (FEMA) floodway. Floodplains and floodways are discussed further in section 3.7.

DWR Classifications

Class C: Waters protected for uses such as secondary recreation, fishing, wildlife, fish consumption, aquatic life, and agriculture. Secondary recreation includes uses involving human body contact with water.

Nutrient Sensitive Waters (NSW): Supplemental classification intended for waters needing additional nutrient management due to being subject to excessive growth of microscopic or macroscopic vegetation.

Swamp Waters (Sw): Supplemental classification intended to recognize those waters that have low velocities and other natural characteristics that are different from adjacent waters.

Water Supply IV (WS-IV): Waters used as sources of water supply for drinking, culinary, or food processing purposes where a WS-I, II, or III classification is not feasible. These waters are protected for Class C uses. Generally located in moderately to highly developed watersheds or protected areas.

In Lenoir County, land cover within the Neuse River basin is primarily agriculture and forest/wetland, with a small urbanized portion, specifically the City of Kinston. Streams within the project study area, the majority of which are occupied by NCDWR subbasin 03-04-05, have been affected by channelization and inadequate riparian buffers in agricultural areas. Many small tributaries in subbasin 03-04-05 flow through agricultural areas. In addition, there are a number of municipal/industrial and swine waste land application fields in the area. These land use practices along with the growing urban areas in this subbasin may be impacting the Neuse River near Goldsboro and Kinston (NCDENR 2009). However, no streams within the NRTR study area are on the North Carolina 2016 Final Section 303(d) list of impaired waters for sedimentation and turbidity (NCDEQ 2018c). Streams listed on the Section 303(d) list are in some way impaired and do not meet water quality standards identified by the state. By constructing roads in areas with streams listed as Section 303(d), it could potentially degrade the water body further. The NCDOT specifies that streams listed on the Section 303(d) list for sedimentation or turbidity institute stricter erosion control practices during construction.

Non-point source pollution refers to pollution that enters surface waters through stormwater or snowmelt runoff. Unlike point source pollution, non-point source pollution is diffuse in nature and occurs at random intervals depending on precipitation events. Major non-point sources of pollution within the project study area include agricultural runoff, municipal/industrial and swine waste land application fields, and growing urban areas within the City of Kinston.

Runoff from existing US 70, other roadways, and other impervious surfaces within the project study area is discharged to road shoulders, roadside ditches, and other unpaved surfaces. Roadway and impervious surface runoff can contain varying amounts of sediments, oils, grease,

and metals, all of which have the potential to degrade water quality. Common sources of such pollutants include vehicles, dust, and precipitation. Other sources include highway maintenance, accidental oil and gas spills, and losses from crashes.

3.6.3 Biotic Resources

3.6.3.1 Terrestrial Communities

Given the size of the NRTR study area, North Carolina's Coastal Change Analysis Program Regional Land Cover Data (C-CAP) were used to identify terrestrial communities in the NRTR study area (National Oceanic and Atmospheric Administration [NOAA] 2010). These community types were verified with aerial photography and USGS topographic mapping. Typically, terrestrial communities presented in an NRTR are classified based on species composition and topography. This approach differs from classifications presented within C-CAP data in that C-CAP data are based more on land cover type (residential or forested). For this reason, this approach results in a much larger number of classes than are typically identified in an NRTR. Table 3-11 provides a summary of each type of terrestrial community.

Sixteen C-CAP types were identified within the NRTR study area (Figure 3-11), which extends 1 mile from the outside edge of each DSA corridor and includes all areas between DSA corridors. These types were grouped into six terrestrial communities typical of those discussed in traditional NRTR documents, including one wetland type and open water. The C-CAP categories and their respective terrestrial community designations are shown in Table 3-11. The wetland type and open water were included so that their respective acreages could be accounted for.

3.6.3.2 Wildlife

Given the size of the NRTR study area, extensive field investigations did not take place during the development of the NRTR; therefore, data on wildlife are limited to field visits conducted during verification of model data, other brief field activities, and landowner accounts. A list of wildlife that could be expected to be present is also provided in Appendix F. Wildlife that were directly observed or determined to be present through evidence during field visits or landowner accounts are indicated with an asterisk (*) in Appendix F.

A variety of bird species are likely to occur within the project study area during certain times of the year. Since coastal North Carolina is part of the Atlantic Flyway (a bird migration route generally following the Atlantic Coast and the Appalachian Mountains), a large number of migratory birds use the region to rest. A list of common year-round, winter, and breeding resident birds is included in Appendix F. Mammals, reptiles, and amphibians likely to occur within the project study area are also included in Appendix F.

Table 3-11: Terrestrial community description

Terrestrial Community	Description
Maintained/disturbed	Include residential neighborhoods, commercial areas, industrial uses, power line rights-of-way, infrastructure, and road shoulders. Vegetation in this community is likely low growing grasses and herbs, and would include planted grasses on residential lawns and landscaped areas.
Agriculture	Scattered throughout the NRTR study area. This classification includes fallow fields, but not those transitioning to a scrub/shrub or forested state. Crops observed within the NRTR study area include cotton, soybean, tobacco, wheat, and hay.
Pine plantation	Present throughout the NRTR study area but are concentrated in the southern and eastern portions, south of existing US 70. The plantations within the project study area range from 5 to 40 years in age, although most appear to be between 20 and 25 years of age.
Forested upland	Include natural pine forests, hardwood forests, and mixed forests. Much of the NRTR study area has been subjected to some form of disturbance in the past, resulting in the dominance of mixed forests with dense understories in this category.
Palustrine wetland	Include all wetland types within the NRTR study area. Forested, emergent, and shrub/scrub categories have been grouped into this one wetland class. Most wetlands within the NRTR study area are associated with the Neuse River and the larger swamp systems that drain to the Neuse River.
Open water	Include the Neuse River and other large streams and ponds void of vegetation.

Source: NOAA 2010

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Figure 3-11: Terrestrial communities

GREENE COUNTY
PITT COUNTY
CRAVEN COUNTY
LENOIR COUNTY
JONES COUNTY
DUPLIN COUNTY
Grifton
La Grange
Kinston
Dover
GTP
Neuse River
Falling Creek
Bear Creek
Southwest Creek
903
148
11
55
70
70 BUS
70 BYP
58
258

Legend

- NRTR Study Area
- Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Terrestrial Communities

- Agriculture
- Forested Upland
- Maintained/Disturbed
- Pine Plantation
- Palustrine Wetland
- Open Water

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

3.6.3.3 Invasive Species

The University of Georgia's Center for Invasive Species and Ecosystem Health database of exotic plants and their occurrence by county was used to compile a list of potential invasive species within the project study area (University of Georgia 2018). Table 3-12 lists the species from that database known to occur within Lenoir, Jones, and Craven counties that also appear on the NCDOT Invasive Exotic Plant List for North Carolina (NCDOT 2012b) and their threat status.

Table 3-12: Invasive exotic plant species known to occur in Lenoir, Jones, and Craven counties

Common Name	Scientific Name	Threat Level	County
Mimosa	*Albizia julibrissin*	Moderate threat	Lenoir
Alligatorweed	*Alternanthera philoxeroides*	Threat	Lenoir, Jones, Craven
Asiatic dayflower	*Commelina communis*	Watch list	Lenoir, Jones, Craven
Brazilian waterweed	*Egeria densa*	Moderate threat	Lenoir, Craven
Japanese knotweed	*Reynoutria japonica*	Threat	Lenoir, Craven
English ivy	*Hedera helix*	Moderate threat	Lenoir
Japanese hop	*Humulus japonicus*	Watch list	Craven
Shrubby lespedeza	*Lespedeza bicolor*	Moderate threat	Lenoir, Jones
Sericea lespedeza	*Lespedeza cuneata*	Threat	Jones, Craven
Chinese privet	*Ligustrum sinense*	Threat	Lenoir, Jones, Craven
Japanese honeysuckle	*Lonicera japonica*	Moderate threat	Lenoir, Jones, Craven
Chinaberry	*Melia azedarach*	Watch list	Lenoir, Jones
Japanese stiltgrass	*Microstegium vimineum*	Threat	Lenoir, Jones, Craven
Chinese silvergrass	*Miscanthus sinensis*	Threat	Craven
Marsh dayflower	*Murdannia keisak*	Threat	Lenoir
Parrot feather milfoil	*Myriophyllum aquaticum*	Moderate threat	Jones
Princess tree	*Paulownia tomentosa*	Threat	Craven
Kudzu	*Pueraria montana var. lobata*	Threat	Lenoir, Jones, Craven
Multiflora rose	*Rosa multiflora*	Threat	Jones
Johnsongrass	*Sorghum halepense*	Moderate threat	Lenoir, Jones, Craven
Chinese tallowtree	*Triadica sebifera*	Watch list	Craven
Chinese wisteria	*Wisteria sinensis*	Moderate threat	Jones

Source: NCDOT 2012b

3.6.4 Aquatic Resources

Aquatic communities within the project study area include habitats ranging from small, intermittent brownwater tributaries, to large perennial slow-moving bottomland hardwood systems. These communities can support various fish, reptile, and amphibian species, as well as mollusks and crustaceans. Due to the fact that extensive field investigations did not take place during the development of the NRTR, data on aquatic species are limited to field visits conducted during verification of model data, other brief field activities, and landowner accounts. A list of aquatic species that could be expected to be present is also provided in Appendix F. Aquatic wildlife that were directly observed or determined to be present through evidence during field visits or landowner accounts are indicated with an asterisk (*) in Appendix F.

3.6.5 Protected and Conservation Lands

3.6.5.1 Hazard Mitigation Grant Program Properties

Over the past several decades, the City of Kinston and Lenoir County have been subjected to severe flooding along the Neuse River. Two severe flood events in 1996 and 1999, resulting from Hurricanes Fran and Floyd, respectively, prompted the local community to coordinate with state and federal government emergency management agencies to implement a relocation program for affected residents. The North Carolina Division of Emergency Management and FEMA assisted the City of Kinston and Lenoir County in utilizing the HMGP to relocate structures located within the floodplain of the Neuse River.

The HMGP is a federal buyout grant program facilitated through FEMA that is used to relocate businesses and residences outside of the floodplain. This effort covers an area of approximately 600 to 700 acres near the Neuse River and included 700 homes (Engesether 2009). This relocation plan has been, and continues to be, a major initiative for the community as it works on the plan's implementation. The HMGP places restrictive covenants on properties purchased under the HMGP that prohibit construction of any permanent structures or impervious surfaces within the properties.

In 2016, Hurricane Matthew affected several areas of eastern North Carolina, causing severe flooding that lasted for more than two weeks. Additional properties are anticipated to be added to the HMGP; however, this information has not been finalized. Additional information will be included in the Final Environmental Impact Statement.

3.6.5.2 NCNHP Managed Areas

The North Carolina Natural Heritage Program (NCNHP) managed areas are a diverse collection of properties and easements that are managed to some degree for conservation of biodiversity and ecosystem function. NCNHP maintains GIS data on most of the conservation land within North Carolina. In addition to areas actively managed for conservation, the data also include properties and easements that are not primarily managed for conservation but are of conservation interest. Conservation interest ranges from properties and easements that support rare species and intact, high-quality, natural communities to those that are simply open spaces in areas where open space is scarce (NCDEQ 2017b).

There are 16 NCNHP managed areas located entirely or partially within the project study area (Figure 3-12), totaling over 7,000 acres. Five of these are managed for biodiversity, and the remaining eleven are managed for multiple uses (Table 3-13).

3.6.5.3 NCNHP Natural Areas

The NCNHP has identified more than 2,500 terrestrial and aquatic natural areas across the state. Natural areas are designated based on the presence of rare species, exemplary or unique natural communities, important animal assemblages, or other important ecological features (NCDEQ 2017b). Natural areas are not protected by law but are recognized as important for conservation of the state's biodiversity.

More than half of these areas are entirely or partially in conservation ownership. However, many remain privately owned and are unprotected from threats such as development. The NCNHP works with many partners, including state and federal conservation agencies, national conservation groups, and the land trust community, to implement protection for these ecologically significant areas. Through these partnerships, and using funding from federal sources, including the Clean Water Management Trust Fund and the Park and Recreation Trust Fund, the most important areas are brought into protection. Once a natural area is purchased, it is considered for dedication as a State Nature Preserve. More than 100 state- and privately-owned natural areas are now protected by dedication (NCDEQ 2017b).

Three NCNHP natural areas are located entirely or partially within the project study area, totaling approximately 1,469 acres (Figure 3-12). The Dover Bay Pocosin Natural Area is located along the northeast corner of the project study area and extends beyond the study area boundary. Approximately half of the Dover Bay Pocosin Natural Area is located within the project study area. The Trent River Aquatic Habitat Natural Area represents important habitat within the Trent River. The Trent River forms a portion of the southeastern boundary of the project study area. The Kelly's Pond Natural Area is located along existing US 70, southeast of Kinston.

NCNHP natural areas are given ratings that identify their relative value compared to other areas within the state. Table 3-14 identifies each natural area's R rating and C rating.

NCNHP Ratings

The **R rating** represents the element representational rating. The R rating is designed to indicate a natural area's potential to contribute to a collection of the best locations for each tracked element within the state. The R3 rating indicates a high rating level, for natural areas containing the 3rd to 8th best examples of a tracked element within the state. The R5 indicated a general rating level, for natural areas containing one of the 30 best statewide examples of elements within it.

The **C rating** represents the element collective rating. The C rating evaluates the conservation value of each natural area based on the number of tracked elements present and the rarity of those elements, weighted in terms of both global imperilment and state imperilment. The C4 rating indicates a moderate rating level, containing a minimum of two elements. The C5 element indicates a general rating level, containing a minimum of one element.

Figure 3-12: NCNHP natural and managed areas

Legend

- Project Study Area
- Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary
- NHP Natural Area
- NHP Managed Area
- 3 NHP Managed Area ID

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

Table 3-13: NCNHP managed areas in the project study area

Managed Area Name	Owner	Management Type	Status	Acres Within Project Study Area	Map ID #[a]
Caswell Developmental Center	North Carolina Department of Health and Human Services	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	State	287.3	1
Caswell Research Farm	North Carolina Department of Agriculture, Research Stations Division	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	State	995.2	2
Conservation Reserve Enhancement Program Easement	North Carolina Department of Agriculture, Division of Soil and Water Conservation	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	Easement	708.1	3
Craven County Open Space	Craven County	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	Local Government	30.7	4
CSS Neuse & Governor Caswell Memorial	North Carolina Department of Natural and Cultural Resources, Division of State Historic Sites and Properties	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	State	47.5	5
Cunningham Research Station	North Carolina Department of Agriculture, Research Stations Division	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	State	318.3	6

Managed Area Name	Owner	Management Type	Status	Acres Within Project Study Area	Map ID #[a]
Dobbs Youth Development Center	North Carolina Department of Public Safety	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	State	128.4	7
Lower Coastal Plain Tobacco Research Station	North Carolina Department of Agriculture, Research Stations Division	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	State	75.1	8
Ducks Unlimited (Wetlands America Trust) Easement	Ducks Unlimited (Wetlands America Trust)	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	Easement	697.2	9
North Carolina Clean Water Management Trust Fund Easement	North Carolina Department of Natural and Cultural Resources, Clean Water Management Trust Fund	Managed for biodiversity - disturbance events suppressed	Easement	92.9	10
NCDOT Mitigation Sites	NCDOT	Managed for biodiversity - disturbance events suppressed	Other Protection	1229.5	11
North Carolina Division of Mitigation Services Easement	NCDEQ, Division of Mitigation Services	Managed for biodiversity - disturbance events suppressed	Easement	625.3	12

Managed Area Name	Owner	Management Type	Status	Acres Within Project Study Area	Map ID #[a]
North Carolina Wildlife Resources Commission Easement	North Carolina Wildlife Resources Commission	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	Easement	1,558.5	13
North Carolina Coastal Land Trust Easement	North Carolina Coastal Land Trust	Managed for biodiversity - disturbance events suppressed	Easement	281.5	14
North Carolina Coastal Land Trust Preserve	North Carolina Coastal Land Trust	Managed for biodiversity - disturbance events suppressed	Private	232.7	15
USFWS Easement	USFWS	Managed for multiple uses - subject to extractive (e.g., mining or logging) or off-highway vehicle use	Easement	18.9	16
Total				7,327	

Source: NCDEQ 2017b

[a] Map ID # refers to Figure 3-12.

Table 3-14: NCNHP natural areas in the project study area

Natural Area Name	Owner	R Rating	C Rating	Acres Within Project Study Area
Dover Bay Pocosin	North Carolina Coastal Land Trust, North Carolina GTP	R3	C4	1,254.1
Kelly's Pond	Private	R5	C5	193.4
Trent River Aquatic Habitat	Public Waters	Unrated	C4	21.6
TOTAL				1,469.1

Source: NCDEQ 2017b

3.6.5.4 NCDOT On-Site Mitigation Properties

NCDOT on-site mitigation properties are used to offset stream and wetland impacts incurred through the construction of NCDOT road projects and are intended to take place within, or directly adjacent to, the footprint of the project for which they will generate mitigation credits.

Five NCDOT on-site mitigation properties are located within the project study area. One is a wetland restoration site, one is a stream restoration site, and three are both wetland and stream restoration sites (Figure 3-13). The site names, associated STIP project, project type, and status are listed in Table 3-15.

Table 3-15: NCDOT on-site mitigation properties in the project study area

Site Name	STIP Project Number	Project Type	Status
Crescent Road	R-2719BA	Wetland/stream	Closed Out
Banks School Road (stream)	R-2719A	Stream	Monitoring
Banks School Road (wetland)	R-2719A	Wetland	Monitoring
Stallings	R-2539WM	Wetland/stream	Monitoring
Adkins Branch	R-2553WM	Wetland/stream	Transferred to the North Carolina Department of Environmental Quality Division of Mitigation Services

70 KINSTON BYPASS
DEIS | R - 2553

Figure 3-13:
On-site mitigation properties

Legend

- Project Study
- Detailed Study
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary
- NCDOT On-site Mitigation Property

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

3.6.6 Threated and Endangered Species

Species with the federal classification of endangered, threatened, or officially proposed for such listing are protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). The US Fish and Wildlife Service (USFWS) lists three federally protected species for Lenoir County (USFWS 2018c), nine federally protected species for Craven County (USFWS 2018a), and three federally protected species for Jones County (USFWS 2018b). The Atlantic sturgeon was previously listed as a federally protected species in all three counties by the USFWS; however, it is now listed by the NOAA Fisheries. All the federally-protected species listed for Lenoir, Jones, and Craven counties are shown in Table 3-16. A brief description of each species' habitat requirements follows. Habitat requirements for each species are based on the best available information from referenced literature.

Table 3-16: Federally protected species listed for Lenoir, Jones, and Craven counties

Scientific Name	Common Name	Federal Status[a]	Habitat Present	County
Aeschynomene virginiana	Sensitive joint-vetch	T	No	Lenoir, Craven
Alligator mississippiensis	American alligator	T(S/A)	Yes	Craven, Jones
Acipenser oxyrhynchus oxyrhynchus	Atlantic sturgeon	E	Yes – Critical habitat in Neuse River	Lenoir, Craven, Jones
Calidris canutus rufa	Rufa red knot	T	No	Craven
Chelonia mydas	Green sea turtle	T	No	Craven
Dermochelys coriacea	Leatherback sea turtle	E	No	Craven
Lysimachia asperulaefolia	Rough-leaved loosestrife	E	Yes	Craven
Myotis septentrionalis	Northern long-eared bat	T	Yes	Lenoir, Craven, Jones
Picoides borealis	Red-cockaded woodpecker	E	Yes	Lenoir, Craven, Jones
Trichechus manatus	West Indian manatee	E	Yes	Craven

[a] E – Endangered; T – Threatened; T(S/A) – Threatened Due to Similarity in Appearance

Sensitive joint-vetch

Sensitive joint-vetch grows in the mildly brackish inter-tidal zone where plants are flooded twice daily. This annual legume prefers the marsh edge at an elevation near the upper limit of tidal fluctuation, but can also be found in swamps and on river banks. Sensitive joint-vetch normally occurs in areas with high plant diversity where annual species predominate, and can grow in sand, mud, gravel, or peat substrates. Bare to sparsely vegetated substrates appear to be a microhabitat feature of critical importance to this plant. Such microhabitats may include accreting point bars that have not yet been colonized by perennial species, areas scoured out by ice, low swales within marshes, muskrat "eat outs" where this rodent removes all the vegetation within a small portion of the marsh, storm damaged areas, and saturated organic sediments of some interior marshes that have local nutrient deficiencies. In North Carolina, stable occurrences have been found in the estuarine meander zone of tidal rivers where sediments transported from up-river settle out and extensive marshes are formed. Additional North Carolina occurrences are also found in moist to wet roadside ditches and moist fields, but these are not considered stable populations.

Suitable habitat is not present for sensitive joint-vetch in the study area.

American alligator

In North Carolina, American alligators have been recorded in nearly every coastal county, and in many inland counties (up to the fall line). The alligator is found in rivers, streams, canals, lakes, swamps, and coastal marshes. Adult animals are highly tolerant of salt water, but the young appear to be more sensitive, with salinities greater than five parts per thousand considered harmful. The American alligator remains on the protected species list due to its similarity in appearance to the endangered American crocodile.

Suitable habitat is present for American alligator in the study area.

Atlantic sturgeon

The Atlantic sturgeon is a large fish that occurs in major river systems along the eastern seaboard of the US. It is an anadromous species that migrates to moderately-moving freshwater areas to spawn in the spring; in some southern rivers a fall spawning migration may also occur. Spawning occurs in moderately flowing water in deep parts of large rivers, usually on hard surfaces (e.g., cobble). Juveniles usually reside in estuarine waters. Subadults and adults live in coastal waters and estuaries when not spawning, generally in shallow nearshore areas dominated by gravel and sand substrates.

Suitable habitat is present for the Atlantic sturgeon within the entirety of the Neuse River in the study area. The Neuse River within Lenoir and Craven counties is listed as one of the Atlantic sturgeon critical habitat rivers in the Southeast US (NOAA 2017a, 2017b). The Neuse River does not flow through Jones County.

Rufa red knot

The rufa red knot is one of the six recognized subspecies of red knots, and is the only subspecies that routinely travels along the Atlantic coast of the US during spring and fall migrations. It is known to winter in North Carolina and to stop over during migration. Habitats used by red knots in migration and wintering areas are similar in character: coastal marine and estuarine habitats with large areas of exposed intertidal sediments. In North America, red knots are commonly

found along sandy, gravel, or cobble beaches, tidal mudflats, salt marshes, shallow coastal impoundments and lagoons, and peat banks. Ephemeral features such as sand spits, islets, shoals, and sandbars often associated with inlets can be important habitat for roosting.

Suitable habitat is not present for rufa red knot in the study area.

Green sea turtle

Green sea turtles are found in temperate and tropical oceans and seas. Nesting in North America is limited to small communities on the east coast of Florida requiring beaches with minimal disturbances and a sloping platform for nesting (they do not nest in North Carolina). The green sea turtle can be found in shallow waters. They are attracted to lagoons, reefs, bays, mangrove swamps, and inlets where an abundance of marine grasses can be found, as this is the principle food source for the green sea turtle.

Suitable habitat is not present for green sea turtle in the study area.

Leatherback sea turtle

Leatherback sea turtles are distributed worldwide in tropical waters of the Atlantic, Pacific, and Indian oceans. They are generally open ocean species, and may be common off the North Carolina coast during certain times of the year. However, in northern waters the species is reported to enter into bays, estuaries, and other inland bodies of water. Major nesting areas occur mainly in tropical regions. In the US, primary nesting areas are in Florida; however, nests are known from Georgia, South Carolina, and North Carolina as well. Nesting occurs from April to August. Leatherback sea turtles need sandy beaches backed with vegetation near deep water and generally with rough seas. Beaches with a relatively steep slope are usually preferred.

Suitable habitat is not present for leatherback sea turtle in the study area.

Rough-leaved loosestrife

Rough-leaved loosestrife, endemic to the Coastal Plain and Sandhills of North and South Carolina, generally occurs in the ecotones or edges between longleaf pine uplands and pond pine (*Pinus serotina*) pocosins in dense shrub and vine growth on moist to seasonally saturated sands and on shallow organic soils overlaying sand (spodosolic soils). Occurrences are found in such disturbed habitats as roadside depressions, maintained power and utility line rights-of-way, firebreaks, and trails. The species prefers full sunlight, is shade intolerant, and requires areas of disturbance (e.g., clearing, mowing, periodic burning) where the overstory is minimal. It can, however, persist vegetatively for many years in overgrown, fire-suppressed areas. The plant is known to occur on the Blaney, Gilead, Johnston, Kalmia, Leon, Mandarin, Murville, Torhunta, and Vaucluse soil series.

Suitable habitat is present for rough-leaved loosestrife in the study area.

Northern long-eared bat

Northern long-eared bat (NLEB) is found across much of the eastern and north central US and all Canadian provinces. Winter hibernating habitat consists of caves and abandoned mines with constant, cooler temperatures with high humidity and no air currents. While within hibernacula, they often form colonies with other bat species. Summer roosting occurs singly or in colonies underneath bark, in cavities and crevices of both live trees and snags, and to a lesser degree in human-made structures such as buildings, barns, bridges, behind window shutters, on utility

poles, and in bat houses. This species is a medium-sized bat with females tending to be slightly larger than males. Average body length ranges from 3 to 4 inches, with a wingspan ranging from 9 to 10 inches. This species is distinguished by its relatively long ears that extend beyond the nose when laid forward.

The USFWS developed a programmatic biological opinion (PBO) in conjunction with the FHWA, the USACE, and the NCDOT for the NLEB (USFWS 2016). The PBO covers the entire NCDOT program in Divisions 1 through 8, including all NCDOT projects and activities. The programmatic determination for the NLEB for the NCDOT program is "may affect, likely to adversely affect." The PBO provides incidental coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all projects with a federal nexus in Divisions 1 through 8, which includes Lenoir, Jones, and Craven counties.

Red-cockaded woodpecker

The red-cockaded woodpecker (RCW) typically occupies open, mature stands of southern pines, particularly longleaf pine (*Pinus palustris*), for foraging and nesting/roosting habitat. The RCW excavates cavities for nesting and roosting in living pine trees, aged 60 years or older, which are contiguous with pine stands at least 30 years of age to provide foraging habitat. The foraging range of the RCW is normally no more than one-half mile. Suitable habitat is present for the RCW in the study area.

The USFWS was consulted regarding the occurrences and potential habitat for RCW in the study area during a field meeting held on October 23, 2013. It was noted the only known occurrence of RCW for Lenoir County is a historical record, and there is probably only a minimal chance of the presence of RCW, but it is prudent to consider since there is potential habitat for the species.

A summary of the field meeting can be found in the 2017 NRTR and is included in Appendix F.

West Indian manatee

West Indian manatees have been observed in all the North Carolina coastal counties. Manatees are found in canals, sluggish rivers, estuarine habitats, salt water bays, and as far off shore as 3.7 miles. They utilize freshwater and marine habitats at shallow depths of 5 to 20 feet. In the winter, between October and April, manatees concentrate in areas with warm water. During other times of the year habitats appropriate for the manatee are those with sufficient water depth, an adequate food supply, and proximity to freshwater. Manatees require a source of freshwater to drink. Manatees are primarily herbivorous, feeding on any aquatic vegetation present, but they may occasionally feed on fish.

Suitable habitat is present for West Indian manatee in the study area.

3.6.6.1 Bald Eagle and Golden Eagle Protection Act

On August 8, 2007, the USFWS removed the bald eagle (*Haliaeetus leucocephalus*) in the lower 48 states of the US from the federal list of threatened and endangered species. The bald eagle is, however, protected by the Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668d, 54 Stat. 250), as amended. This law provides for the protection of the bald eagle and the golden eagle by prohibiting, except under specified conditions, the taking, possession, and commerce of such birds.

Habitat for the bald eagle primarily consists of mature forests in proximity to large bodies of open water for foraging. Large, dominant trees are utilized for nesting sites, typically within 1 mile of open water. Within the project study area, the banks of the Neuse River present potential bald eagle nesting habitat. Adjacent agricultural fields, small forested areas, and the Neuse River itself could provide foraging habitat. However, the project study area is fragmented by sporadic development and swamplands that do not represent ideal nesting or foraging areas.

3.6.6.2 Endangered Species Act Critical Habitat Designations

The USFWS has no listed critical habitat designations within Lenoir, Craven, or Jones counties (USFWS 2012, 2015, 2017). In a Final Rule dated September 18, 2017, NOAA defined critical habitat for Atlantic sturgeon (NOAA 2017a, 2017b). Their designation includes the Neuse River from just east of Raleigh in Wake County to the Pamlico Sound. The entire length of the Neuse River within Lenoir and Craven counties is within the limits of the defined critical habitat.

3.6.6.3 Essential Fish Habitat

A preliminary review of essential fish habitat within the project study area was conducted using the NOAA's online essential fish habitat mapper(https://www.habitat.noaa.gov/application/efhmapper/index.html). No essential fish habitat is present within the project study area. Verification of these preliminary findings will be coordinated with the NOAA, National Marine Fisheries Service, and NCDOT's Biological Surveys Group once the applicant's preferred alternative is selected.

3.6.7 Jurisdictional Issues

3.6.7.1 Clean Water Act Waters of the US

Jurisdictional waters of the US, including wetlands, are protected under Section 404 of the Clean Water Act as well as Section 10 of the Rivers and Harbors Act, as discussed in section 3.6.7.4. The USACE and USEPA jointly define wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 230.3). Section 404 jurisdictional wetlands are those areas satisfying the technical criteria contained in the USACE's *Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (Environmental Laboratory 2010).

Both federal and state programs regulate activities conducted in wetlands in order to minimize the continued reduction and degradation of these resources and strive to achieve a "no net loss" policy. The federal program is based on Section 404 of the Clean Water Act and the USACE's implementing regulations (33 CFR 320-330). The state regulatory program is based on Section 401 of the Clean Water Act (33 U.S.C. 1341) and is regulated by NCDEQ.

Two ArcGIS models were used in order to assess potential stream and wetland impacts for the project. A jurisdictional stream model was created by NCDWR and a jurisdictional wetland model was created by NCDOT (NCDWR 2013; NCDOT 2011a). The NCDOT wetland model classified wetlands into two wetland types, non-riparian and riparian (NCDOT 2001a).

Impact calculations and evaluations presented in both the NRTR and the DEIS are based on GIS data. Detailed information about the development and use of these models can be found in Appendix F.

3.6.7.2 Coastal Area Management Act Areas of Environmental Concern

There is potential for the presence of CAMA areas of environmental concern (AEC) within the Craven County portion of the project study area. Craven County is one of the 20 designated coastal counties within North Carolina. The portion of the project study area within Craven County contains three named streams (Tracey Swamp, Gum Swamp, and Core Creek) and a large floodplain wetland system associated with Tracey Swamp. These streams and/or floodplain wetlands could be considered AECs by the NCDCM. Lenoir and Jones counties are not designated coastal counties for North Carolina.

3.6.7.3 North Carolina River Basin Buffer Rules

Streamside riparian zones within the project study area are protected under provisions of the Neuse River Buffer Rule administered by the NCDWR (15A NCAC 02B .0233). The purpose of the rule is to protect and preserve existing riparian buffers in the Neuse River basin to maintain their nutrient removal functions. The rule applies to a 50-foot-wide riparian buffer directly adjacent to surface waters in the Neuse River basin, including intermittent streams, perennial streams, lakes, ponds, and estuaries, excluding wetlands. The 50-foot riparian buffer width is applied to each side of the surface water, beginning at the most landward limit of the top of bank. Streams subject to the Neuse River Buffer Rules were identified based solely on their presence on 1:24,000 scale USGS topographical maps.

3.6.7.4 Rivers and Harbors Act Navigable Waters

The Neuse River and Contentnea Creek are considered navigable waters under Section 10 of the Rivers and Harbors Act of 1899. The USACE regulates Section 10 of this act, which requires that the building of any wharfs, piers, jetties, or other structures on, over, under, or affecting the navigable capacity of such waters be permitted and approved. In addition, the Neuse River, Contentnea Creek, and a portion of Falling Creek are considered navigable waters under Section 9 of the act, which is administered by the US Coast Guard (USCG). Impacts to these waters would require coordination and permitting with the USCG.

3.6.7.5 Wild and Scenic Rivers

No rivers or sections of river within or near the project study area are designated as wild, scenic, or recreational under the National Wild and Scenic Rivers Act or designated under the North Carolina Natural and Scenic Rivers Act.

Segments of the Neuse River within the study area are included in the National Park Service's Nationwide Rivers Inventory (NRI) list (National Park Service 2017). This list includes more than 3,200 free-flowing river segments believed to possess one or more "outstandingly remarkable" values. The section of the Neuse River identified on the NRI list begins outside of the project study area and continues towards Kinston, stopping just before the conveyance with

Falling Creek (south of Berkley Avenue) and begins again at Carolina Railroad Bridge and continues outside of the project study area. The Neuse River was listed in 1982 for having remarkable value for cultural, fish, geologic, historic, recreational, scenic, and wildlife (National Park Service 2017).

3.7 FLOODPLAINS AND FLOODWAYS

3.7.1 Existing Floodplains and Floodways

A large portion of the project study area contains floodplains and floodways associated with the Neuse River and its larger tributaries. Floodplains and floodways are mapped by FEMA under the National Flood Insurance Program. Flood Insurance Rate Maps for the project study area indicate that both 100-year and 500-year floodplains are present (FEMA 2018). Streams located within FEMA regulatory floodways are indicated on Figure 3-14. Floodways are also present along the main channel of the Neuse River and some of the larger tributaries, such as Bear Creek, Falling Creek, and Southwest Creek (Figure 3-14).

A floodway is defined as the channel of a river or watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations (FEMA 2018). Lenoir County implements the *Lenoir County Flood Damage Prevention Ordinance* (Lenoir County 2003a) as discussed in section 3.3.2.1.

3.7.2 Flood Analysis

As described in section 3.6.5.1, the City of Kinston and Lenoir County have been subjected to severe flooding along the Neuse River for the past several decades. The two most recent storm events to impact the area, Hurricane Matthew in 2016 and Hurricane Florence in 2018, prompted the NCDOT to complete a flood analysis for the project. The purpose of the analysis was to evaluate the 11 new location DSAs to determine whether or not they would be subject to flooding during such extreme events. Comparisons were made between the proposed road surface elevation and the water surface elevations for the 1 percent annual flood chance, 4 percent annual flood chance, and flood levels resulting from Hurricane Matthew. Methodologies used during the study are included in the R-2553 Kinston Bypass Flood Analysis Memo (AECOM 2018b). The Flood Analysis Memo for the Kinston Bypass can be found on the project website.

Flood Analysis Memo

The Flood Analysis Memo for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

25-year Flood

A flood that has a 4 percent annual chance of occurring.

100-year Flood

A flood that has a 1 percent chance of being equaled or exceeded in any given year. Levels of flooding created by the 100-year storm are referred to as the base flood elevation.

500-year Flood

A flood that has a 0.2 percent annual chance of occurring.

3.8 FARMLAND

3.8.1 Farmland Soils

North Carolina Executive Order 96, Conservation of Prime Agricultural and Forest Lands, requires all state agencies to consider the impact of land acquisition and construction projects on prime farmland soils, as designated by the NRCS (State of North Carolina 1983). Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural products within allowable soil erosion tolerance. Prime and unique farmland soils are present throughout the study area (Figure 3-15).

3.8.2 Agricultural Resources

There are numerous active agricultural operations and farmlands within the study area. Most notable is the Sanderson Farms Processing Plant, located on Sanderson Way just south of the NC 148 and US 70 interchange. Crop farms and animal operations of all sizes are located throughout the DCIA.

The NCDA&CS has a "Century Farm" program that recognizes family farms that have exceeded 100 years of continuous agriculture. There are 24 Century Farms in Lenoir County. While being recognized as a Century Farm provides no protections to the owners, it is a measure of community stability and shows the longevity and ties to a community that many families have had for more than 100 years. There is no mapping of the location of the 24 Century Farms in Lenoir County or for those located in Jones County (15) or Craven County (18).

3.8.3 Voluntary Agricultural Districts

Under North Carolina state law, local governments can offer VADs in the local jurisdictions, which provide landowners with a voluntary way to support the conservation and preservation of farmland from non-farm development. Lands under VAD protection have a conservation agreement between the landowner and the local jurisdiction that prohibits non-farm use or development for a period of at least 10 years.

In Lenoir County, eight VADs are located within the project study area, with one VAD that is composed of two parcels. In Jones County, there are two VADs within the project study area. In Craven County, there are six VADs within the project study area.

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DEIS | R - 2553

Figure 3-14:
Floodplains and floodways

Legend

- Project Study Area
- Detailed Study Alternatives
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

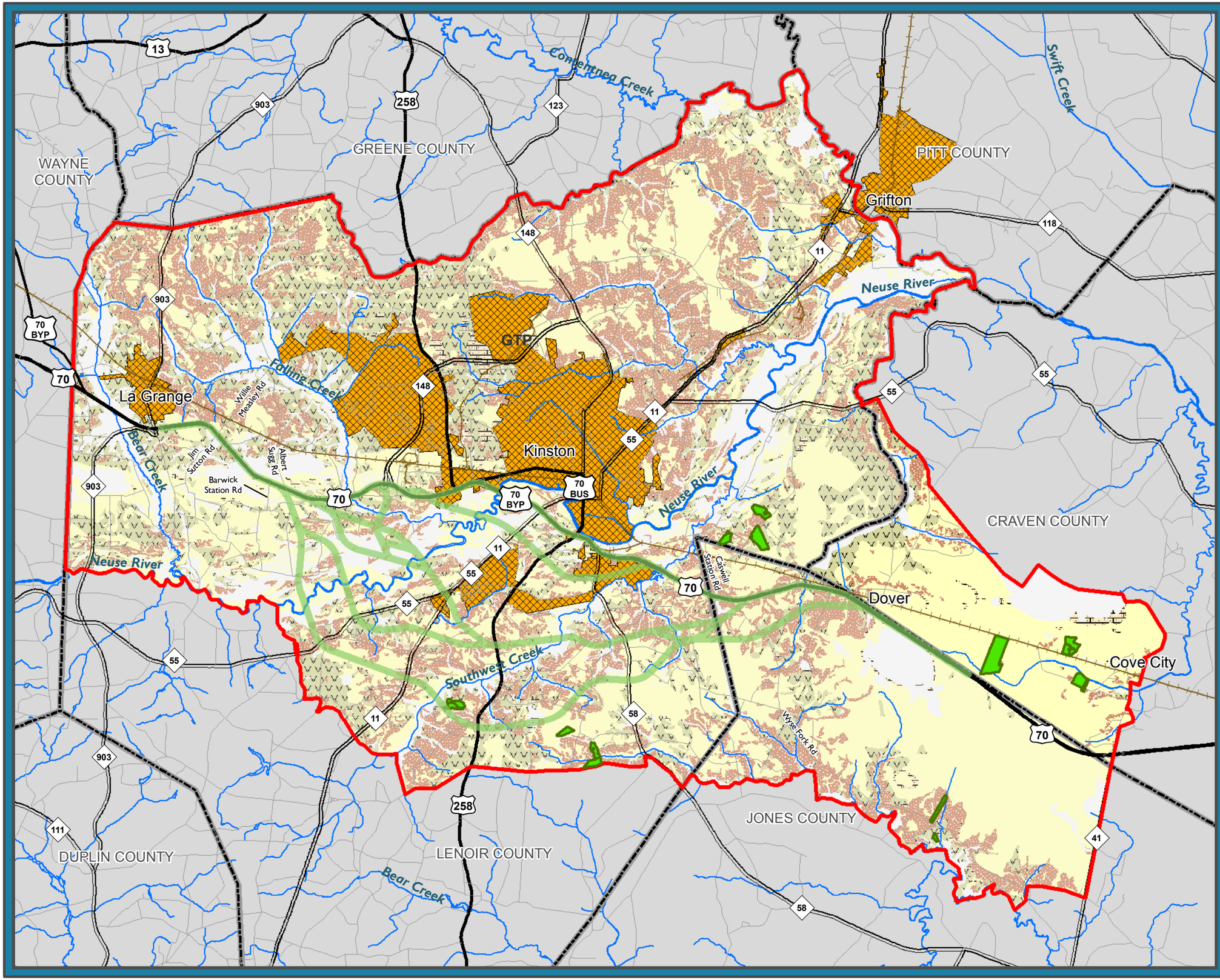


Figure 3-15:
Prime and unique farmland soils

Legend

- Project Study Area
- Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary
- All areas are prime farmland
- Farmland of statewide importance
- Farmland of unique importance
- Not prime farmland/Prime farmland if drained
- Voluntary Agricultural District
- NC Urbanized Area

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

3.9 AIR QUALITY

The Federal Clean Air Act of 1970, as amended (42 U.S.C. 7401) was enacted for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity.

Air Quality Report

The Air Quality Report for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Air pollution is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants degrade the atmosphere by reducing visibility, damaging property, reducing the productivity or vigor of crops or natural vegetation, and/or harming human or animal health.

Air pollution originates from various sources. Emissions from industry and internal combustion engines are the most prevalent sources. The impact from highway construction ranges from intensifying existing air pollution problems to improving ambient air quality. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. Motor vehicles emit carbon monoxide, nitrogen oxide, hydrocarbons, particulate matter, sulfur dioxide, and lead (listed in order of decreasing emission rate).

A project-level air quality analysis was prepared for this project and is entitled *Air Quality Report, US 70 Kinston Bypass, Lenoir, Jones, and Craven Counties* (NCDOT 2018c). The Air Quality Report for the Kinston Bypass is available on the project website.

3.9.1 Attainment Status

The Kinston Bypass project is located in Lenoir, Jones, and Craven counties, which are in attainment with the National Ambient Air Quality Standards (NAAQS); therefore, 40 CFR 51 and 93 are not applicable.

Non-attainment Areas

A non-attainment area is an area considered to have a concentration of one or more criteria pollutants in a geographic area found to exceed the regulated level for NAAQS.

3.9.2 Mobile Source Air Toxics

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments of 1990, whereby Congress mandated that the USEPA regulate 188 air toxics, also known as hazardous air pollutants. The USEPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (USEPA 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (USEPA 2018). In addition, the USEPA has identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the *National Air Toxics Assessment* (USEPA 2017). These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics (MSAT), the list is subject to change and may be adjusted in consideration of future USEPA rules.

A qualitative MSAT analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from various DSAs. The qualitative assessment presented in section 4.9 is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions among Transportation Project Alternatives* (FHWA 2011).

3.10 NOISE AND NOISE ABATEMENT CRITERIA

Noise can be described as any sound that is undesirable. The magnitude of noise is defined by its sound pressure level, which is related to the ratio of the measured sound pressure over a reference sound pressure. The reference pressure is the pressure of the weakest sound audible to a healthy human hearing system. The resulting quantities from the ratio equation are expressed in terms of decibels (dB) on the sound pressure level scale. A dB is an interval on the sound pressure level scale, with 0 dB as the threshold of hearing and 130 dB as the level that causes pain.

Traffic Noise Report

The Traffic Noise Report for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

In order to determine that highway noise levels are or are not compatible with various land uses, FHWA has developed noise abatement criteria (NAC) and procedures to be used in the planning and design of highways.

The *Traffic Noise Report* was conducted to assess the probable traffic noise impacts of the US 70 Kinston Bypass project (NCDOT 2018j). The Traffic Noise Report can be found on the project website.

The project study area was divided into noise study areas (NSA), which included individual receptor locations. The receptors were grouped based on their location and potential for common noise mitigation measures. The results of the traffic noise modeling varied based on the various DSAs. Table 3-17 shows the NAC levels based on land use. The substantial noise level increase criteria is based on a comparison of the existing noise level with the predicted increase with respect to a change to noise levels of 10 dB(A) or more in the design year.

Table 3-17: Noise abatement criteria (hourly equivalent A-weighted sound level)

Activity Category	Activity Criteria[a] $L_{eq}(h)$[b]	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B [c]	67	Exterior	Residential
C [c]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E [c]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--	--	Undeveloped lands that are not permitted

Source: NCDOT 2018i.

[a] The $L_{eq(h)}$ Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

[b] The equivalent steady-state sound level that, in a stated period of time, contains the same acoustic energy as the time-varying sound level during the same time period, with $L_{eq(h)}$ being the hourly value of L_{eq}.

[c] Includes undeveloped lands permitted for this activity category.

3.11 UTILITIES

3.11.1 Electric

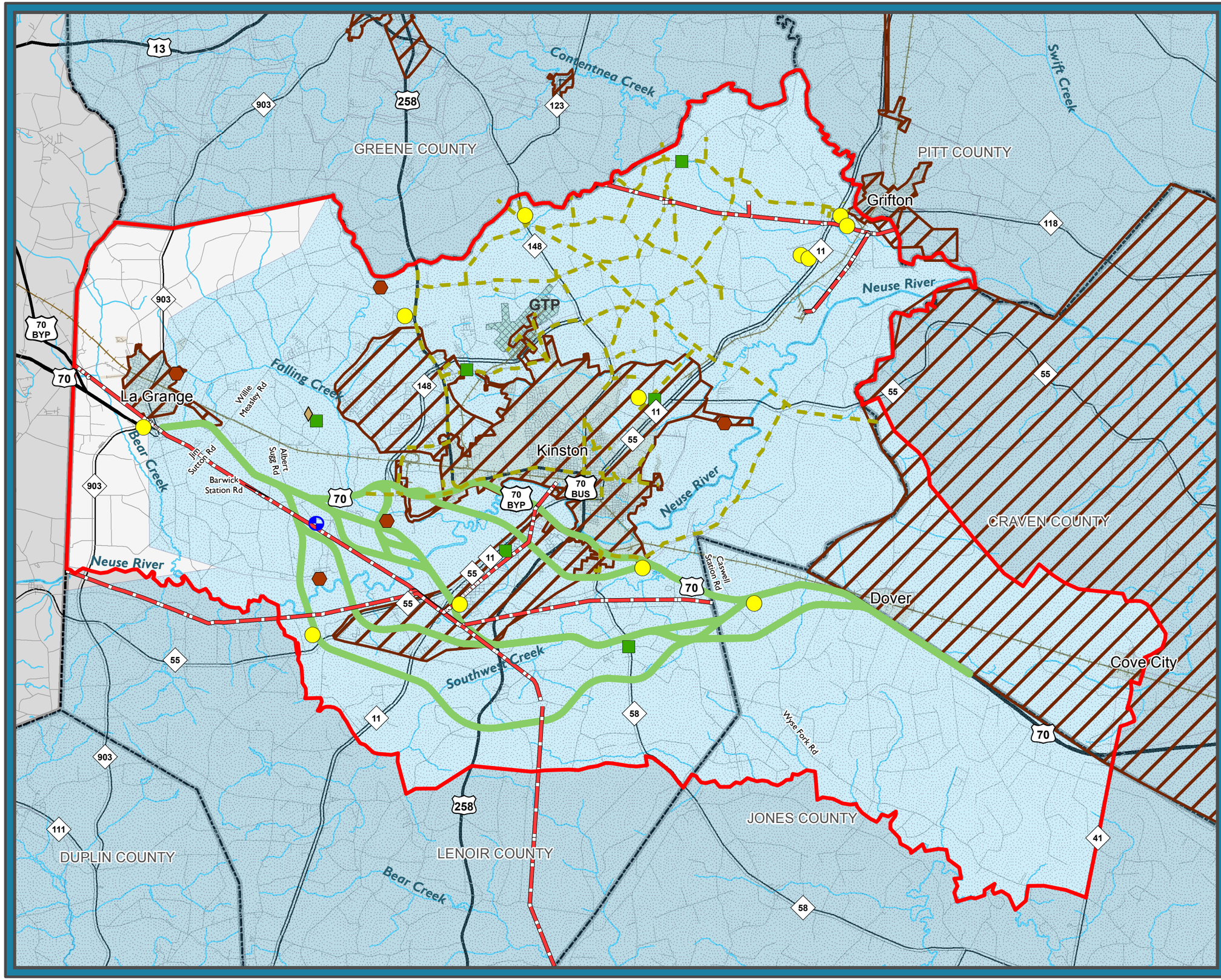
Duke Energy Progress is the main energy provider in the area. In July 2015, Duke Energy Progress purchased a range of energy assets previously owned by the North Carolina Eastern Municipal Power Agency, a coalition of 32 cities and towns in eastern North Carolina that own and operate their own electric systems. Transmission power lines are mainly located in the southern portion of the study area below US 70 (Figure 3-16).

3.11.2 Water/Sewer

Nearly the entirety of the project study area is within a water distribution service area, with the exception of a small area west of La Grange. The area in and around Kinston is served by the City of Kinston; the area south and southwest of Kinston in Lenoir County is served by Deep Run Water Corporation; the area north, northwest, and northeast of Kinston is served by North Lenoir Water Corporation; the area in Jones County is served by Jones County; and the area in Craven County is served by Craven County. Figure 3-16 shows the water distribution service areas. With the exception of Craven County and Jones County, all regional municipalities are a part of the Neuse Regional Water and Sewer Authority. The Neuse Regional Water and Sewer Authority is a cooperative partnership of water and sewer providers that was formed in 2000 to develop regional solutions for meeting future needs.

The CIA (NCDOT 2018d) and the Land Use Scenario Assessment (LUSA) (NCDOT 2018g) identify one water treatment plant in the project study area: the New Water Treatment Plant, owned by Lenoir County and located approximately one-half mile south of US 70 off Kennedy Home Road. The water treatment plant is operated by the Neuse Regional Water and Sewer Authority and began operation in 2008. It has been designed to allow for expansion and is permitted to withdraw 30 million gallons per day from the Neuse River. Through the use of its existing well field and its membership in the Neuse Regional Water and Sewer Authority, Kinston is projected to provide enough water service for the next 50 to 75 years. Neuse Regional Water and Sewer Authority service extends to approximately 100,000 citizens and commercial users in the area.

Sewer service is only available to the areas within and immediately outside of the municipal areas (Kinston/GTP and La Grange) and all of Craven County (Figure 3-16). The other rural areas are served via on-site septic systems. Future plans to extend sewer are somewhat limited, but include areas along US 70 (west of Kinston), US 258 (south of Kinston), NC 58 (south of Kinston), and further around the GTP.



70 KINSTON BYPASS
DEIS | R - 2553

Figure 3-16: Utility services

Legend

- Project Study Area
- Detailed Study Alterantive
- Wastewater Treatment Plant
- Water Treatment Plant
- Landfill
- Recycling Site
- Solar Farm
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary
- Power Transmisstion Lines
- Natural Gas Lines
- Water Distribution Service Area
- Sewer Service Area

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

3.11.3 Wastewater

Four wastewater treatment plants are in the project study area; two serve the general region and the other two are site specific. The two serving the general region are in Kinston and La Grange. In Kinston, the Kinston Regional Water Reclamation Facility was built in 2007 by expanding upon the former Northside Wastewater Treatment Plant. The Kinston Regional Water Reclamation Facility is a state-of-the-art facility built west of the Neuse River, south of NC 55 and has a daily operational capacity of 11.5 million gallons. The Kinston Regional Water Reclamation Facility also contains a 40 acre site used as a spray field, where sludge generated from the plant is "land applied" rather being discharged directly into the Neuse River. The La Grange Wastewater Treatment Plant has a daily operational capacity of 75,000 gallons and is located along Mosley Creek. The two other facilities include locations at North Lenoir High School and Sanderson Farms. Each of these wastewater treatment plants was designed to serve their respective facilities.

3.11.4 Solid Waste/Recycling

The Lenoir County Landfill located at 2949 Hodges Farm Road serves Lenoir County residents by treating solid waste generated from residential and commercial uses, institutional non-hazardous solid wastes, and designated solid wastes (Lenoir County 2014).

The Tuscarora Landfill located at 7400 Old US Highway 70, approximately 5 miles east of Cove City, serves the residents of Craven County. This landfill is located outside of the project study area.

Lenoir County operates nine recycling sites; six sites are located in the project study area: Site 1, Dobbs Farm, is located on Robinson Road; Site 2, Fairground, is located on Fairground Road; Site 3, Loftin's Crossroads, is located on Elijah Loftin Road; Site 5, Hodges Farm Road, is located on Hodges Farm Road in La Grange; Site 6, Wallace Road, is located on Wallace Road in Kinston; and Site 9, Hugo Crossroads, is located on Grifton-Hugo Road in Grifton.

3.11.5 Natural Gas

Piedmont Natural Gas is the sole natural gas provider within the project study area. Natural gas lines are mainly located in the northern portion of the project study area north of US 70 (Figure 3-16).

3.11.6 Solar Power Farms

Twelve commercial-scale solar power farms are located throughout the project study area (Figure 3-16). Information on the solar power farms is summarized in Table 3-18.

Table 3-18: Solar Power Farms in the project study area

Solar Power Farm	Utility Owner Name	Peak Power Generation Capacity (Megawatts)
Albemarle Solar Center	SRE Utility Solar 1, LLC	5
Crockett Farm	Crocket Farm, LLC	5
Exum Farm Solar, LLC	Cypress Creek Renewables	4.9
Highland Solar Center, LLC	SRE Utility Solar 1, LLC	5
Hood Farm	CD Global Solar Holdings, LLC	4.9
Innovative Solar 54	Innovative Solar 54	50
Kinston	Kinston Solar LLC	2
Kinston Davis Farm	Kinston Davis Farm, LLC	5
Kinston Solar	Cypress Creek Renewables	5
Lenoir Farm	Lenoir Farm LLC	5
Lenoir Farm 2	Lenoir Farm 2, LLC	5
Scarlet Solar	Cypress Creek Renewables	2

Source: U.S. Energy Information Administration 2019.

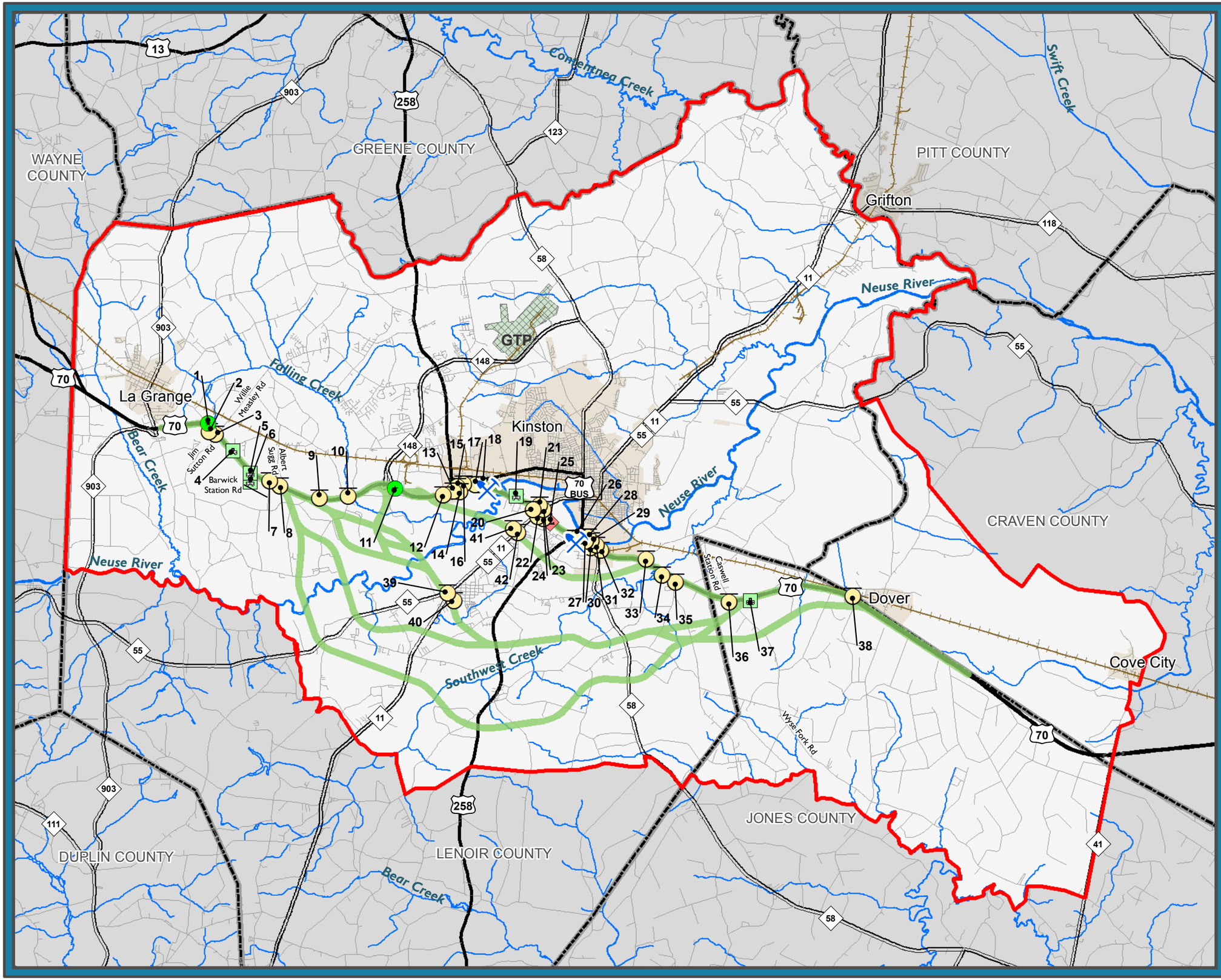
3.12 HAZARDOUS MATERIAL SITES

Hazardous material waste sites are regulated by state and federal agencies under the Resource Conservation Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act. Hazardous materials are generally defined as material or a combination of materials that present a potential hazard to human health or the environment.

The GeoEnvironmental Section of NCDOT conducted a preliminary alternatives analysis to identify the number and type of potentially hazardous materials sites within each 500-foot wide corridor that would pose a concern to NCDOT. Forty-two underground storage tanks (UST), landfills, and other potentially contaminated sites were identified, including 33 UST sites, 6 auto salvage operations, 1 landfill, and 2 industrial small quantity generators (SQG) of non-acute hazardous waste (Appendix G) (Figure 3-17).

3.13 MINERAL RESOURCES

The NCDEQ, Division of Energy, Mineral, and Land Resources identifies two mining pits within the vicinity of the DSAs, Clay Pit and Davis Pit. Both are past producing and no longer active mines located south of US 70 (NCDEQ 2018b; USGS 2018b).



70 KINSTON BYPASS
DEIS | R - 2553

Figure 3-17:
Hazardous materials
sites of concern

Legend

- Project Study Area
- Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary
- Landfill
- Auto Salvage
- Small Quantity Generator
- Underground Storage Tank
- Abandoned Mining Pit

0 1.5 3 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

4. ENVIRONMENTAL CONSEQUENCES

4.1 SOCIAL AND ECONOMIC IMPACTS

4.1.1 Population and Demographics

While the North Carolina Office of State Budget and Management projects that the Lenoir County population will decrease slowly over the next two decades, this could change if the GTP and/or Lenoir County are able to attract major new business development to the area. When it was first developed, the GTP was expected to stimulate economic development and population growth in Lenoir County due to an increase in local employment opportunities. Projections made in 2000 estimated that the population of Lenoir County would increase substantially by 2012. However, GTP's slower growth and restructuring of the manufacturing sector have also contributed to stagnant population levels in Kinston and Lenoir counties.

Land Use Scenario Assessment (LUSA)

The LUSA for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

The Kinston Bypass project would alter property access for properties that abut, or are adjacent, to the DSAs. It would not provide new access to previously isolated areas; however, as discussed in the LUSA (NCDOT 2018g), additional residential and/or commercial development could occur near the DSAs given the proximity to other major highways, the availability of land suitable for development, and the availability of water and sewer. The LUSA is available on the project website. According to interviews with Wayland Humphrey, Lenoir County GIS/Planning Coordinator, and Adam Short, City of Kinston Planning Director, on November 15, 2017, at the time of analysis, no new residential or commercial development projects are proposed as a result of the DSAs. Although there may be additional residential growth near the applicant's preferred alternative (when identified), it is anticipated to represent a shift in the location of the existing population, not a new population that could be attributed to the project. Due to the stagnant population in the area, the No-Build Alternative is not anticipated to affect population growth either within or outside the project study area.

4.1.2 Relocation of Homes and Businesses

Relocation Report

The Relocation Report for the Kinston Bypass can be found on the project website.

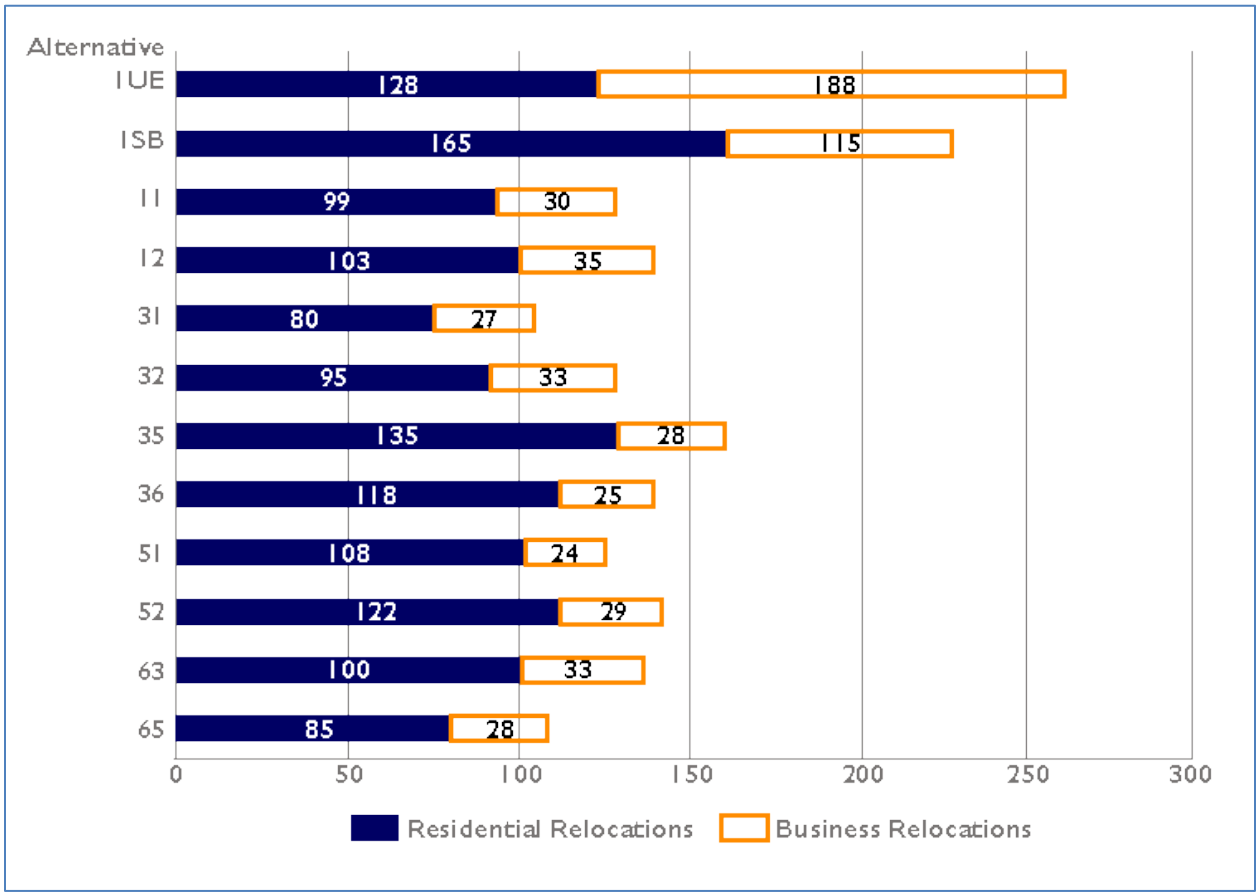
https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Relocation impacts to property owners and tenants are identified in the R-2553 Relocation Report (NCDOT 2017f). Alternatives 1UE and 1SB would have the largest number of business relocations, with 188 and 115 business relocations, respectively. The remaining DSAs have a range of business impacts from 24 to 35 business relocations, with the majority of these business relocations being common to all DSAs. Types of businesses include convenience stores, restaurants, retail, and various services. Residential relocations would include single family residences and manufactured homes. Table 4-1 provides the residential and business relocation

information for each DSA. The racial, ethnic, and economic composition of these relocations is further discussed in section 4.1.5. The R-2553 Relocation Report can be found on the project website.

Depending on the DSA, right-of-way acquisition would be required from between 285 parcels (Alternative 31) and 569 parcels (Alternative 1UE). In addition, the DSAs would require between 80 (Alternative 31) and 165 (Alternative 1SB) residential relocations. The relocation report noted that there appeared to be an adequate supply of available replacement sites. Relocations for the proposed action would be conducted in accordance with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646) (Uniform Relocation Act) and the North Carolina Relocation Assistance Act (North Carolina General Statutes 133-5 through 133-18). Relocation benefits under the Uniform Relocation Act will be available to anyone displaced from the project (NCDOT 2017f).

Table 4-1: Summary of residential and business relocation impacts



Source: NCDOT 2017f.

4.1.3 Economics and Employment

Economic Impact Assessment

The EIA for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

The purpose of the EIA was to assess the project's potential future economic impact on future roadway users and the local economy. The EIA is available on the project website. The EIA analyzed the No-Build Alternative, Alternative 1UE, Alternative 1SB, and Alternative 51. These four DSAs were assessed in the EIA because it was determined that the differentiation of economic impacts from Alternatives 11, 12, 31, 32, 35, 36, 51, 52, 63, and 65 would be minimal, as they would be located along paths with similar land use, population, and business density. Therefore, Alternative 51 was chosen as a representative alternative to be assessed in the EIA.

The EIA estimated the economic benefits to roadway users from the projected improvements to their future travel within the study area. The EIA also analyzed the economic impacts to Lenoir County and the City of Kinston from the economic activity that would be directly affected by the project (NCDOT 2018f). Many of the build alternatives' potential economic benefits cannot be quantified. The current traffic modeling does not provide information to determine the future improvements in travel time reliability. Another important consideration is that there is currently insufficient data to estimate the comparably higher economic costs for Alternative 1UE (both from business interruption during construction and business displacement/relocation).

In cases where the project's impacts are less direct (e.g., profitability benefits from larger market and labor catchment areas), it is difficult to determine the specific contribution that can be attributed to project-related effects. Similarly, the project's potential future economic development benefits would also be dependent on other contributing factors (e.g., city planning, capital availability).

The economic impacts and benefits for the DSAs are summarized as follows:

- **Alternative 1UE**. Alternative 1UE would continue to focus future retail development along the existing US 70 corridor. However, the new controlled access highway would reduce access to businesses not located at the future interchange locations. Some existing businesses may be displaced or face encroachment as a result of Alternative 1UE's expanded right-of-way access and new frontage roads.

  Based on its sales shift, average daily traffic growth, vehicle hours traveled, vehicle miles traveled (VMT), and safety benefits, Alternative 1UE is projected to result in total net benefits of $20.6 million in 2040. Between 2025 and 2044, the net present value of Alternative 1UE's cumulative net benefits is estimated to total $66.2 million.

- **Alternative 1SB**. Alternative 1SB would divert more than 50 percent of the pass-through traffic to the bypass, which would be located approximately three quarters of a mile south of the existing US 70 in Kinston. Any travelers interested in stopping would be expected to divert before the bypass and travel along the existing US 70 route. In addition, it is likely that new infill commercial development may be attracted to the interchanges as a secondary focus for future retail development. Alternative 1SB is projected to result in a net positive impact on Lenoir County.

Based on its sales shift, average daily traffic growth, vehicle hours traveled, VMT, and safety benefits, Alternative 1SB is projected to result in total net benefits of $21.5 million in 2040. Between 2025 and 2044, the net present value of Alternative 1SB's cumulative net benefits is estimated to total $177.2 million.

- **Alternative 51**. Alternative 51 would divert more than 50 percent of the pass-through traffic to the bypass, which would be located approximately 4 or 5 miles south of the existing US 70 in Kinston. However, any travelers interested in stopping would be expected to divert before the bypass and travel along the existing US 70 route. The lack of any nearby existing (or likely future) residential or commercial development and supporting utilities would also limit the local market support for any new businesses located at its interchanges. Alternative 51 would provide the least overall net economic benefit for Lenoir County since there would be no notable connectivity between its interchanges and US 70 existing retail clusters.

  Based on its sales shift, average daily traffic growth, vehicle hours traveled, VMT, and safety benefits, Alternative 51 is projected to result in total net benefits of $8.0 million in 2040. Between 2025 and 2044, the net present value of Alternative 51's cumulative estimated net benefit loss is $14.7 million.

Furthermore, the EIA conservatively assumes that under the 2040 no-build baseline conditions, future retail business growth would not be negatively impacted despite its projected worsening future travel conditions.

4.1.3.1 Highway Users

It is difficult to precisely and fully determine each project alternative's total net benefits. However, as Table 4-2 shows, the project would be expected to result in time savings and safety benefits for future roadway users. There would also be more limited user benefits resulting from the project's increased service capacity with only comparatively minor travel cost increases for future roadway users of Alternatives 1SB and 51 due to the slightly greater distance of their route. Although not quantified, these two alternatives would result in the highest reliability benefits since the existing US 70 roadway would remain as an alternate secondary route during any future highway delays or closures (e.g., due to congestion or accidents).

Table 4-2: Summary of economic impacts to highway users by DSA (2016 $; $ millions)

Impacts	Alternative 1UE	Alternative 1SB	Alternative 51
Travel Time Savings (2040)	$17.5	$13.1	$8.0
Travel Cost (2040)	$0	($1.2)	($3.2)
Safety Benefit (2040)	$20.5	$15.2	$11.4
User Capacity Benefit (2040)	$1.7	$1.2	$4.2
Reliability	Improved	Best – provides alternate route during delays	Best – provides alternate route during delays
Total User Benefits (2040)	$39.7	$28.3	$20.4

Source: NCDOT 2018f.

4.1.3.2 Local Economy

Table 4-3 summarizes the project's expected impacts on the region's businesses and economy. The DSAs would result in a variety of economic benefits for the Lenoir County economy. The proposed action's primary purpose is to improve regional mobility, connectivity, and capacity for US 70 between La Grange and Dover in a manner that meets the intent of the North Carolina STC policy (NCDOT 2015c). Mitigation measures to businesses would be explored after selection of the applicant's preferred alternative.

While the project's benefits to the region's businesses and economic development cannot be quantified, the project may be expected nonetheless to improve most of its businesses' competitiveness, profitability, and development potential. These impacts would include potential for increased revenues from improved market access and/or cost savings from reduced transportation costs and expanded labor/supplier catchment area.

Table 4-3: Summary of economic impacts to regional businesses by DSA (2016 $; $ millions)

Impacts	Alternative 1UE	Alternative 1SB	Alternative 51
Business profitability	Improved financial performance and competitiveness ▪ Increased market area ▪ Lower delivery costs ▪ Expanded labor and supplier catchment area		
Market growth	No local market growth assumed under all DSAs Limited retail sales/business growth from increased future pass-through traffic		
Business development	Non-retail growth supported by improved US 70 travel conditions and enhanced businesses' competitiveness.		
	Retail growth focused on future US 70 interchanges.	Retail growth focused on future US 70 interchanges with infill development and US 70 growth also possible.	Minimal net retail growth. Very limited interchange and infill development due to poor amenities and negligible nearby market. US 70 growth also possible.

Source: NCDOT 2018f.

The No-Build Alternative's potential adverse conditions and impact on the region's businesses and economy similarly cannot be determined and quantified. It was also conservatively assumed that there would be no adverse impacts on the region's businesses and economy despite an expected deterioration in future travel conditions if the project is not built. Nonetheless, it might reasonably be expected that future non-retail growth could be potentially be constrained by worsened US 70 travel conditions. Similarly, future retail growth could also be limited by degraded US 70 traffic conditions and would remain limited along US 70. It was conservatively projected that in 2040 up to $277.4 million in future retail and service sales growth would occur under the No-Build Alternative. This increase is expected to be primarily the result of future non-local highway users' spending growth since the area's stagnant population and absence of

increased highway traffic growth by local residents are expected to ensure that local residents' retail and service sales would remain unchanged.

4.1.3.3 Business Impacts

Table 4-4 summarizes the project's expected impacts on the region's existing businesses and potential future retail sales shift impacts. Sales shift impacts represent the projected net changes to the retail and service business sectors that otherwise may be "lost" or transferred to other businesses outside the market area under the DSAs compared to the No-Build Alternative.

Table 4-4: Summary of US 70 business impacts by DSA (2016 $; $ millions)

Impacts	Alternative 1UE	Alternative 1SB	Alternative 51
US 70 land use and access	US 70 businesses access restricted by interchanges. Potential encroachment and site access changes.	No access changes for existing US 70 businesses. Improved US 70 travel conditions.	
Construction (short-term)	Comparable increased local spending and employment during project construction. Not included as an economic benefit for impact analysis.		
	Major disruption to US 70 use and businesses.	Minor disruption to US 70 use and businesses.	
Retail sales growth (2040)	$258.4m	$270.7m	$265.5m
Sales shift [a] from No Build (2040)	Growth change (2040): ■ Sales: -$19.1m ■ Jobs: -128 ■ Output: -$8.0m	Growth change (2040): ■ Sales: -$6.7m ■ Jobs: -45 ■ Output: -$2.8m	Growth change (2040): ■ Sales: -$11.9m ■ Jobs: -80 ■ Output: -$5.0m
Other existing businesses	Up to 270 ac farmland impacted and <$0.1m net revenue loss.	Up to 464 ac farmland impacted and $0.15m net revenue loss.	Up to 743 ac farmland impacted and $0.24m net revenue loss.

Source: NCDOT 2018f.

m = million

As shown in Table 4-4, the EIA estimated that the project's potential future retail sales shifts could range from a $6.7 million decrease in the region's future highway related retail sales growth (Alternative 1SB) up to a $19.1 million decrease (Alternative 1UE). These future retail sales shift impacts are relatively minor as they would range from approximately 2.4 percent to 6.9 percent of the future highway related retail sales growth projected under the No-Build Alternative. Furthermore, successful marketing, planning, and other development efforts could result in other new business growth and/or retention that could readily offset the projected potential sales shift impacts. In addition, the DSAs may encourage business growth and/or retention as a result of increased non-local highway users, improved business productivity, and/or improved traffic conditions on the existing US 70 roadway (under Alternatives 1SB and

51). In contrast to Alternative 1UE, Alternatives 1SB and 51 would have only limited access and property impacts on the existing US 70 businesses and have greater potential and likelihood of new business development and/or relocations at its interchanges. Due to its relative proximity to the existing US 70 roadway, Alternative 1SB has the best potential for encouraging future infill development along its arterial connections to the existing US 70 roadway and businesses.

4.1.3.4 Business Relocations

The impacted businesses are identified by the R-2553 Relocation Report (NCDOT 2017f). The Relocation Report can be found on the project website. Impacts to any displaced businesses (which may be distinct from the landowners who will be financially compensated) would consist of their lost future net earnings potential (i.e., revenues minus business costs). However, except for the one-time relocation cost, the displaced businesses would probably not incur any long-term net earnings losses if other comparable relocation sites were available nearby. Given the availability of underused and developable land sites in Lenoir County (as defined in the LUSA), it would be reasonable to expect that future business relocations should be possible to reduce the future displacement impacts. The LUSA can be found on the project website.

Relocation Report

The Relocation Report for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Land Use Scenario Assessment (LUSA)

The LUSA for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Table 4-5 shows the estimated average annual sales and employment associated with the businesses that would be relocated under each DSA. The impacted businesses were also separated into two groups – highway market dependent and other businesses. The highway market dependent group consisted of lodging, food and beverage, entertainment, and retail businesses. This includes businesses such as lodging, fuel stations, fast food restaurants, and convenience stores that obtain a major proportion of their sales from non-local highway users, and therefore proximity and easy access from the highway are important for their success. The remaining businesses were aggregated as other businesses. While these other businesses may rely on the highway for their customers, employees, and suppliers to access their facility, their sales are not predominantly obtained from in-transit highway users making unplanned stops and/or purchase decisions.

The values shown in Table 4-5 provide a highly conservative estimate of the businesses that would require relocation to alternate sites with highway access since it does not differentiate those businesses that provide goods and service for non-local customers travelling through Kinston. If there is an insufficient supply of suitable highway-accessible sites then some displaced highway market dependent businesses may leave the area, which can increase the future "sales leakage" out of the local economy. This would represent a negative economic impact for both the permanently displaced businesses and potentially for the local economy (if the sales leakage cannot be served and captured by other local businesses). The economic impact could also be more long-term if the site availability constraints persist and are not corrected through planning, rezoning, or other means.

Table 4-5: Business relocation impacts by DSA (2016 $; $ millions)

	Alternative 1UE	Alternative 1SB	Alternative 51
Total Business Relocations	**137**	**66**	**26**
Highway Market Dependent	69	31	12
Other Businesses	68	35	14
Total Sales ($ millions/year)	**$150**	**$49**	**$16**
Highway Market Dependent	$82	$25	$11
Other Businesses	$68	$24	$5
Total Jobs	**1,158**	**349**	**178**
Highway Market Dependent	652	188	127
Other Businesses	506	161	51

Source: NCDOT 2017f; AECOM 2018a.

Note: Business relocations listed in Table 4-5 differ from those shown in Table 4-1 and in the relocation report, as the EIA only considered operational businesses, whereas the relocation report considered commercial or business properties, regardless of whether there was an operational business.

Non-highway market dependent businesses will have a greater selection of alternative relocation sites and generally will be far less liable to long-term adverse sales or business impacts from the relocation. The economic impacts for specific business from relocation may also differ depending on the condition of their current property. Businesses and/or landowners of outmoded buildings may benefit from an opportunity to revitalize their businesses.

As a result, while it is difficult to project individual business decisions, it is the overall net economic outcomes that are most relevant to the EIA. No net loss to the local economy would occur if an existing business's lost sales and jobs are subsequently recaptured by other existing businesses or new ventures.

4.1.3.5 Short-term Impacts

The EIA also found that project-related construction would have short-term economic benefits in local employment and spending. However, these benefits are not included in the EIA as an additional benefit of the DSAs compared to the No-Build Alternative. This was primarily a conservative assumption so as not to overly favor future roadway development based on the project's ability to secure construction spending that would result in only temporary economic gains for Lenoir County. In addition, due to the similarity of the alternatives' construction cost estimates, potential cost savings is not considered an important consideration for weighting the EIA results. As a result, the alternatives' construction costs are not included in the EIA estimates of the alternatives' economic benefits.

4.1.4 Communities and Neighborhoods

Potential neighborhood impacts include access and mobility, residential property relocations and acquisitions, visual quality, and noise effects. These impacts are the direct impacts to communities and neighborhoods as a result of the proposed action. Impacts to community cohesion and stability are most likely to result with Alternative 1UE, given the highest number of community facilities and community gathering spots that would be impacted along the corridor. A moderate level of impacts is expected for Alternative 1SB that results from disruption between neighborhoods and commercial areas, employment facilities, and dislocation of community gathering places due to a moderately high number of relocations. A lower level of impact is expected from Alternatives 11, 12, 31, 32, 35, 36, 51, 52, 63, and 65 based on areas of community cohesion noted at the small group meetings and by local planners. An analysis of community cohesion and potential impacts to community cohesion within the project study area is included in the CIA (NCDOT 2018d). The CIA is available on the project website. An analysis of visual quality and noise effects can be found in sections 4.5 and 4.10, respectively.

Impacts to residential areas and GNIS communities by DSA are summarized in Table 4-6 and in the following paragraphs.

- **Cedar Dell Lane (**census tract 110.01, block group 2): A neighborhood along Cedar Dell Lane, just off of Kennedy Home Road, is located southwest of the C.F. Harvey Parkway interchange. The neighborhood contains single family housing, the Baptist Children's Organization's Kennedy Memorial Home, the Lenoir County Learning Academy, and tennis courts. Alternatives 1UE and 1SB would not directly impact the neighborhood but would reduce access from the neighborhood to US 70 as well as destinations north of US 70. Access to the neighborhood would not be impacted by any additional DSAs, but Alternatives 31 and 32 would pass just south of the neighborhood.

Direct Impacts

Direct impacts are caused by the action and occur at the same time and place. (40 CFR 1508.8)

Access

Access is the ability to reach private property from a transportation network. Access effects were assessed by determining where the DSAs would result in changes to the existing pattern of vehicular or pedestrian/bicycle traffic, how they would restrict access at locations where access currently exists, or where new or enhanced access would be provided.

Mobility

Mobility is the ability to move around a transportation network. Mobility effects were assessed through the change in transportation options, as well as changes in the efficiency of travel. These impacts are indicated by the expansion, addition, reduction, or removal of travel lanes, transit, or pedestrian facilities.

Residential Property Relocations and Acquisitions

Residential relocations are the complete taking of property. Residential properties within the proposed right-of-way or affected by the proposed right-of-way (i.e., inaccessible, close proximity to improvements) were identified as relocations.

Community Impact Assessment (CIA)

The CIA for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Table 4-6: Residential areas and GNIS community impacts by DSA

Neighborhood	Alternative											
	1UE	1SB	11	12	31	32	35	36	51	52	63	65
Cedar Dell Lane	X	X	--	--	--	--	--	--	--	--	--	--
Jackson's Crossroads	--	--	--	X	X	X	--	--	--	--	X	X
Howard Place Drive Neighborhood	--	--	--	--	--	--	X	X	--	--	--	--
Albrittons	--	--	--	--	--	--	--	--	X	X	--	--
Woodington	--	--	--	--	--	--	X	X	--	--	--	--
Sandy Bottom	--	--	--	--	--	--	X	X	--	--	--	--
Bucklesberry	--	--	--	--	--	--	X	X	--	--	--	--
Loftin's Crossroads			X	X	X	X	--	--	X	X	X	X
Murray Circle	X	X	--	--	--	--	--	--	--	--	--	--
Town of Dover	--	--	--	--	--	--	--	--	--	--	--	--
Little Baltimore	X	X	X	X	X	X	X	X	X	X	X	X
Wyse Forks	X	X	--	X	--	X	X	--	--	X	X	--

Source: NCDOT 2018d.

Note: X = residential impacts -- = no residential impacts

- **Bucklesberry** (census tract 110.01, block group 2): Alternatives 35 and 36 intersect Kennedy Home Road within the neighborhood of Bucklesberry. Only one home is expected to be impacted, but the proposed roadway would split the housing along Louie Pollock Road and the housing to the east along Kennedy Home Road. While one home would be directly impacted, the dominant issue in the neighborhood is access and mobility. The neighborhood contains residential housing and a church.
- **Jackson's Crossroads** (census tract 113, block group 3): Neighborhoods in the vicinity of the NC 55 and NC 11 intersection include a manufactured home park on Williams Loop and a neighborhood of single family and manufactured homes east of NC 11 off Sherry Drive. No DSAs would result in direct impacts to the neighborhoods; however, Alternatives 11, 12, 21, 32, 63, and 65 would result in minor changes in access to the neighborhood as current access from NC 11 would be closed.
- **Howard Place Drive Neighborhood** (census tract 113, block group 1): The Howard Place Drive neighborhood is located off of NC 11 and includes 34 manufactured homes. Alternatives 35 and 36 would have a half cloverleaf interchange at NC 11 that would directly impact the entire community, requiring acquisition and relocation of all 34 homes.
- **Albrittons** (census tract 113, block group 3): Development is dense along a triangle comprised of NC 55, Jesse T. Bryan Road, and Green Haynes Road. The neighborhood includes or is in close proximity to multiple churches and businesses. Alternatives 51 and 52 intersect Jesse T. Bryan Road, which would cause direct impacts to approximately 20 houses along NC 55. Access would also be changed for homes that are not directly impacted, given the control of access of the proposed action.
- **Sandy Bottom** (census tract 113, block group 1): The Sandy Bottom community is located along NC 55 near the intersections of Croom-Bland Road and Green Haynes Road and consists of scattered single family housing, churches, and a fire station. For Alternatives 35 and 36, there would be direct impacts to approximately seven houses along NC 55 and Croom-Bland Road. The alternatives would also be in the vicinity of the Sandy Bottom Fire Station, making access an important issue in this area. Two churches are located along the portion of NC 55 that would be realigned leading up to the proposed interchange, but neither church would be directly impacted.
- **Woodington** (census tract 114, block group 3): Woodington is a rural community composed of scattered residential housing, a church, and a middle school along US 258. Alternatives 35 and 36 intersect John Green Smith Road and US 258. Two homes along John Green Smith Road would be directly impacted and approximately twelve homes along US 258 would be directly impacted. In both locations, the alternatives would directly impact homes. An interchange serving these alternatives at US 258 would maintain overall access between the northern and southern side of the alternative; however, access along smaller roads would be affected by the closing of local roads, including Joe Nunn Road and Patterson Road. This could impact the overall connectivity of housing to the north of the alternatives and the middle school to the south of the alternatives.
- **Loftin's Crossroads**: The crossroads community near the intersection of Elijah Loftin Road and NC 58 would be impacted by Alternatives 11, 12, 31, 32, 51, 52, 63, and 65. It appears that only one home would be directly impacted by the alternatives. Access would not be

impacted due to the interchange at the proposed alignment and NC 58. The neighborhood includes, or is located in the vicinity of, a church and multiple businesses.

- **Crossroads Community at Cobb Road and Silo Road** (census tract 114, block groups 2 and 3): The neighborhood along the intersection of Cobb Road and Silo Road is located south of all alternatives. Access from the neighborhood to more northern destinations would be maintained due to the planned grade separations at Cobb Road for all DSAs.
- **Murray Circle** (census tract 114, block group 2): Access along Murray Circle would be slightly changed for Alternatives 1UE and 1SB. Residents would have to access or cross US 70 using the proposed interchanges at NC 58 or Wyse Fork Road. However, no direct impacts would occur.
- **Town of Dover** (census tract 9603, block groups 3 and 4): The housing and development within the Town of Dover would not be impacted by any of the DSAs. All DSAs would maintain the current access the town has to US 70.
- **Little Baltimore** (census tract 111, block group 3): Little Baltimore contains a church and several small businesses and restaurants. All DSAs would directly impact the community. The proposed interchange and service roads at the intersection of Willie Measley Road/Jim Sutton Road and US 70 would include business and residential relocations. Access to Washington Street and Sugg Road would be available by the proposed service roads. As noted in section 3.3.3.2, STIP project number R-5813 proposes to construct this intersection to an interchange.
- **Wyse Forks** (census tract 9203, block group 1)**:** Wyse Forks contains a fire station, EMS station, church, and a convenience store. Alternatives 1UE and 1SB would directly impact the fire station and the convenience store. Alternatives 12, 32, 35, 52, and 63 would have change of access impacts to US 70 and a new interchange would be constructed near Wyse Fork Road and US 70.

In addition to the above communities, 11 minority and/or low-income communities were identified where potential impacts may occur. The potential impacts on these communities are discussed in section 4.1.5.

4.1.5 Environmental Justice

Title VI of the Civil Rights Act of 1964 protects individuals from discrimination on the grounds of race, age, color, religion, disability, sex, and national origin. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," provides that each federal agency shall make achieving EJ part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations. Executive Order 12898 requires that EJ principles be incorporated into all transportation studies, programs, policies and activities. The three EJ principles are to (1) ensure the full and fair participation of potentially affected communities in the transportation decision-making process; (2) avoid, minimize or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority or low income populations; and (3) fully evaluate the benefits and burdens of transportation programs, policies, and activities, upon low-income and minority populations.

Potential impacts to minority and low-income populations are summarized in the following paragraphs. EJ residential areas were determined using available demographic Census data, identified EJ thresholds, field observations—including observations of the presence of poor housing conditions—and input from local officials and public meetings.

- **Norbert Hill Road**: The Norbert Hill Road residential area, located on Norbert Hill Road between US 70 and Gregg Drive, contains low-income populations that would be affected by all the DSAs. The DSAs may displace some of these residences that are closest to US 70 and those that remain would experience a change in access, as they would be connected to US 70 via a service road.
- **Foss Farm Road:** The Foss Farm Road residential area, located on US 70 between Barwick Station Road and Albert Sugg Road, contains concentrations of minority and low-income populations that would be displaced by DSAs 1UE, 1SB, 11, 12, 35, 36, 51, and 52. Access to this residential area would be affected by Alternatives 31, 32, 63, and 65 (from Willie Measley/Little Baltimore interchange), as these alternatives would provide a service road to this community.
- **Crooms Drive**: The Crooms Drive residential area, located on Crooms Drive off of NC 55, contains low-income populations that would be impacted by Alternatives 51 and 52. Some of the residences would be displaced by the proposed interchange with NC 55 and those that remained would experience a change of access to NC 55.
- **Jesse T. Bryan Road**: The Jesse T. Bryan Road residential area, located off of Jesse T. Bryan Road and Barwick Road, contains low-income populations. Alternatives 51 and 52 would change how the residences access the local road network.
- **Carrie Hill Drive and Howard Place Drive**: The Carrie Hill Drive and Howard Place Drive residential area, located off of NC 11, contains low-income populations. Alternatives 35 and 36 would displace this residential area that contains approximately 35 homes.
- **Lonesome Pine Drive**: The Lonesome Pine Drive residential area, located on Lonesome Pine Drive between Joe Nunn Road and Randy Road, contains low-income populations. Alternatives 63 and 65 are expected to displace several of these homes.
- **Albert Baker Road:** The Albert Baker Road residential area, located on Albert Baker Road off of NC 58, contains concentrations of minority and low-income populations. Alternatives 35 and 36 propose an interchange with NC 58 in a location that would displace this residential area.
- **Fordham Lane:** The Fordham Lane residential area, located on Fordham Lane off of US 258, contains a minority and low-income population that would be displaced by Alternative 1SB due to the proposed interchange with US 258.
- **Johnson Road/NC 58:** The Johnson Road/NC 58 residential area contains a minority population that would be displaced by Alternative 1SB due to the proposed interchange with NC 58.
- **British Road and Caswell Station Road:** A minority residential area is located between British Road and Caswell Station Road on the north side of US 70. Alternatives 1UE and 1SB would upgrade existing US 70 and require the construction of service roads, which would directly impact several homes along existing US 70 in this area due to the need for

additional right-of-way. Homes that would not be directly impacted would experience change in access to the US 70 corridor.

- **US 70/Tilghman Road:** A cluster of housing that contains potential minority and low-income populations is located on the southern side of US 70 just west of its junction with Tilghman Road. Alternatives 1UE, 1SB, 12, 32, 35, 52, and 63 would involve widening existing US 70 in this location, which would include adding service roads. These alternatives are expected to displace most of these residences and those that remain would experience a change in access, as they would be connected to US 70 via a service road.

Full and fair access to meaningful involvement by low-income and minority populations in project planning and development is an important aspect of EJ. As described in the CIA and in section 5.2.4, efforts have been taken to date to reach out and seek input from the EJ populations near the project. This information will continue to be used in the design and evaluation of alternatives, to avoid negative impacts to valued sites, and to support the development of safe, practical, and attractive design of the applicant's preferred alternative that are responsive to the concerns of EJ populations. Efforts will be made to continue to identify issues and concerns for potential impacts to EJ residential areas and to avoid, minimize, and mitigate for potential disproportionately high and adverse impacts.

Benefits of the project, including improved safety and mobility, would be enjoyed by both regional travelers and local residents, including minority and low-income residents. While adverse community impacts including right-of-way acquisition, relocations, and construction delays and detours could result from this project, specific impacts to minority and low-income populations will be evaluated as part of the FEIS to determine whether the impacts are disproportionate and adverse.

4.1.6 Community Facilities and Resources

The CIA identified the following impacts to community facilities and resources (Table 4-7). Figure 4-1 through Figure 4-12 display the possible effects to community resources.

Small family plot cemeteries identified during field visits could also be impacted by the proposed action. Alternatives 11, 31, 51, and 65 would impact one unnamed cemetery and Alternatives 35 and 36 would impact two cemeteries.

Parking spaces at Lenoir Community College adjacent to US 70 as well as the driveway access to US 70 would be impacted by Alternatives 1UE and 1SB. Southwood Elementary School and Woodington Middle School would not be directly impacted by any of the DSAs; however, the schools are located just outside of proposed interchanges with NC 58 and US 258, so indirect impacts could occur, such as changes in traffic patterns and access.

Table 4-7: Community facility impacts by DSA

Feature	Alternative											
	1UE	1SB	11	12	31	32	35	36	51	52	63	65
Cemeteries												
Pinelawn Memorial Park Cemetery	X	X	--	--	--	--	--	--	--	--	--	--
Westview Cemetery	X	--	--	--	--	--	--	--	--	--	--	--
Civic Buildings												
Woodmen of the World Lodge	X	X	--	--	--	--	--	--	--	--	--	--
Lenoir County Shrine Club	X	X	--	--	--	--	--	--	--	--	--	--
Government Facilities												
US Post Office	X	--	--	--	--	--	--	--	--	--	--	--
Kinston/Lenoir County Visitors Center	X	--	--	--	--	--	--	--	--	--	--	--
Lenoir County Fairgrounds	--	X	--	--	--	--	--	--	--	--	--	--
Schools												
Woodington Middle School	--	--	--	--	--	--	X	X	--	--	--	--
Southwood Elementary School & Southwood Gym	--	--	X	X	X	X			X	X	X	X
Lenoir Community College	X	X	--	--	--	--	--	--	--	--	--	--
Churches												
Church of God, La Grange	X	X	X	X	X	X	X	X	X	X	X	X
Chosen Vessel Ministries	X	X	X	X	X	X	X	X	X	X	X	X
Greater Vision Baptist Church	X	--	--	--	--	--	--	--	--	--	--	--
Identity Ministries Church	X	--	--	--	--	--	--	--	--	--	--	--
Destiny Ministries	X	--	--	--	--	--	--	--	--	--	--	--

Feature	Alternative											
	1UE	1SB	11	12	31	32	35	36	51	52	63	65
Trinity United Methodist	X	--	X	X	--	--	--	--	--	--	--	--
Kennedy Home Church	--	--	--	--	--	X	--	--	--	--	--	--
Grace Baptist Church	--	X	--	--	--	--	--	--	--	--	--	--
Tabernacle Free Will Baptist Church	X	--	--	--	--	--	--	--	--	--	--	--
New Testament Baptist Church	X	--	--	--	--	--	--	--	--	--	--	--
Armenia Christian Church	X	X	--	--	--	--	--	--	--	--	--	--
Victorious Living Chapel	X	X	X	X	X	X	X	X	X	X	X	X

Note: X = community facility impacts -- = no community facility impacts

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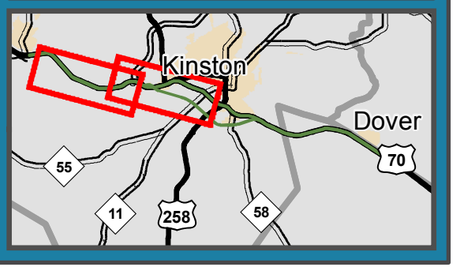
Figure 4-1: Community feature and environmental justice population impacts-Alternatives 1UE and 1SB-A

Legend

- Alts 1UE and 1SB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Block Group
- Block Group Above Both Low-Income and Minority Threshold
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



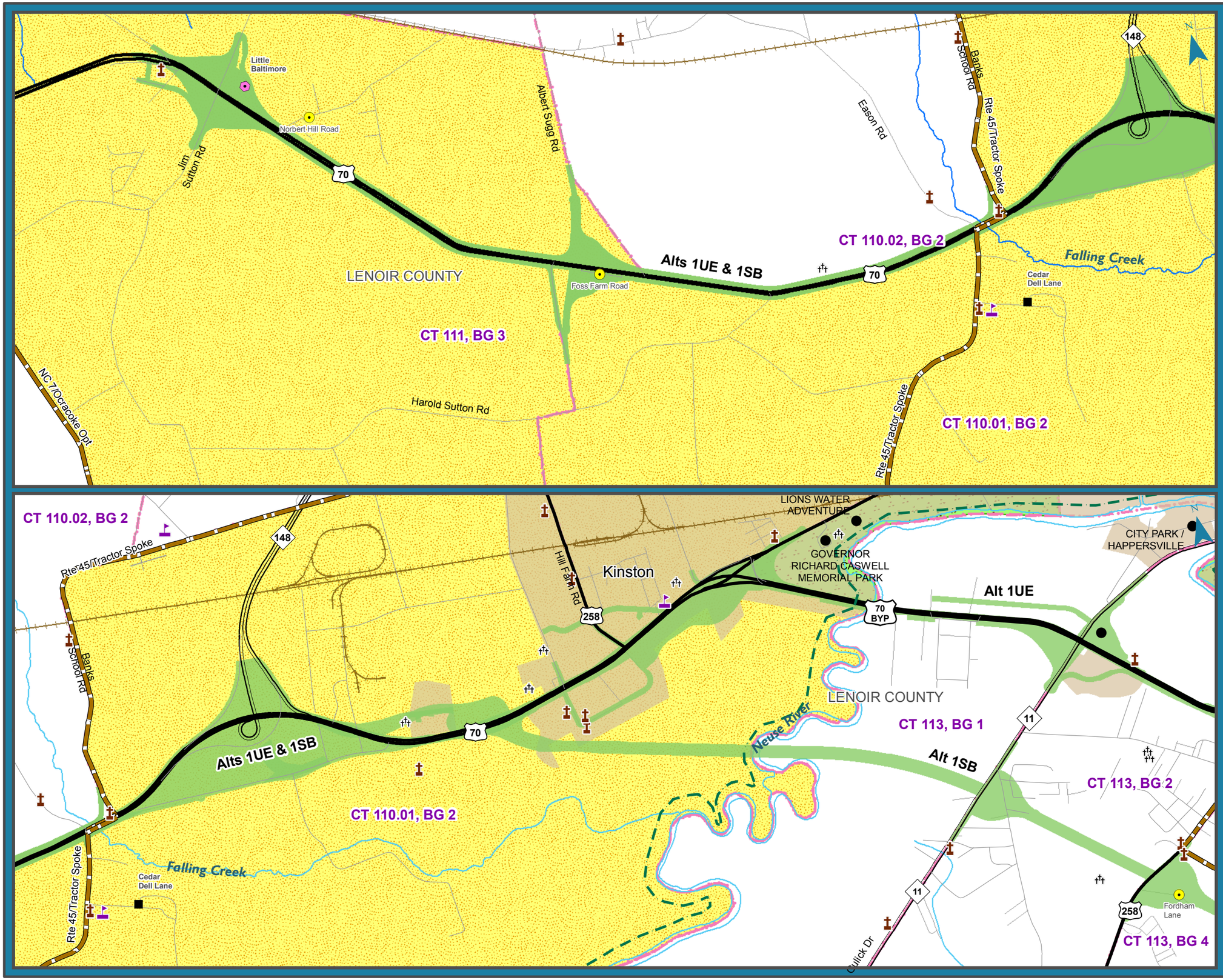


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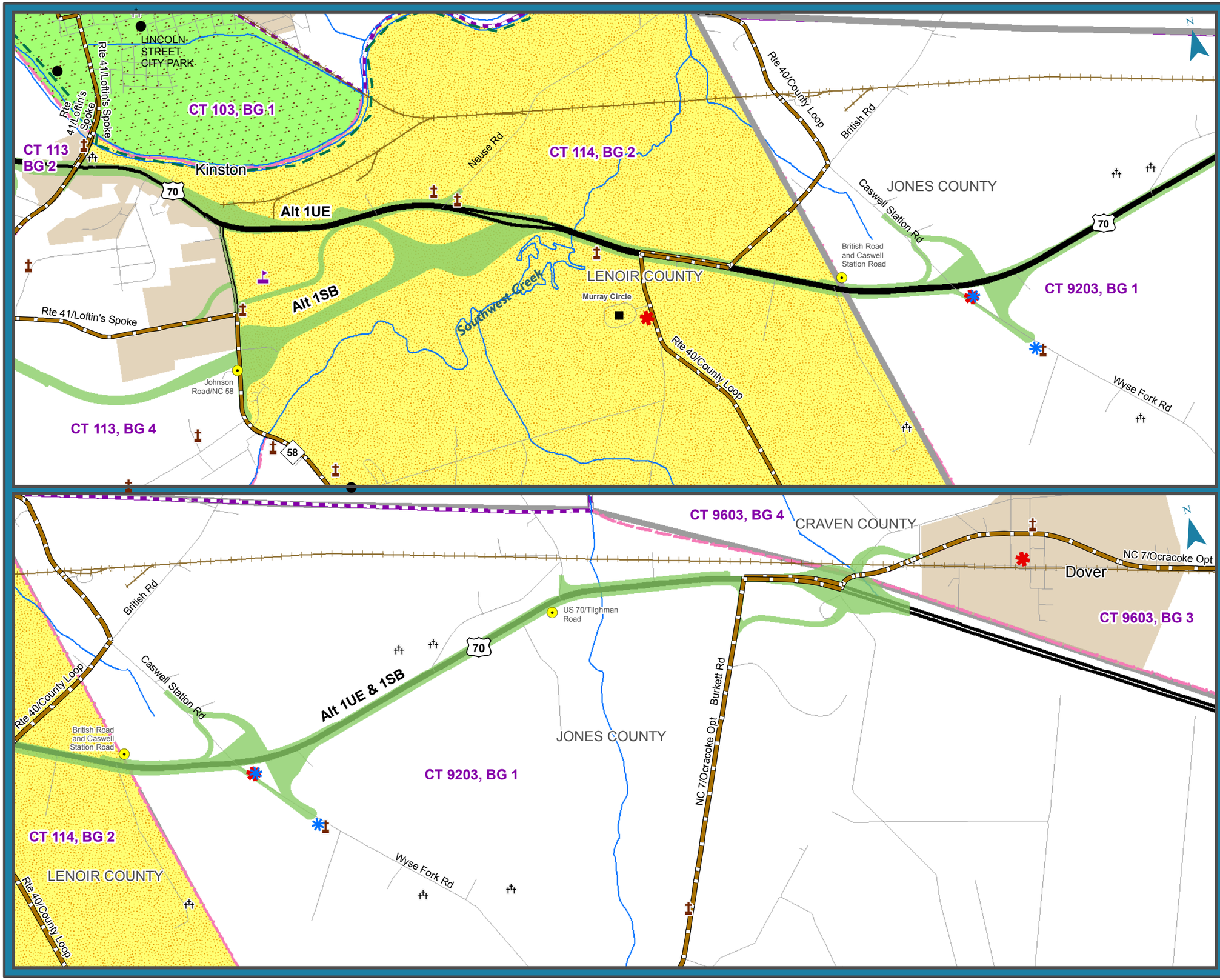
Figure 4-2: Community feature and environmental justice population impacts-Alternatives 1UE and 1SB-B



Legend

- Alts 1UE and 1SB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Demographic Study Area
- Block Group
- Block Group Above Both Low-Income and Minority Threshold
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

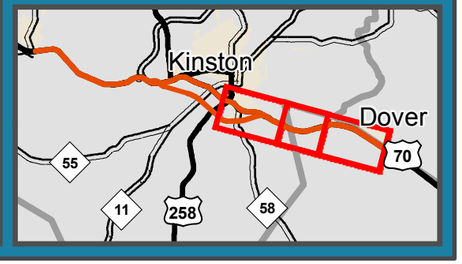


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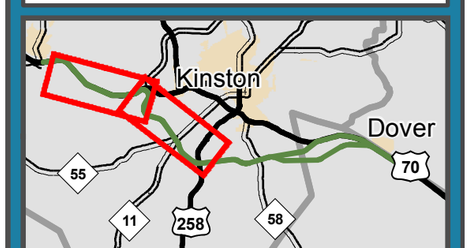
Figure 4-3: Community feature and environmental justice population impacts - Alternatives 11 and 12 - A

Legend

- Alts. 11 and 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Local Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Demographic Study Area
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



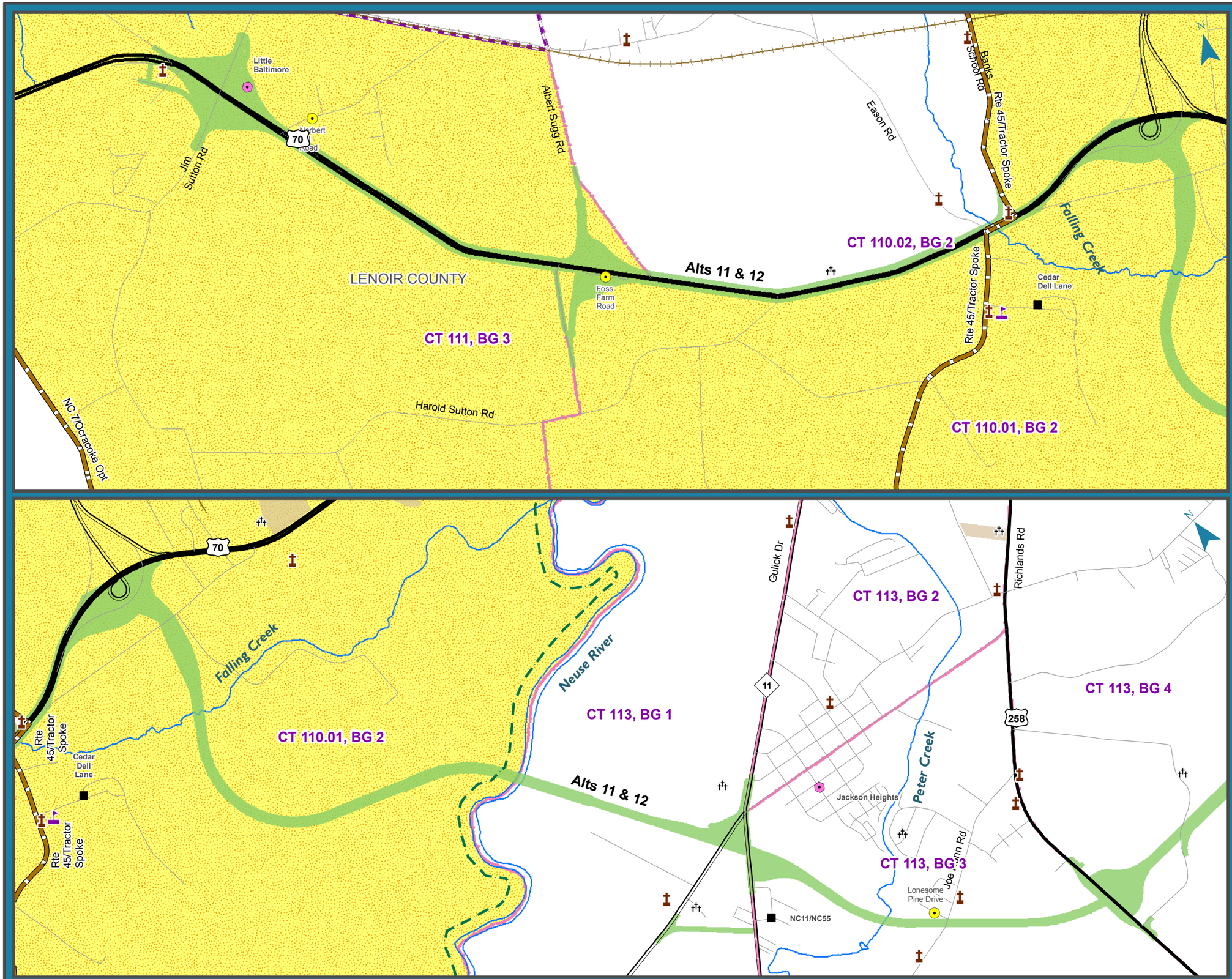


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Figure 4-4: Community feature and environmental justice population impacts - Alternatives 11 and 12 - B

CT 113, BG 2
CT 113, BG 3
CT 113, BG 4
CT 114, BG 3
CT 114, BG 2
CT 9603, BG 4
CT 9203, BG 1
CT 9603 BG 3
LENOIR COUNTY
CRAVEN COUNTY
JONES COUNTY
Alts 11 & 12
Alt 12
Alt 11
WATER WEST PARK
Rte 41/Loftin's Spoke
Strawberry Branch
Whaley Rd
Cobb Rd Rte 40/County Loop
Elijah Loftin Rd
Southwood Rd
Crossroads
Crossroads Community at NC 58
NC 7/Ocracoke Opt
Woodington Rd
Southwest Creek
Albert Baker Road
British Road and Caswell Station Road
US 70/Tilghman Road
Wyse Fork Rd
Burkett Rd
Dover
258
58
70
55
11

Legend

- Alts. 11 and 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

Kinston
Dover

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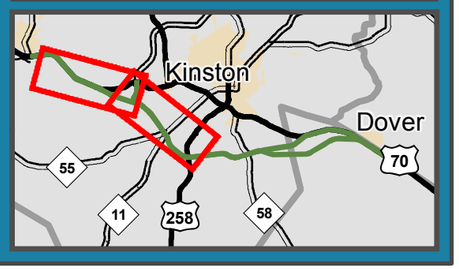
Figure 4-5: Community feature and environmental justice population impacts - Alternatives 31 and 32 - A

Legend

- Alt. 31 and 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



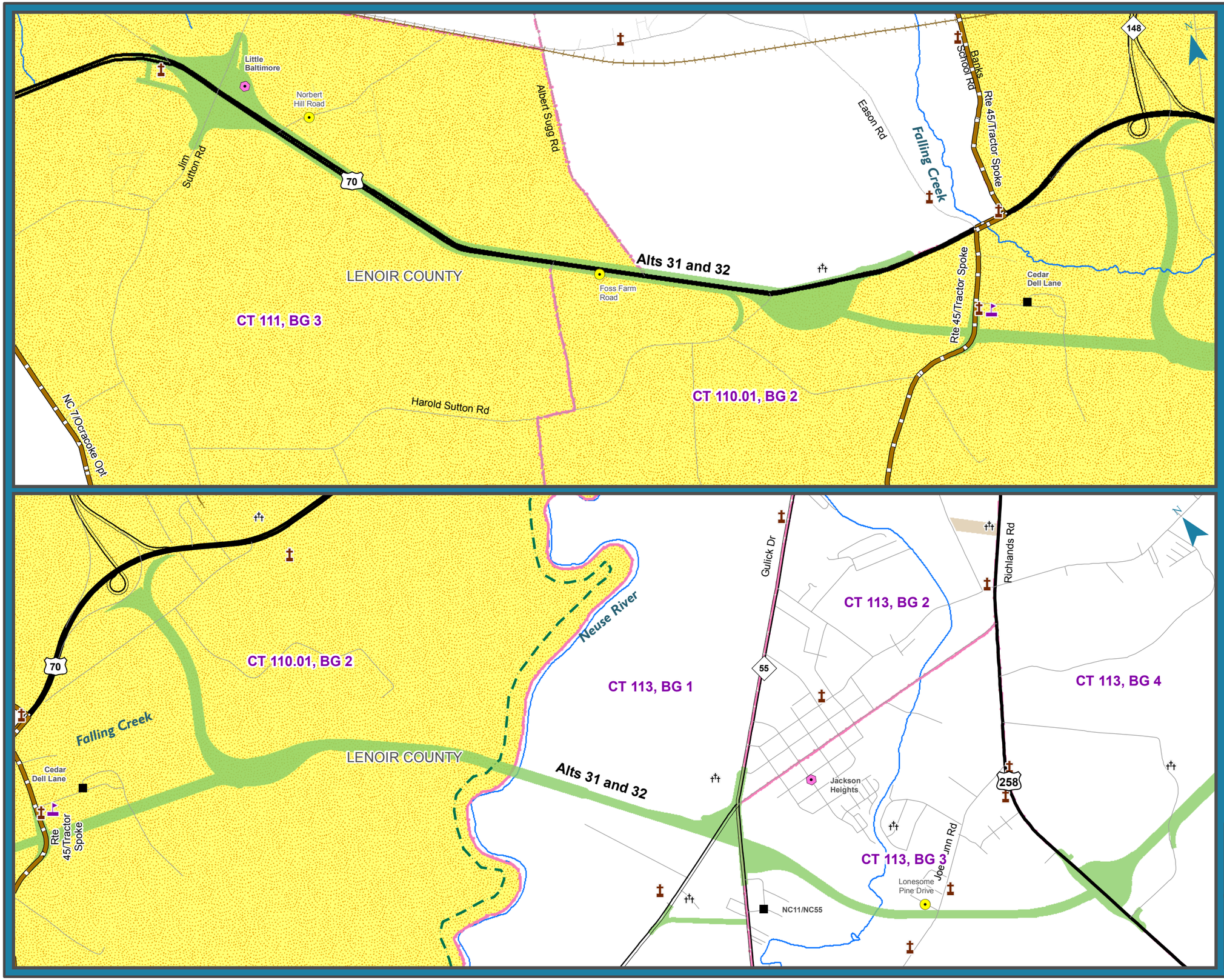


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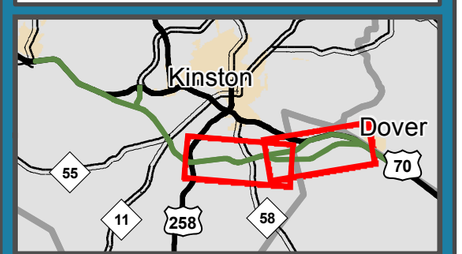
Figure 4-6: Community features and environmental justice population impacts - Alternatives 31 and 32 - B

Legend

- Alts. 31 and 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Demographic Study Area
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



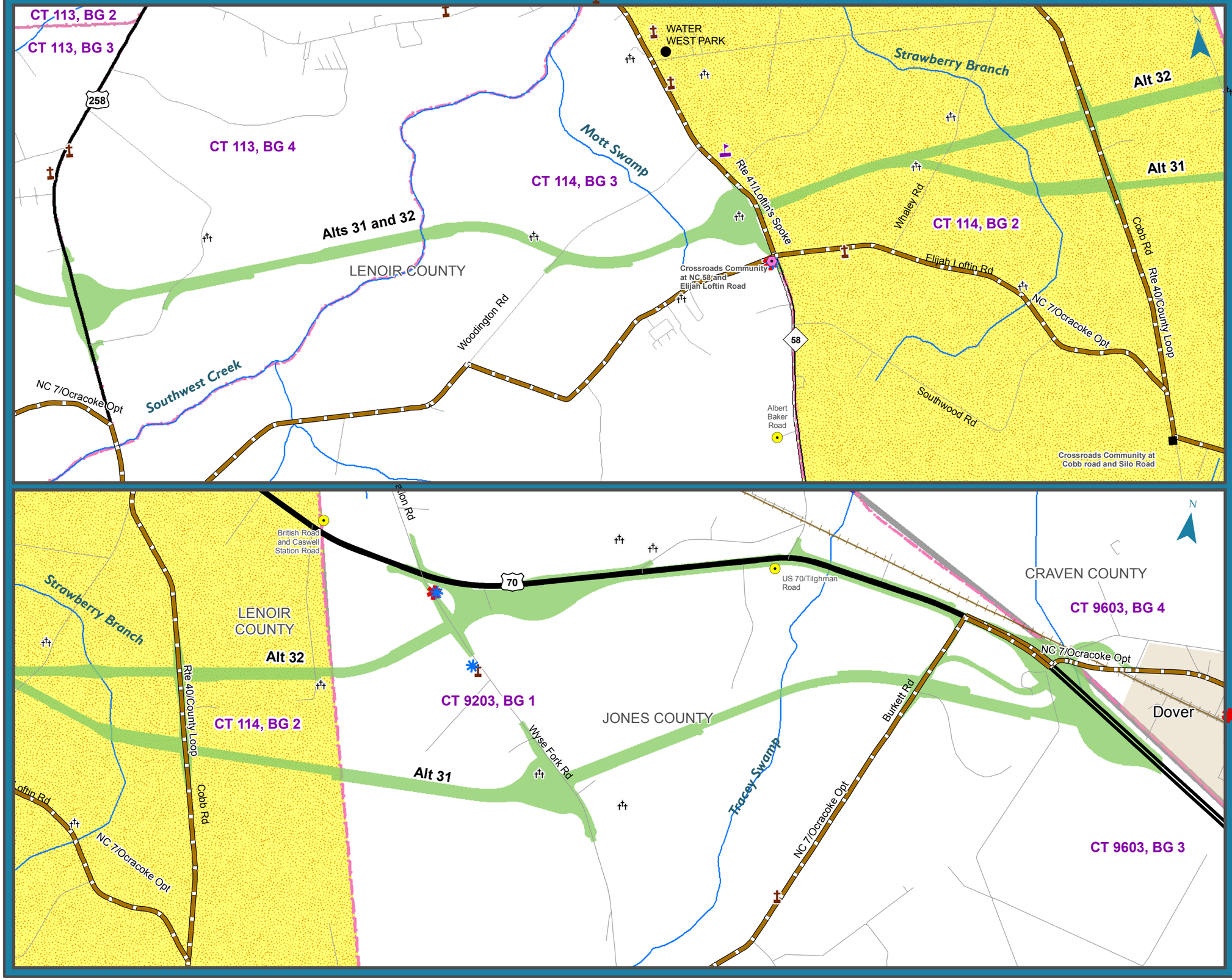


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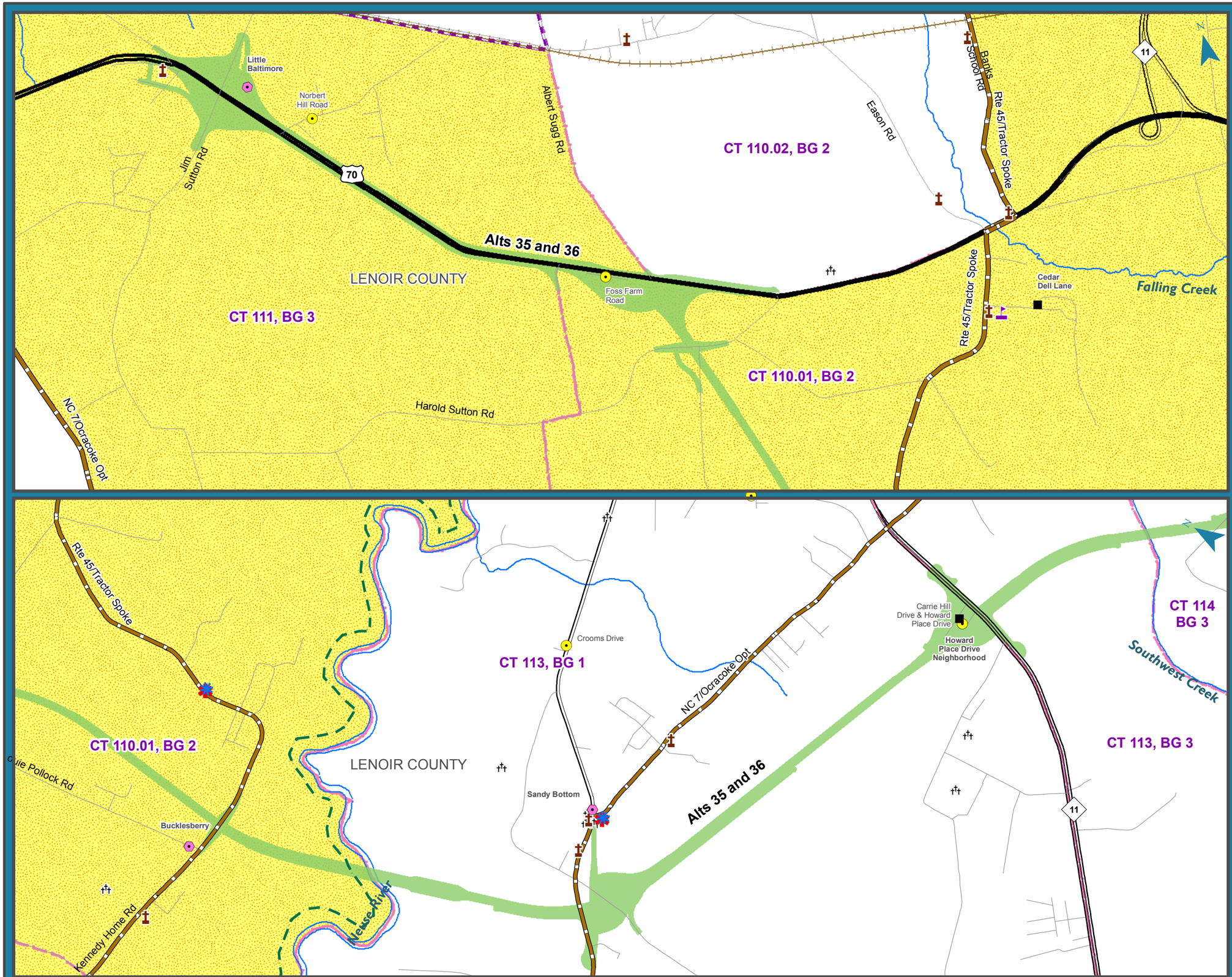
Figure 4-7: Community feature and environmental justce population impacts - Alternatives 35 and 36 - A

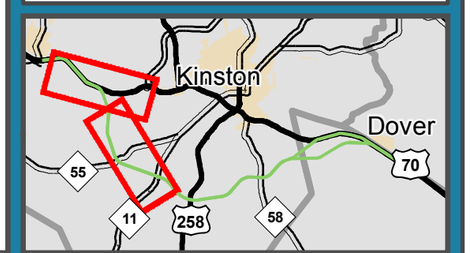


Legend

- Alts. 35 and 36 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Demographic Study Area
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



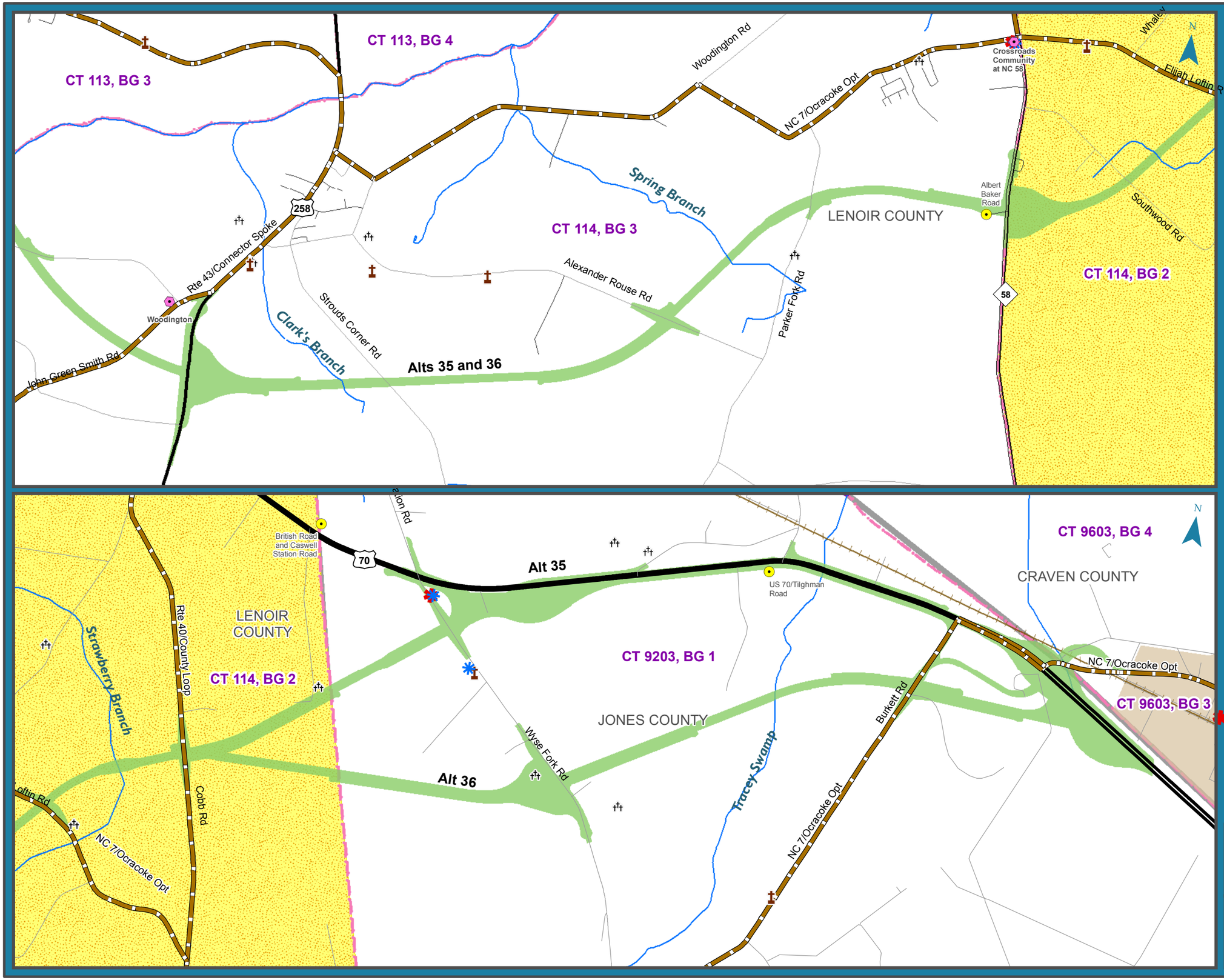


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Figure 4-8: Community feature and environmental justice population impacts - Alternatives 35 and 36 - B

Legend

- Alts. 35 and 36 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Demographic Study Area
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

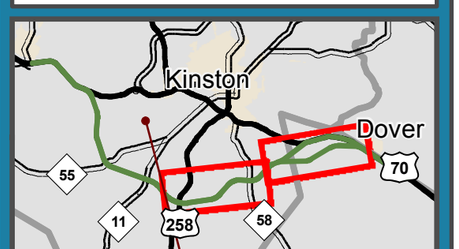

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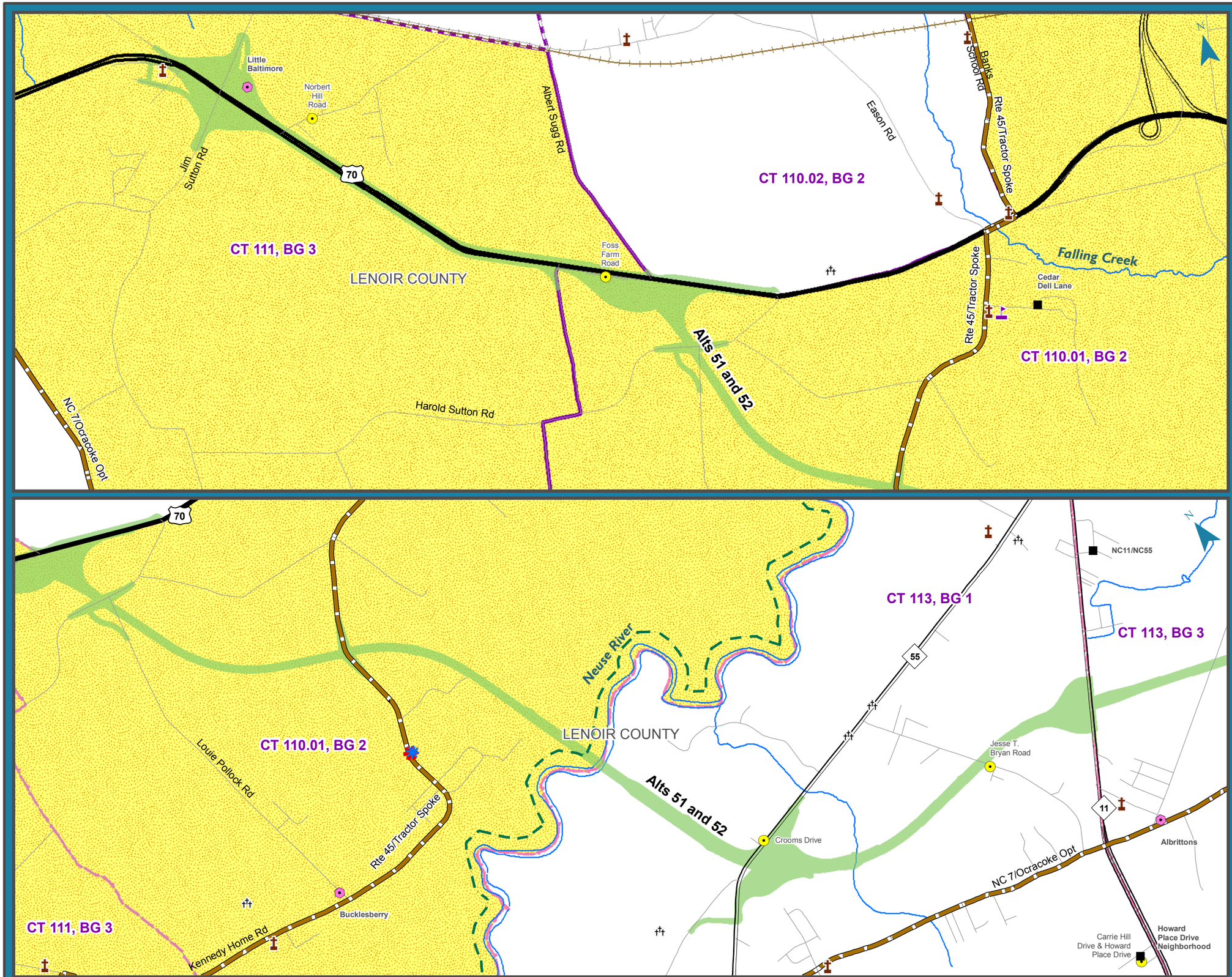
Figure 4-9: Community feature and environmental justice population impacts - Alternatives 51 and 52 - A



Legend

- Alts. 51 and 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Demographic Study
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

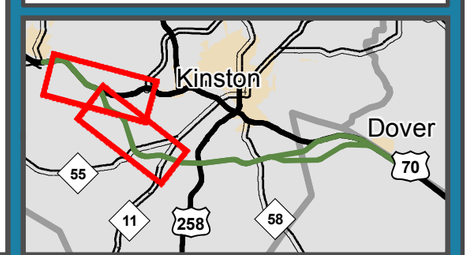


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Figure 4-10: Community feature and environmental justice population impacts - Alternatives 51 and 52 - B

CT 113, BG 2
Jackson Heights
258
CT 113, BG 4
CT 114, BG 3
WATER WEST PARK
58
CT 114, BG 2
Alt 52
Alt 51
Rte 41/Loftin's Spoke
Whaley Rd
Lonesome Pine Drive
Joe Nunn Rd
CT 113, BG 3
Alts 51 & 52
LENOIR COUNTY
Crossroads Community at NC 58
Elijah Loftin Rd
NC 7/Ocracoke Opt
Woodington Rd
Southwest Creek
Albert Baker Road
Southwood Rd
NC 7/Ocracoke Opt
British Road and Caswell Station Road
70
Alt 52
US 70/Tilghman Road
CT 9603, BG 4
CRAVEN COUNTY
LENOIR COUNTY
CT 9203, BG 1
JONES COUNTY
NC 7/Ocracoke Opt
CT 9603, BG 3
Strawberry Branch
Rte 40/County Loop
Cobb Rd
CT 114, BG 2
Alt 51
Wise Fork Rd
Tracey Swamp
NC 7/Ocracoke Opt Burkett Rd
NC 7/Ocracoke Opt

Legend

- Alts. 51 and 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Demographic Study
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

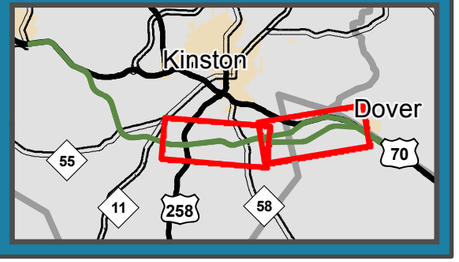

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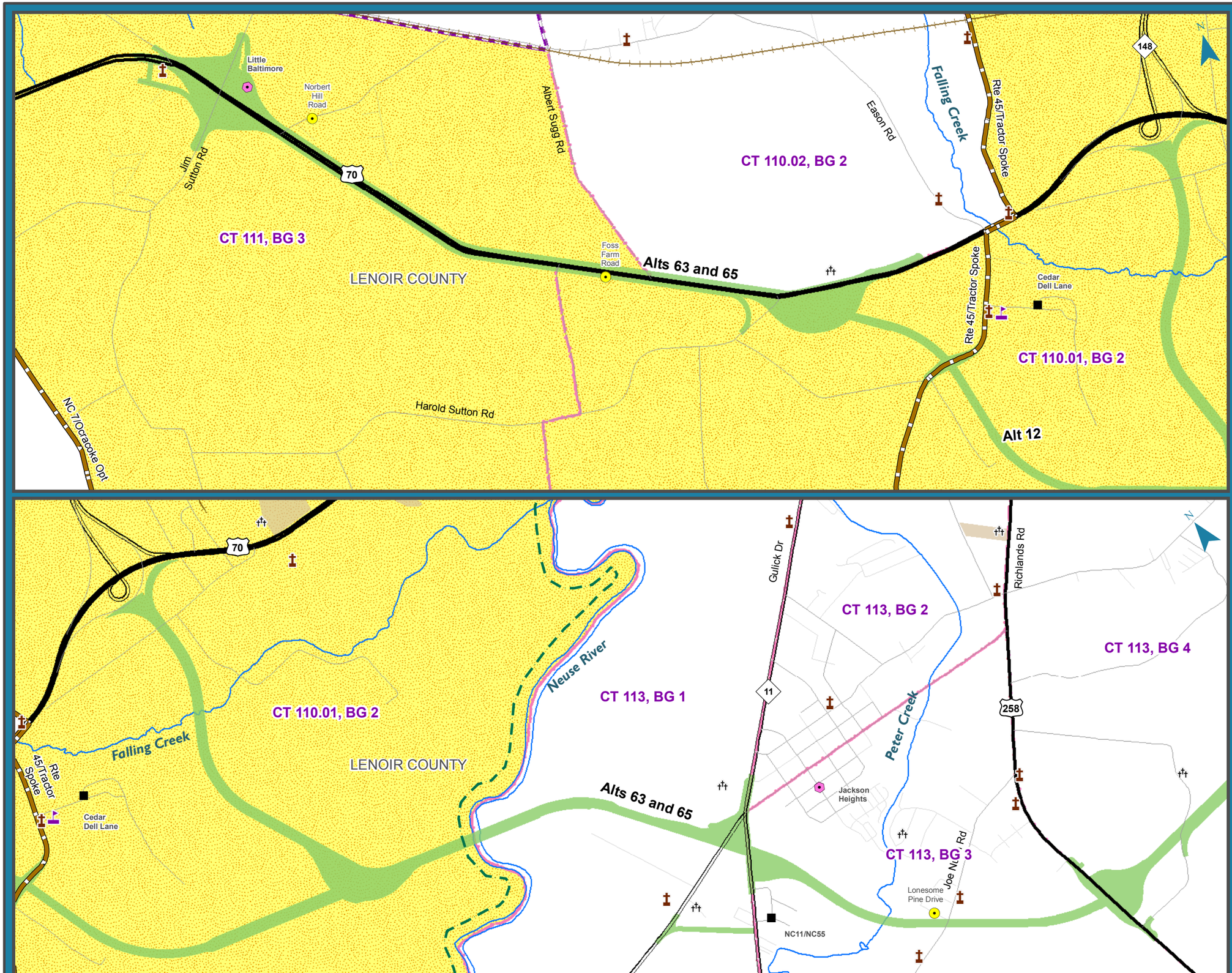
Figure 4-11: Community feature and environmental justice population impacts - Alternatives 63 and 65 - A



Legend

- Alts. 63 and 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Demographic Study Area
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

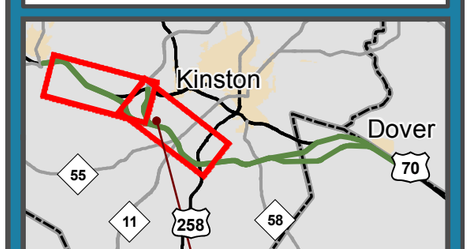


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Figure 4-12: Community feature and environmental justice population impacts - Alternatives 63 and 65 - B

CT 113, BG 2
Jackson Heights
258
Joe Nunn Rd
Lonesome Pine Drive
CT 113, BG 4
CT 114, BG 3
Mott Swamp
WATER WEST PARK
58
Rte 41/Loftin's Spoke
Strawberry Branch
Alt 63
Alt 65
Whaley Rd
Alts 63 and 65
LENOIR COUNTY
CT 113, BG 3
Woodington Rd
NC 7/Ocracoke Opt
Crossroads Community at NC 58 and Elijah Loftin Road
Elijah Loftin Rd
CT 114, BG 2
Southwest Creek
Albert Baker Road
Southwood Rd

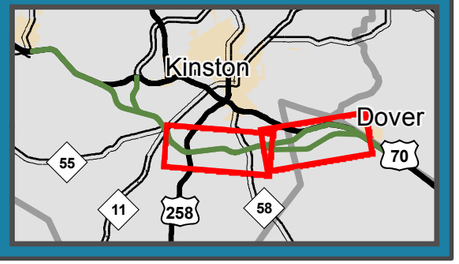
British Road and Caswell Station Road
70
Alt 63
US 70/Tilghman Road
CT 9603, BG 3
CRAVEN COUNTY
CT 114, BG 2
LENOIR COUNTY
CT 9023, BG 1
JONES COUNTY
Rte 40/County Loop
Strawberry Branch
Cobb Rd
Alt 65
Wise Fork Rd
Tracey Swamp
NC 7/Ocracoke Opt Burkett Rd
NC 7/Ocracoke Opt

Legend

- Alts. 63 and 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- EJ Communities
- Residential Areas
- USGS GNIS Community
- Parks
- Hospital
- Police or EMS
- Fire Station
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Demographic Study Area
- Block Group
- Block Group Above the Low-Income Threshold

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



4.2 RECREATION AREAS

Kinston Rotary Dog Park would be directly impacted by a proposed interchange at NC 11/55 and upgraded US 70 under Alternative 1UE. The Governor Richard Caswell Memorial Park is also located near Alternative 1UE and changes in access (temporary or permanent) are possible. The Woodmen of the World Lodge would also be directly impacted by Alternatives 1UE and 1SB.

Wyse Fork Battlefield would be crossed by Alternatives 1UE, 1SB, 12, 32, 35, 52, and 63. None of the DSAs would impact the sites associated with the First Battle of Kinston.

Given that the Kinston Bypass project will be a full-control of access freeway, there would be no bicycle or pedestrian accommodation on the actual roadway. However, the proposed action would impact existing bicycle and pedestrian facilities. Table 4-8 provides a summary of the level of impact to each crossing of a bicycle route by the DSAs. A small portion of existing US 70 from Whaley Road to British Road is designated as a bicycle route. If Alternative 1UE is selected, the bicycle route would need to be re-routed off US 70 since bicycles are not permitted on freeways.

It is recommended that the NCDOT coordinate with the NCDOT Bicycle and Pedestrian Division to evaluate the inclusion of bicycle/pedestrian facilities where the project crosses existing bicycle routes, as well as the necessary level of bicycle/pedestrian access accommodation during construction.

Table 4-8: Potential impacts to bicycle routes

Alternative	Tractor Spoke	County Loop	Connector Spoke	Loftin's Spoke	Ocracoke Option
1UE	A	A	N	T	N
1SB	A	A	N	T	N
11	A	T	N	T	A
12	A	T	N	T	A
31	T	T	N	T	N
32	T	T	N	T	N
35	T	T	A	N	T
36	T	T	A	N	T
51	T	T	N	T	N
52	T	T	N	T	N
63	T	T	N	T	N
65	T	T	N	T	N

Note: No Proposed Changes = N; Temporary Construction Impacts = T; Access Removed = A

4.3 COMPATIBILITY WITH LAND USE AND TRANSPORTATION

The compatibility of the project with local land use and transportation planning is assessed in this section. Consistency with land use plans is a factor when considering the scope and intensity of each DSA's impacts.

The proposed action is largely compatible with local public policy since it would meet the goals identified in the *Kinston Land Use Plan* (City of Kinston 2015) and the Lenoir County *Future Land Use Plan* (Lenoir County 2001). Kinston and Lenoir County are generally supportive of growth within the municipal limits of Kinston and supportive of the preservation of rural residential developments and agricultural lands outside of the municipal limits. The *Kinston Land Use Plan* identifies continued investment in transportation infrastructure as a policy to achieve the goals outlined in the plan. The Lenoir County *Future Land Use Plan* identifies transportation and corridor protection as both short-term and long-term strategies in order to reach plan goals, which include safe and efficient transportation, farming and rural landscape, economic development and job creation, and quality residential communities.

The Kinston Bypass project would not impact existing pedestrian facilities or planned future pedestrian projects outlined in the city's *Comprehensive Pedestrian Plan* (City of Kinston 2012).

Jones and Craven counties are supportive of growth, but also exhibit caution to protect the county's agricultural and natural resources and rural lifestyle while addressing the transportation needs of the county. The *Jones County Future Land Use Plan* indicates a desire for largely agricultural uses surrounding the eastern terminus of the proposed action (Jones County 2013).

Overall, the proposed action is compatible with the Jones County CTP (NCDOT 2016a) and is included as a four-lane, median-divided freeway on new location in the Kinston CTP (NCDOT 2011b).

4.4 CULTURAL RESOURCES

4.4.1 Historic Architectural Resources

Adverse effects are defined in 36 CFR 800 (Section 106) as occurring when an undertaking may alter, directly or indirectly, any of the characteristics of a historic architectural resource that qualify the historic architectural resource for inclusion in the NRHP in a manner that would diminish its integrity. Adverse effects can include destruction or alteration of the resource, isolation of the resource from its surrounding environment, and introduction of visual, audible, or atmospheric elements that are out of character with the architectural resource (36 CFR 800.5). As determined by the USACE, NCDOT, and the North Carolina HPO at an effects meeting on November 28, 2017, the Kinston Bypass project could have adverse effects on historic architectural resources as summarized in Table 4-9 (NCDOT 2017c, 2017d, 2018e). Figure 4-13 through Figure 4-24 depict possible effects to historic architectural resources. Avoidance, modification, and mitigation suggestions are included in the January 30, 2018 Concurrence Form for Assessment of Effects between NCDOT and North Carolina HPO found in Appendix E, section E-3, dated November 28, 2017. Once the applicant's preferred alternative is selected, measures to address and resolve adverse effects will be taken (36 CFR 800.6).

Section 106 Process

Historic properties or districts may qualify for protection under Section 106 of the National Historic Preservation Act of 1966. In order to receive protection, properties must be listed on the US Department of Interior's National Register of Historic Places or be deemed eligible for listing on the National Register. Local historic sites that are not eligible for listing may, in some cases, still be considered when locating new highways.

Table 4-9: Kinston Bypass historic architectural resource adverse effects by DSA

HPO Site #	Resource Name	Alternative											
		1UE	1SB	11	12	31	32	35	36	51	52	63	65
JN-0306	Wyse Fork Battlefield	X	X	--	X	--	X	X	--	--	X	X	--
LR-1203	Kelly's Millpond Site	--	--	--	--	--	--	--	--	--	--	--	--
LR-1197	Cobb-King-Humphrey House	X	X	--	--	--	--	--	--	--	--	--	--
LR-1550	Kelly's Pond Fire Lookout Tower	--	--	--	--	--	--	--	--	--	--	--	--
LR-1185	Wooten-Whaley House (John Council Wooten House)	--	--	O	O	O	O	O	O	O	O	O	O
LR-1186	Robert Bond Vause House	--	--	--	O	--	O	--	O	--	O	O	--
LR-0008	Dempsey Wood House	--	--	--	--	--	--	O	O	--	--	--	--
LR-1040	Croom Meeting House	--	--	--	--	--	--	X	X	--	--	--	--
LR-0927	James A. & Laura McDaniel House ("Maxwood")	--	--	--	--	X	X	--	--	--	--	O	O
LR-1189	Kennedy Memorial Home Historic District	--	--	O	O	X	X	--	--	--	--	X	X
LR-0001	Cedar Dell (Kennedy Memorial Home)	--	--	O	O	X	X	--	--	--	--	X	X
LR-0703	Dr. James M. Parrott House ("The Grove")	--	O	X	X	X	X	--	--	--	--	X	X
LR-0700	Henry Loftin Herring Farm	O	O	--	--	--	--	--	--	--	--	--	--
LR-0005	Jesse Jackson House	--	--	X	X	X	X	--	--	--	--	X	X

HPO Site #	Resource Name	Alternative											
		1UE	1SB	11	12	31	32	35	36	51	52	63	65
LR-1195	Elijah Loftin Farm (Mossy Oaks)	--	--	X	X	X	X	--	--	X	X	X	X

Source: NCDOT 2018e.

Note: X= Adverse Effects; O= No Adverse Effects; -- = No Effect

KINSTON BYPASS
DEIS | R-2553

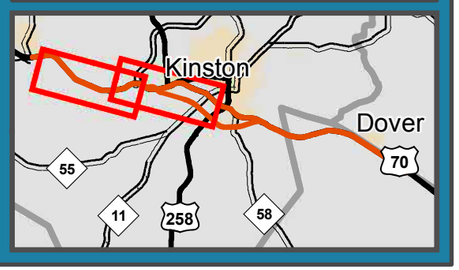
Figure 4-13: Historic architectural resource impacts - Alternatives 1UE and 1SB - A

Legend

- Alts 1UE and 1SB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefield

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



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DEIS | R-2553

Figure 4-14: Historic architectural resource impacts - Alternatives 1UE and 1SB - B

Legend

- Alts 1UE and 1SB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

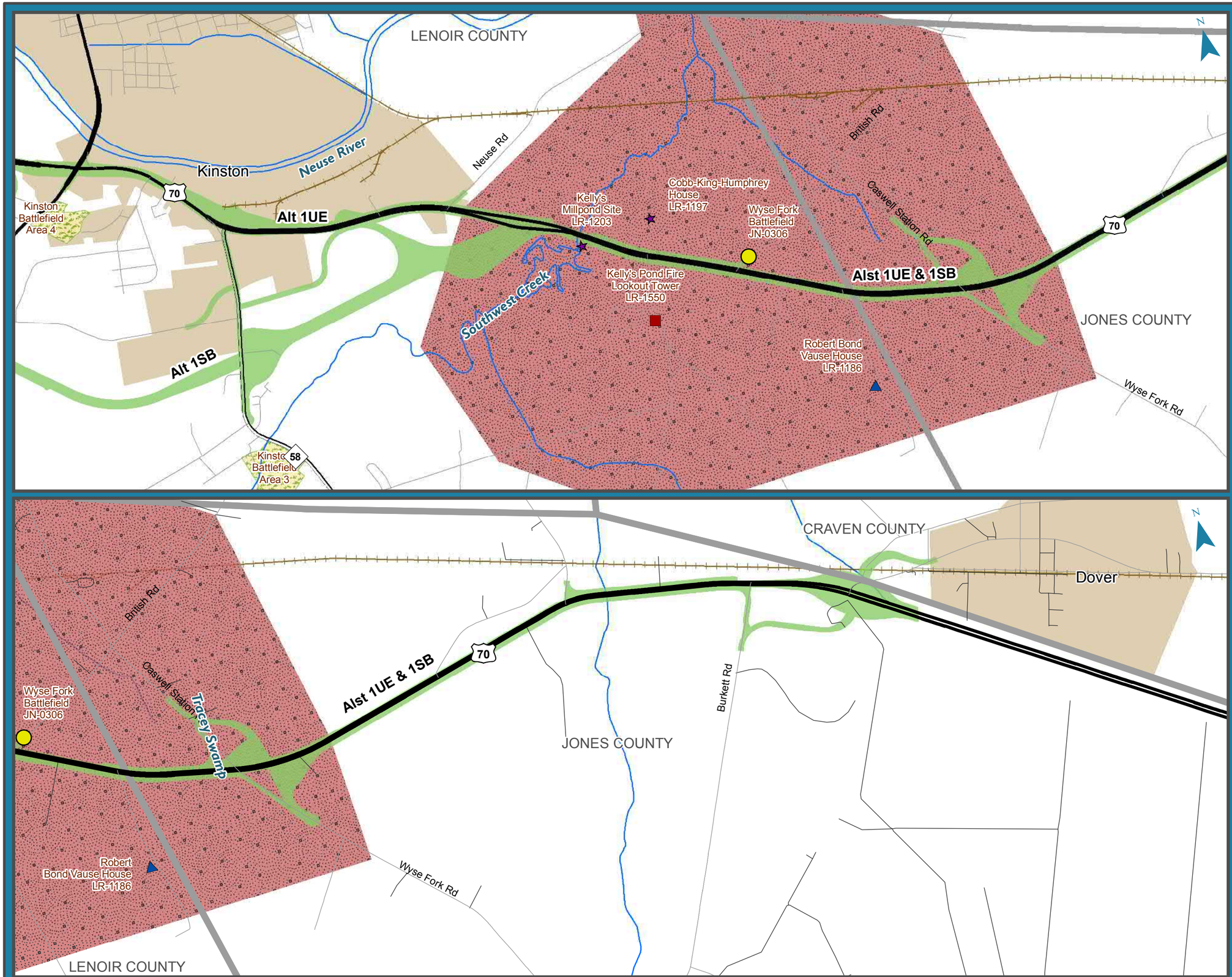

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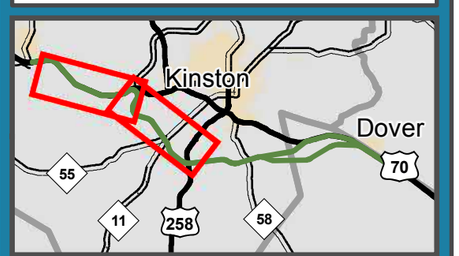
Figure 4-15: Historic architectural resource impacts - Alternatives 11 and 12 - A

Legend

- Alts. 11 and 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



70 KINSTON BYPASS DEIS | R-2553

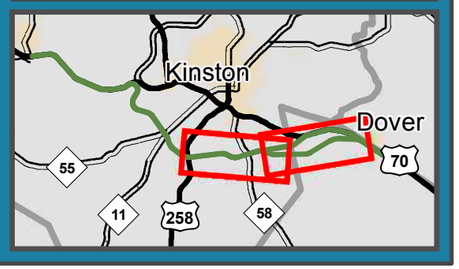
Figure 4-16: Historic architectural resource impacts - Alternatives 11 and 12 - B

Legend

- Alts. 11 and 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

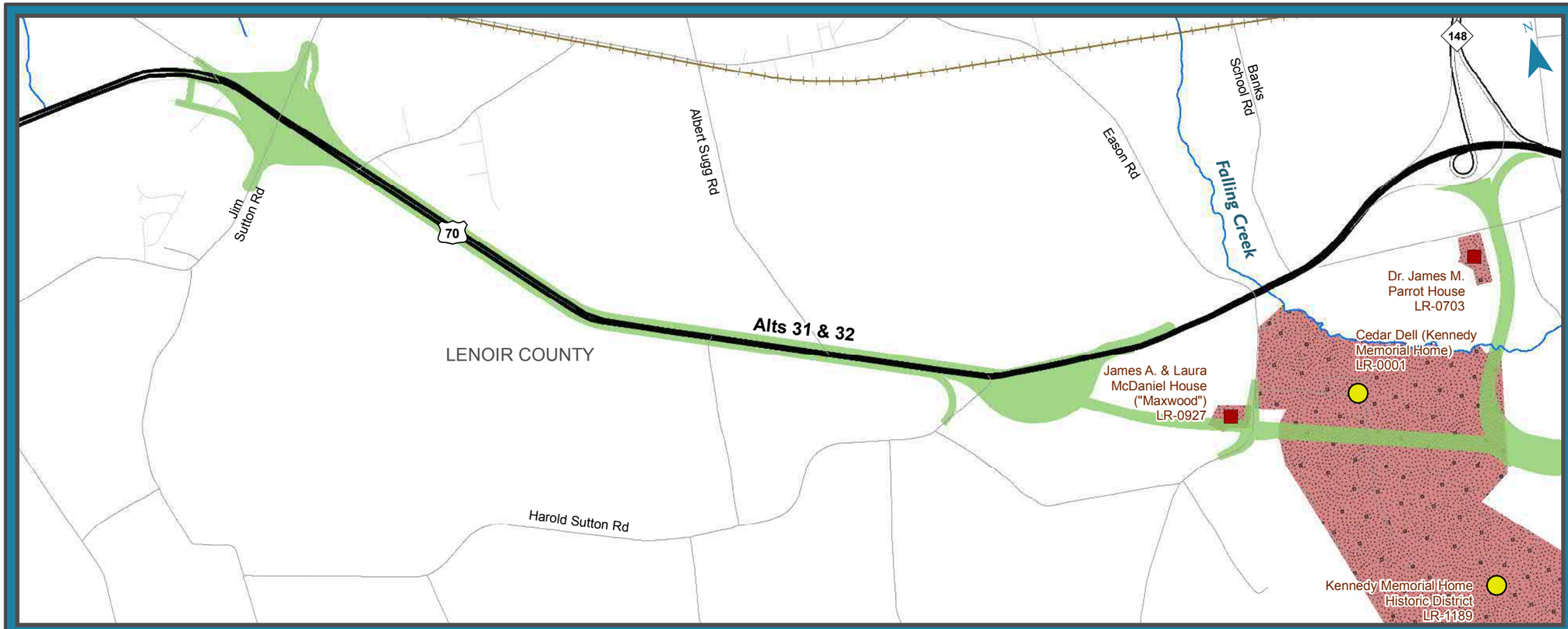
This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

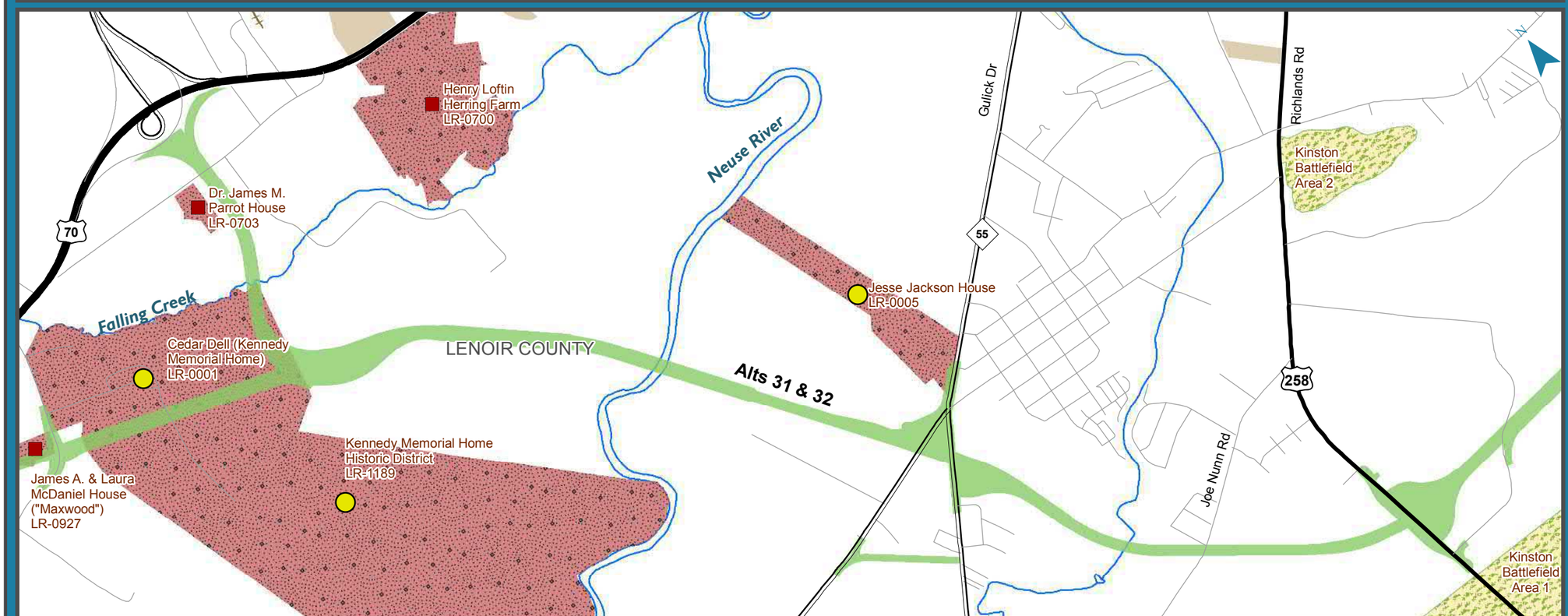


Kinston Battlefield Area 2
Kinston Battlefield Area 3
Kinston Battlefield Area 1
Robert Bond Vause House LR-1186
Wooten-Whaley House (John Council Wooten Hose) LR-1185
Elijah Loftin Farm (Mossy Oaks) LR-1195
Alt 12
Alt 11
Alts 11 & 12
LENOIR COUNTY
CRAVEN COUNTY
JONES COUNTY
Dover
Whaley Rd
Elijah Loftin Rd
Cobb Rd
Woodington Rd
Southwood Rd
Burkett Rd
Wyse Fork Rd
Southwest Creek
Strawberry Branch
258
58
70
N

KINSTON BYPASS
DEIS | R-2553

Figure 4-17: Historic architectural resource impacts - Alternatives 31 and 32 - A



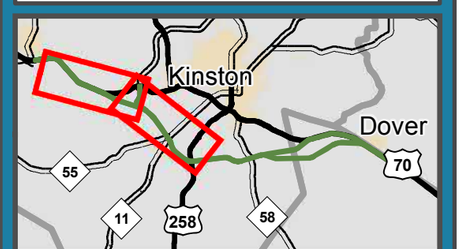


Legend

- Alt. 31 and 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



70 KINSTON BYPASS DEIS | R-2553

Figure 4-18: Historic architectural resource impacts - Alternatives 31 and 32 - B

Legend

- Alts. 31 and 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefield

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

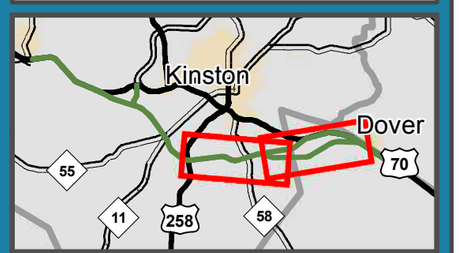


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Figure 4-19: Historic architectural resource impacts - Alternatives 35 and 36 - A

Legend

- Alts. 35 and 36 ROW
- Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

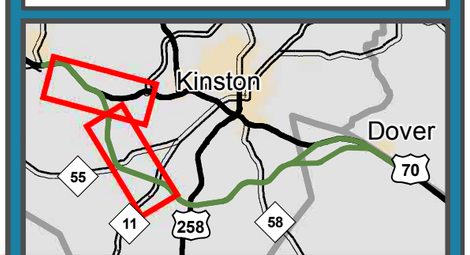

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Figure 4-20: Historic architectural resource impacts - Alternatives 35 and 36 - B

Legend

- Alts. 35 and 36 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

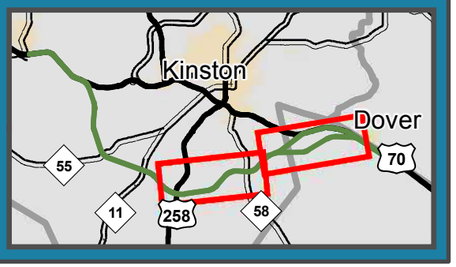

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Figure 4-21: Historic architectural resource impacts - Alternatives 51 and 52 - A

Legend

- Alts. 51 and 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

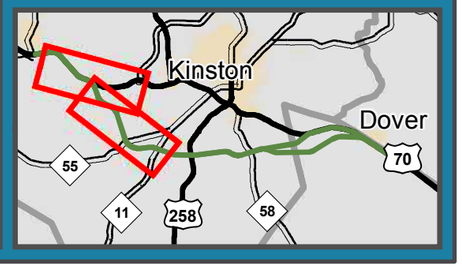

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Figure 4-22: Historic architectural resource impacts - Alternatives 51 and 52 - B

Legend

- Alts. 51 and 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

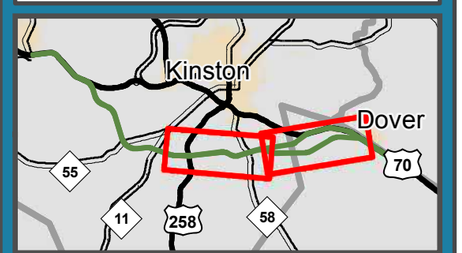

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Figure 4-23: Historic architectural resource impacts - Alternatives 63 and 65 - A

Legend

- Alts. 63 and 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

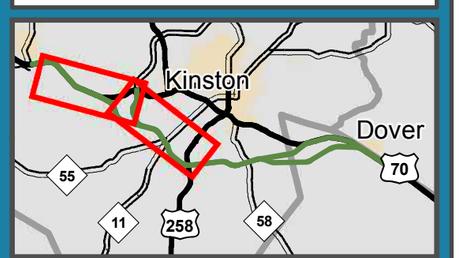

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Figure 4-24: Historic architectural resource impacts - Alternatives 63 and 65 - B

Legend

- Alts. 63 and 65 ROW
- Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NRHP Listed Resource
- Resource Determined NRHP Eligible (DOE)
- Contributing Resource to Wyse Fork Battlefield
- Contributing Resource to Wyse Fork Battlefield and DOE
- Historic Property Boundary
- First Battle of Kinston Battlefields

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

4.4.2 Archaeological Resources

Based on the October 2017 update of the archaeological predictive model results, the following summarizes potential impacts to high- and low-probability areas (Table 4-10). Of the 12 DSAs under consideration, Alternatives 1UE, 1SB, 12, 32, and 63 have the most potential to encounter and affect archaeological resources. Conversely, Alternatives 35, 36, 51, and 65 have the least potential to affect archaeological resources (NCDOT 2017g). The five sites associated with the First Battle of Kinston are not anticipated to be impacted by any of the DSAs.

Archaeological field work will be conducted once the applicant's preferred alternative is selected.

Table 4-10: Archaeological probability for Kinston Bypass DSAs

Alternative	High Probability (acres)	High Probability (%)	Low Probability (acres)	Low Probability (%)	Total (acres)
1SB	1,132	64.5	624	35.5	1,756
12	771	55.4	622	44.6	1,393
32	736	54.7	610	45.3	1,346
1UE	842	53.2	742	46.8	1,584
63	703	50.5	688	49.5	1,391
52	687	49.9	691	50.1	1,378
11	654	47.7	716	52.3	1,369
31	606	46.2	707	53.8	1,313
65	558	41.4	791	58.6	1,349
51	513	39.9	773	60.1	1,286
35	635	39.9	957	60.1	1,593
36	563	37.7	929	62.3	1,491

Source: NCDOT 2017g

Note: Sorted (descending) by high probability percentage.

4.5 VISUAL QUALITY AND AESTHETICS

Visual impacts to the rural and agricultural landscape are likely to result along the corridors that predominantly traverse agricultural land.

The design of the project's mainline, interchanges, and crossings of roadways, railways, and waterways dictates the project be constructed above grade. Portions of Alternative 1SB would be elevated over the floodplain, and other DSAs would include areas where the mainline crosses over secondary roads or railroads. Due to the region's flat terrain, elevated portions of the roadway would be highly visible to those living within the view sheds. In wooded areas or locations with a built environment, the view sheds are already obstructed by buildings, trees, and

other structures, and thus the proposed action would not have as much of an adverse impact to the view shed. Agricultural zones and low density residential areas with low levels of development and relatively clear view shed would have a higher degree of visual impacts. These types of areas are more associated with Alternatives 11, 12, 31, 32, 35, 36, 51, 52, 63, and 65 as opposed to Alternatives 1UE and 1SB. The highway will be landscaped to improve the aesthetic quality of the view shed.

In general, visual quality would be enhanced or improved for those using the highway and degraded for those viewing the highway from surrounding communities. The proposed action would provide motorists opportunities for scenic views across agricultural fields, the Neuse River, and forested areas, which would be a positive effect. In the urban settings, visual impacts are still possible, but the project context is more in line with urban land uses and would likely be in context to the surrounding areas.

Additional lighting near the transportation nodes where there are interchanges could be noticeable in rural areas where it is currently absent. Context sensitive designs will be used in areas along the applicant's preferred alternative where visual/aesthetic impacts are likely.

4.6 NATURAL RESOURCES

4.6.1 Geology, Topography, Soils

No major changes to geology or topography are anticipated as a result of any of the DSAs or the No-Build Alternative. Bridge structures and grade separations may require some fill or excavation to topography in the vicinity of the larger stream and wetland systems. Otherwise, it is anticipated that existing elevations would be maintained along the remainder of the routes.

Soil properties along the applicant's preferred alternative could affect the final engineering design of the proposed action. The most common soil limitations within the project study area include poor drainage, high water table, susceptibility to flooding, and loose, sandy soils. Soil borings will be taken after selection of the applicant's preferred alternative to inform the design. There are no soils impacts associated with the No-Build Alternative.

Best management practices and sediment and erosion control plans will be implemented to minimize soil compaction and erosion outside of the construction area as required and to the extent practicable.

4.6.2 Surface Water and Water Quality

Stormwater runoff from roadways carries materials that can degrade water quality and aquatic habitat integrity, such as silt, heavy metals, petroleum products, nitrogen, and phosphorous. The effects on water quality vary based on the size of the waterways crossed, the number of such crossings, and the season of construction. Streams with low flow are more severely impacted since they have less volume to dilute the runoff.

Soil erosion and sedimentation may cause short-term impacts to water quality within the project area and, if uncontrolled, could potentially destroy aquatic algae, eliminate benthic (bottom dwelling) macroinvertebrate habitat, eradicate fish-spawning habitat, and remove food sources for many stream species. Potential impacts will be considered for the communities where construction activities would occur as well as downstream communities. Long-term impacts on

water quality are possible due to the particulates, heavy metals, organic matter, pesticides, herbicides, nutrients, and bacteria that can be found in highway runoff.

The following are potential impacts to water resources that could occur in any of the DSAs:

- Increased sediment loading and siltation as a consequence of watershed vegetation removal, erosion, and/or construction
- Decreased light penetration/water clarity from increased sedimentation
- Changes in water temperature due to vegetation removal
- Changes in the amount of available organic matter due to vegetation removal
- Increased concentration of toxic compounds from highway runoff, construction activities and equipment, and spills from construction equipment
- Alteration of water levels and flows as a result of interruptions and/or additions to surface water and groundwater flow from construction

In accordance with the North Carolina Sedimentation Pollution Control Act of 1973 (GS Chapter 113A, Art. 4), as amended, and NCAC Title 15A, Chapter 4 (Sedimentation Control), an erosion and sedimentation control plan must be prepared for land-disturbing activities that cover one or more acres to protect against runoff from a 10-year storm.

An erosion and sedimentation control plan will be developed for the applicant's preferred alternative prior to construction. The plan will be prepared in accordance with the NCDENR publication *Erosion and Sediment Control Planning and Design Manual* (NCDENR 2006) and the NCDOT's *Best Management Practices for Protection of Surface Waters* (NCDOT 1997).

The *Standard Specifications for Roads and Structures* requires proper handling and use of construction materials and loose, sandy, or organic soils (NCDOT 2012c). The contractor will be responsible for taking every reasonable precaution throughout the construction of the project to prevent the pollution of any body of water. The contractor also will be responsible for preventing soil erosion and stream siltation.

There are no streams with Primary Nursery Area, Outstanding Resource Waters, or High Quality Waters designations within the NRTR study area. The DSAs would not impact any designated Shellfish Growing Area waters.

Impacts to each stream channel are discussed further in section 4.7.2. Portions of the Neuse River and Falling Creek contain AFSA. The Neuse River also contains IPNA. Portions of the Neuse River, Bear Creek, and Squirrel Creek are part of a water supply watershed and designated as WS-IV, meaning they occur in a highly developed water supply watershed (NCDEQ 2017a). None of the DSAs would result in any impacts to AFSA and IPNA. As discussed in the NRTR, Alternatives 35 and 36 would each result in impacts to streams within a WS-IV watershed. The No-Build Alternative is not anticipated to impact water quality.

4.6.3 Biotic Resources

4.6.3.1 Terrestrial Communities

Terrestrial communities in the NRTR study area would be impacted by project construction as a result of clearing of vegetation, grading, and paving. Impacts to terrestrial communities are shown in Table 4-11. The No-Build Alternative would not impact terrestrial communities.

Table 4-11: Impacts to terrestrial communities

Alternative	Maintained/ Disturbed	Agriculture	Pine Plantation	Forested Upland	Palustrine Wetland	Open Water	Total
Alt 1 UE (acres)	706.2	317.9	73.0	21.5	98.3	3.5	1220
Alt 1SB (acres)	516.6	507.9	148.5	25.3	97.4	13.7	1309
Alt 11 (acres)	264.2	672.2	246.7	28.0	98.2	3.9	1313
Alt 12 (acres)	346.3	689.6	193.0	19.9	86.6	2.3	1338
Alt 31 (acres)	242.3	664.6	242.6	27.9	97.0	3.9	1278
Alt 32 (acres)	324.3	682.3	188.7	19.7	85.4	2.3	1303
Alt 35 (acres)	312.7	714.1	265.3	29.7	117.3	4.0	1443
Alt 36 (acres)	230.1	699.9	305.1	38.0	130.7	5.6	1409
Alt 51 (acres)	214.9	637.3	266.1	34.2	115.1	5.6	1273
Alt 52 (acres)	297.6	655.6	212.4	26.0	103.5	4.0	1299
Alt 63 (acres)	315.5	667.8	211.3	19.4	114.8	4.3	1333
Alt 65 (acres)	232.8	648.9	265.1	27.6	126.3	5.9	1307

Note: Impacts were calculated using right-of-way limits of the functional designs.

4.6.3.2 Wildlife

Terrestrial communities found along the DSAs serve as shelter, nesting, and foraging habitat for numerous species of wildlife. Any of the DSAs would result in direct impact to both natural and altered terrestrial communities through clearing of vegetation, grading, and paving. The forested upland and palustrine wetland community types provide relatively undisturbed forest and aquatic habitat for wildlife.

4.6.3.3 Invasive Species

Trucks and heavy equipment associated with project construction may introduce or transport seeds from terrestrial, non-native vegetation, resulting in colonization of existing or newly created vacant spaces with exotic vegetation. Impacts could occur during cut-and-fill and temporary or permanent clearing within the limits of the proposed construction. The No-Build Alternative would not result in any invasive species impacts.

Species that appear on the NCDOT Invasive Exotic Plant List for North Carolina (NCDOT 2012b) will be identified and their presence noted, where applicable, during field investigations once the applicant's preferred alternative is selected.

4.6.4 Aquatic Resources

Aquatic communities found along the DSAs include habitats ranging from small, intermittent brownwater tributaries, to large perennial slow-moving bottomland hardwood systems. These communities support various fish, reptile, and amphibian species, as well as mollusks and crustaceans. Any of the DSAs would result in direct impact to the aquatic communities they cross through clearing of vegetation, grading, and paving. Due to the fact that extensive field investigations did not take place during the development of the NRTR, data on aquatic species are limited to field visits conducted during verification of model data, other brief field activities, and landowner accounts. A list of aquatic species that could be expected to be present is provided in Appendix F. Aquatic wildlife that were directly observed or determined to be present through evidence during field visits or landowner accounts are indicated with an asterisk (*) in Appendix F.

4.6.5 Protected and Conservation Lands

4.6.5.1 Hazard Mitigation Grant Program Properties

NCDOT began coordination with FHWA, FEMA Region IV, and NCDEM in December 2013 to develop a plan to address potential impacts to HMGP properties from the proposed action. Potential impacts were disclosed and HMGP compliance strategies were discussed. The coordination resulted in a three-phased approach that will be used to maintain contact with and provide project updates to FEMA and NCDEM throughout the project development and decision-making phase. Phase I of this approach has been completed, and consisted of a coordination meeting that reviewed the project alternatives screening process. Phase II will occur after the selection of the applicant's preferred alternative and Phase III will occur during the 30 percent hydraulic review phase of the design process (NCDOT 2014).

Only Alternatives 1UE and 1SB would impact HMGP properties. Alternative 1UE would impact all or a portion of 21 properties, totaling 21.7 acres. Alternative 1SB would impact all or a portion of 54 properties, totaling 20.9 acres. Impacts to the properties would not occur at proposed bridge locations. The No-Build Alternative would not impact HMGP properties.

Impacts to HMGP properties will be avoided and minimized to the extent practicable during final project design. NCDOT's coordination with FHWA, FEMA, and NCDEM will ensure that any impacts will be mitigated to the fullest extent practicable.

4.6.5.2 North Carolina Natural Heritage Program Managed Areas

Only four of the DSAs would have permanent impacts to NCNHP managed areas. Permanent impacts to NCNHP managed areas are shown in Table 4-12. Figure 4-25 through Figure 4-36 show the potential impacts to NCNHP resources. The No-Build Alternative would not impact NCNHP managed areas.

Table 4-12: Impacts to NCNHP managed areas

Alternative	Caswell Research Farm	NC Coastal Land Trust Preserve	NCDMS Easement	CSS Neuse & Governor Caswell Memorial	Total
Alt 1 UE (acres)	3.5	2.3	--	0.2	6
Alt 1SB (acres)	--	2.3	--	--	2.3
Alt 11 (acres)	--	--	--	--	--
Alt 12 (acres)	--	--	--	--	--
Alt 31 (acres)	--	--	6.1	--	6.1
Alt 32 (acres)	--	--	6.1	--	6.1
Alt 35 (acres)	--	--	--	--	--
Alt 36 (acres)	--	--	--	--	--
Alt 51 (acres)	--	--	--	--	--
Alt 52 (acres)	--	--	--	--	--
Alt 63 (acres)	--	--	--	--	--
Alt 65 (acres)	--	--	--	--	--

Note: Impacts were calculated using right-of-way limits of the functional designs.

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Figure 4-25: NCNHP and mitigation resource impacts - Alternatives 1UE and 1SB - A

Legend

- Alts 1UE and 1SB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

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Figure 4-26: NCNHP and mitigation resource impacts - Alternatives 1UE and 1SB - B

Legend

- Upgrade Existing Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- State Road
- Local Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

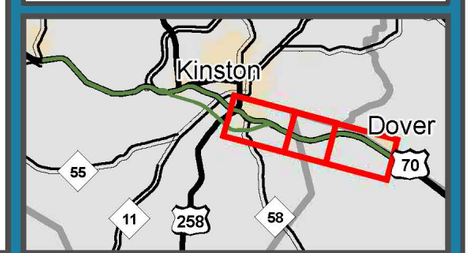

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Figure 4-27: NCNHP and mitigation resource impacts - Alternatives 11 and 12 - A

Legend

- Alts. 11 and 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

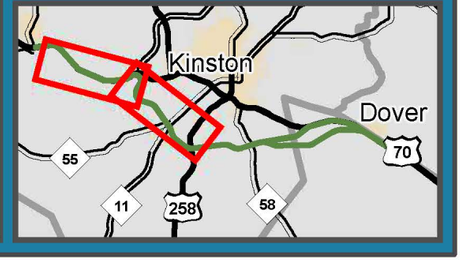

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Figure 4-28:
NCNHP and mitigation resource impacts - Alternatives 11 and 12 - B

Legend

- Alts. 11 and 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

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Figure 4-29: NCNHP and mitigation resource impacts - Alternatives 31 and 32 - A

Legend

- Alt. 31 and 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

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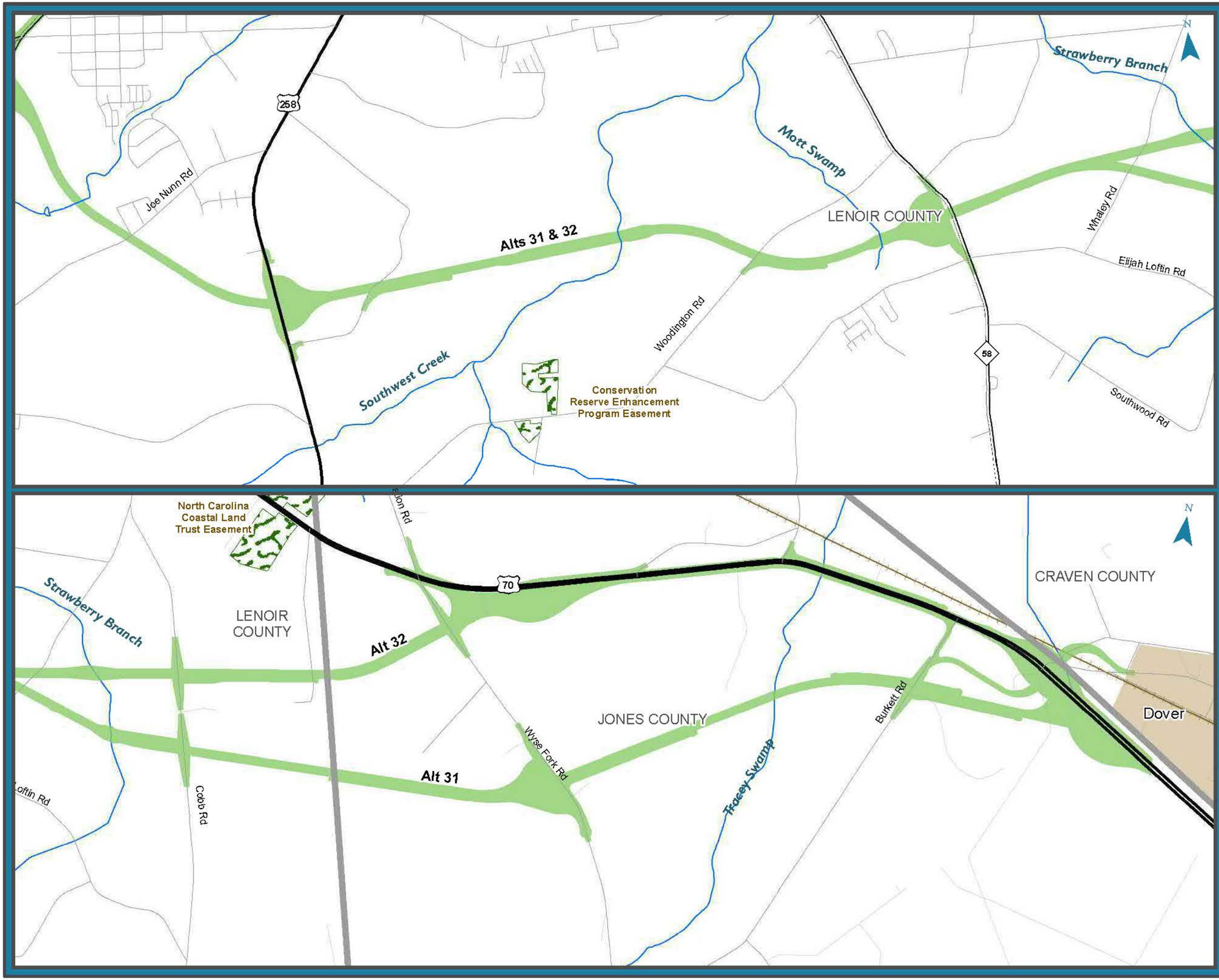
DEIS | R-2553

Figure 4-30: NCNHP and mitigation resource impacts - Alternatives 31 and 32 - B



Legend

- Alts. 31 and 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Local Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

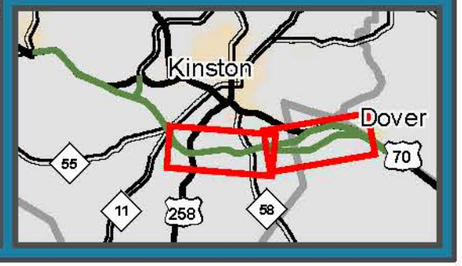


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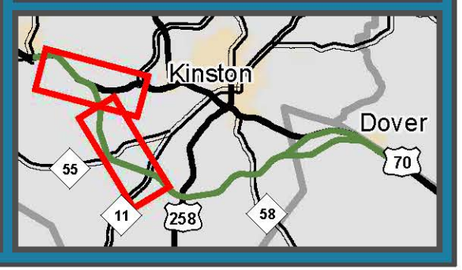
Figure 4-31: NCNHP and mitigation resource impacts - Alternatives 35 and 36 - A

Legend

- Alts. 35 and 36 ROW
- Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- State Road
- Local Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



70 KINSTON BYPASS DEIS | R-2553

Figure 4-32: NCNHP and mitigation resource impacts - Alternatives 35 and 36 - B

Legend

- Alts. 35 and 36 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

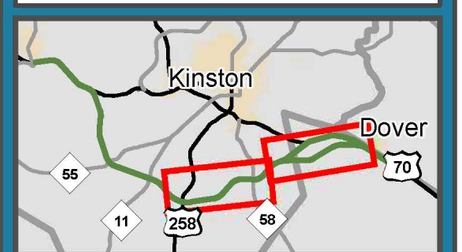


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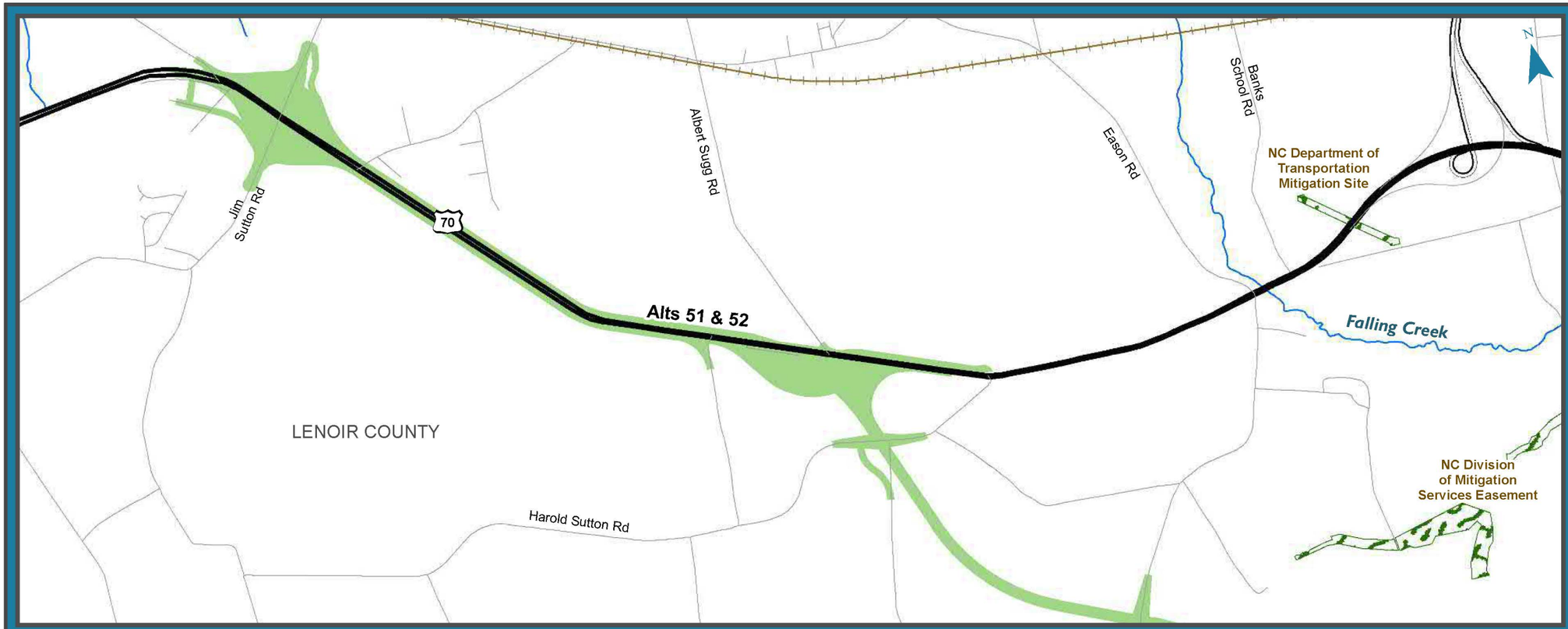
Figure 4-33: NCNHP and mitigation resource impacts - Alternatives 51 and 52 - A



Legend

- Alts. 51 and 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Local Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

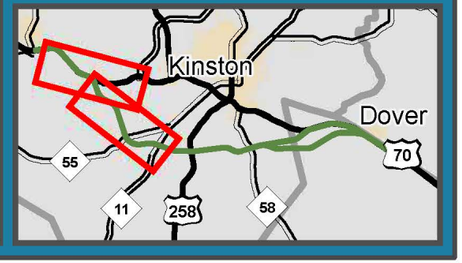


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Figure 4-34: NCNHP and mitigation resource impacts - Alternatives 51 and 52 - B

Legend

- Alts. 51 and 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NHP Natural
- NHP Managed

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

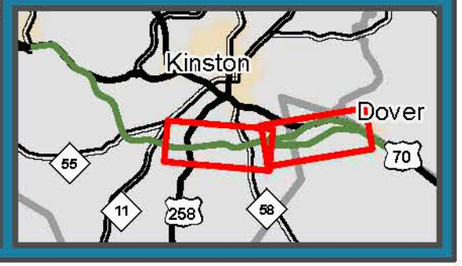

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Figure 4-35: NCNHP and mitigation resource impacts - Alternatives 63 and 65 - A

Legend

- Alts. 63 and 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

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DEIS | R-2553

Figure 4-36: NCNHP and mitigation resource impacts - Alternatives 63 and 65 - B

Legend

- Alts. 63 and 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- NHP Natural Areas
- NHP Managed Areas

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

The Caswell Research Farm is an agricultural research station owned by the North Carolina Department of Agriculture. The station has 1,259 acres, 150 acres of which are used for field crops and 20 acres of which are used for infrastructure. Woodlands cover 424 acres, and the remaining 700 acres are used for rotational purposes. The primary purpose of the research station is to provide resources in the form of land, equipment, personnel, expertise, labor, facilities, and irrigation to research scientists conducting field research studies on agricultural crops (NCDA&CS 2017). Alternative 1UE would impact 3.5 acres of the Caswell Research Farm. The impact would occur along the edge of one of its planted fields. It would not bisect the property.

The North Carolina Coastal Land Trust Preserve is an 80-acre agricultural preservation located east of British Road, both north and south of existing US 70. The easement is composed primarily of open agricultural fields. Alternatives 1UE and 1SB would each impact 2.3 acres of agricultural fields within the North Carolina Coastal Land Trust Easement. These impacts are located directly adjacent to existing US 70, on both the north and south sides of the highway.

The NCDMS Easement is the conservation easement associated with the Goodman Property Stream Restoration Project, located off Pruitt Road in Kinston. The project contains 632 acres of conservation easement along 4,325 linear feet of restored stream along Swamp Run and 3,205 linear feet of preserved stream along Swamp Run. Swamp Run is a tributary to Falling Creek, just upstream of the Neuse River floodplain. The main goal of the project was to restore traditional pattern and profile to the tributary and remove historic channelization associated with adjacent agricultural activities (NCDENR 2010). Alternatives 31 and 32 would each impact 6.1 acres of the Goodman Property Stream Restoration Project and conservation easement. A portion of the impact would be in the preservation area, and two other portions would be across the restoration reaches. The alignments would bisect the top reach of one of the restoration reaches.

Alternative 1UE would impact a portion of the CSS Neuse/Governor Caswell Memorial State Historic Site near the southern boundary of the property that is adjacent to existing US 70 and the Neuse River.

4.6.5.3 NCNHP Natural Areas

Only Alternatives 1UE and 1SB would have permanent impacts to NCNHP natural areas. Alternatives 1UE and 1SB would impact 0.7 and 1.0 acres, respectively, of the privately-owned Kelly's Pond Natural Area. The NCNHP natural areas described in section 3.6.5.3 are located along the boundary of the project study area, well outside of the limits of construction, and would not be impacted by any of the DSAs. Figure 4-25 through Figure 4-36 show the potential impacts to NCNHP resources. The No-Build Alternative would not impact NCNHP natural areas.

4.6.5.4 NCDOT On-Site Mitigation Properties

Only Alternatives 11 and 12 would have permanent impacts to NCDOT on-site mitigation properties. Alternatives 11 and 12 would have 0.4 acre of impact to the easement associated with the Banks School Road Stream Restoration project. Figure 4-25 through Figure 4-36 show the potential impacts to mitigation properties. The No-Build Alternative would not impact NCDOT on-site mitigation properties.

4.6.6 Threatened and Endangered Species

As of October 4, 2018, the USFWS lists three federally protected species for Lenoir County; as of April 25, 2018, nine federally protected species for Craven County; and as of June 27, 2018, three federally protected species for Jones County (USFWS 2018a, 2018b, 2018c). These species are shown in Table 4-13. A brief description of each species' habitat requirements follows. Habitat requirements for each species are based on the best available information from referenced literature and/or USFWS.

Table 4-13: Federally protected species effects

Scientific Name	Common Name	Federal Status[a]	County	Biological Conclusion
Alligator mississippiensis	American alligator	T(S/A)	Craven, Jones	Not Required
Acipenser oxyrhynchus oxyrhynchus	Atlantic sturgeon	E	Lenoir, Craven, Jones	Not Required
Chelonia mydas	Green sea turtle	T	Craven	No Effect
Dermochelys coriacea	Leatherback sea turtle	E	Craven	No Effect
Picoides borealis	Red-cockaded woodpecker	E	Lenoir, Craven, Jones	Unresolved
Trichechus manatus	West Indian manatee	E	Craven	No Effect
Lysimachia asperulaefolia	Rough-leaved loosestrife	E	Craven	No Effect
Aeschynomene virginiana	Sensitive joint-vetch	T	Lenoir, Craven	No Effect
Calidris canutus rufa	Rufa red knot	T	Craven	No Effect
Myotis septentrionalis	Northern long-eared bat	T	Lenoir, Craven, Jones	MALAA[b]

[a] E – Endangered; T – Threatened; T(S/A) – Threatened Due to Similarity in Appearance

[b] MALAA: May affect, likely to adversely affect

In 2013, representatives from Weyerhaeuser and the North Carolina Forest Service were contacted to obtain information pertaining to RCW habitat and presence on their lands within the project study area. Statements were obtained and summarized in the 2017 NRTR. Through coordination with the USFWS, it was determined that once the applicant's preferred alternative is selected, NCDOT should request specific stand information from both Weyerhaeuser and the North Carolina Forest Service to confirm that conditions have not changed. Formal surveys for RCW will be conducted once the applicant's preferred alternative is selected.

Field investigations will be performed, as appropriate, and impacts for all species will be evaluated once the applicant's preferred alternative is selected. The No-Build Alternative would not impact threatened and endangered species.

The USFWS has developed a PBO in conjunction with the FHWA, the USACE, and the NCDOT for the NLEB (USFWS 2016). The PBO covers the entire NCDOT program in Divisions 1 through 8, including all NCDOT projects and activities. The programmatic determination for the NLEB for the NCDOT program is "may affect, likely to adversely affect." The PBO provides incidental coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all projects with a federal nexus in Divisions 1 through 8, which includes Lenoir, Jones, and Craven counties.

4.6.6.1 Bald Eagle and Golden Eagle Protection Act

No formal field surveys have been conducted for the Kinston Bypass project. Impacts to bald and golden eagles from the DSAs will be evaluated once the applicant's preferred alternative is selected. The No-Build Alternative would not impact bald or golden eagles.

4.6.6.2 Endangered Species Act Critical Habitat Designations

There are no designated critical habitats in the project study area; therefore, there would be no impacts to ESA critical habitat designations as a result of the Kinston Bypass project.

4.6.6.3 Essential Fish Habitat

The Atlantic sturgeon was previously listed as federally protected species by the USFWS; however, it is now listed by NOAA Fisheries. There is no habitat for Atlantic sturgeon in the NRTR study area.

Identification of essential fish habitat will be coordinated with NOAA, National Marine Fisheries Service, and NCDOT's Biological Surveys Group once the applicant's preferred alternative is selected. The National Marine Fisheries Service was involved in the development of the NRTR and approved the document and coordination efforts.

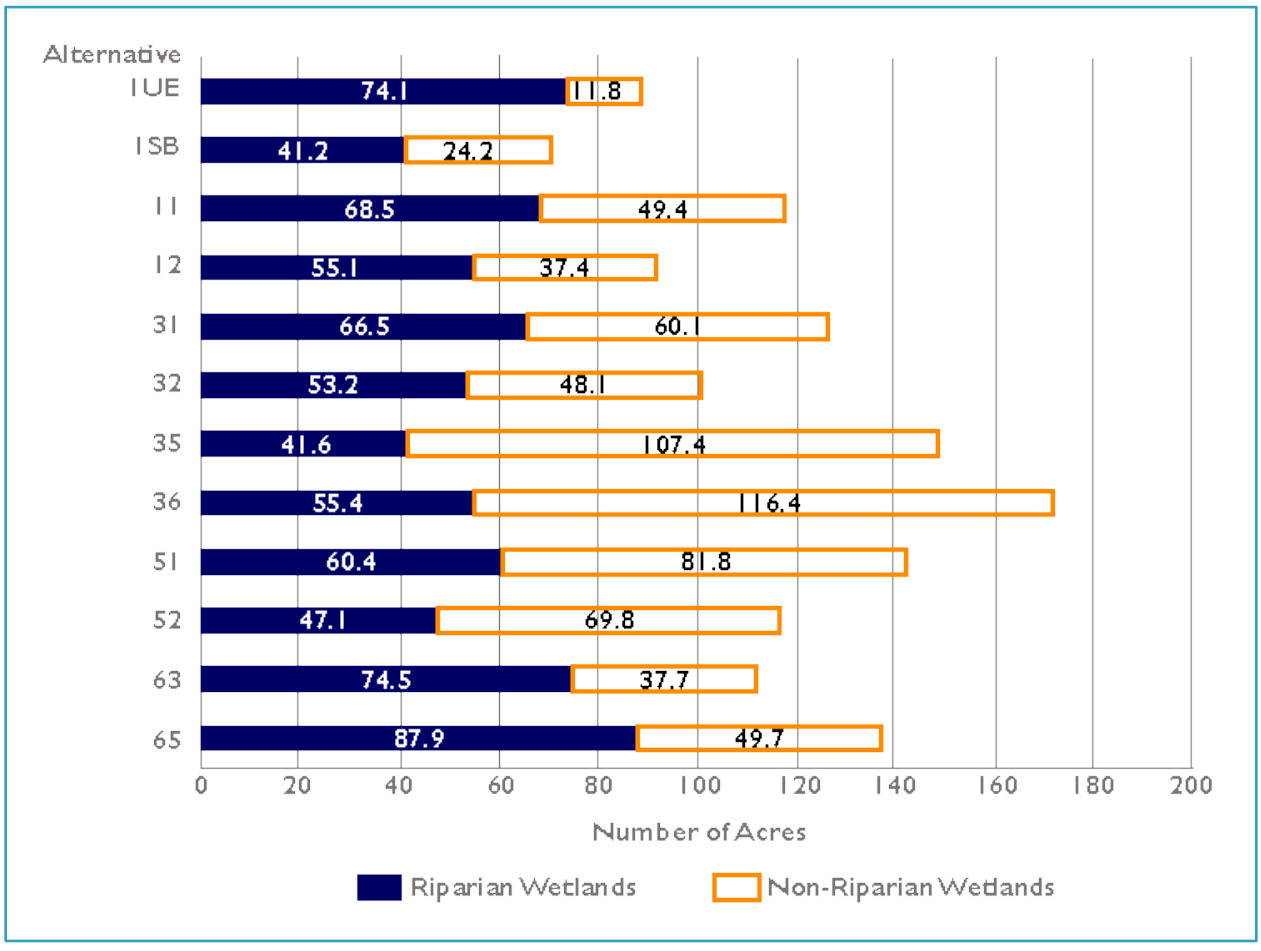
4.6.7 Jurisdictional Issues

This project has been designated as a pilot project by the North Carolina Interagency Leadership Team, which includes using GIS data as the basis for alternative development, alternative evaluation, and selection of the applicant's preferred alternative. The intention of pilot projects is to reserve detailed field investigations for the applicant's preferred alternative. In order to meet the intent of the pilot project process, two ArcGIS models were used to assess potential stream and wetland impacts for the proposed action. A jurisdictional stream model was created by NCDWR and a jurisdictional wetland model was created by NCDOT (NCDWR 2013; NCDOT 2011a). The models generated were verified through multiple field surveys with resource agencies, including USACE, NCDWR, USFWS, and NCWRC. Additional discussions of the models and methodologies used are included in the 2017 NRTR. Metadata are included in Appendix F.

4.6.7.1 Wetlands

Permanent impacts to jurisdictional wetlands for each DSA are summarized in Table 4-14 and shown on Figure 4-37 through Figure 4-48. Jurisdictional wetland impacts were calculated based on the NCDOT wetland model. The NCDOT wetland model utilizes 20-foot grid cell digital elevation models generated from bare-earth Light Detection and Ranging data and subsequent terrain derivatives and other ancillary data as variables. The model is an aggregate of five different models based on ecoregion. The NCDOT wetland model classified wetlands into two wetland types, non-riparian and riparian (NCDOT 2011a). The acreages shown in Table 4-14 do not include areas where bridges would be placed over larger wetland systems. The bridged areas have been removed from the analysis. The No-Build Alternative would have no impact to wetlands.

Table 4-14: Jurisdictional wetland impacts



Note: Impacts were calculated using the construction slope stake limits plus a 40-foot buffer of the functional designs.

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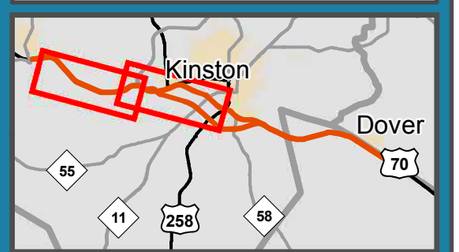
Figure 4-37:
Wetland and stream impacts - Alternatives 1UE and 1SB - A

Legend

- Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- State Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



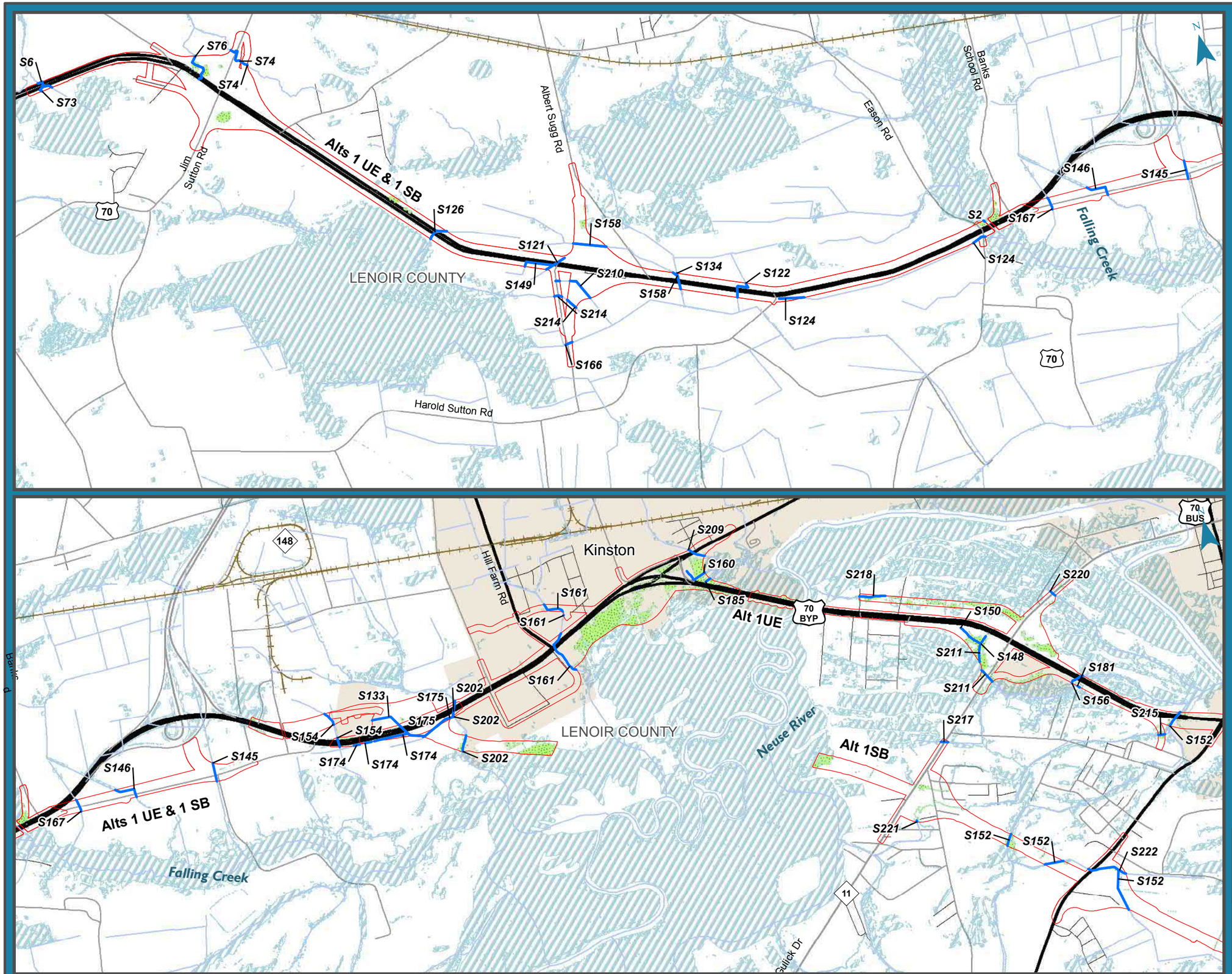


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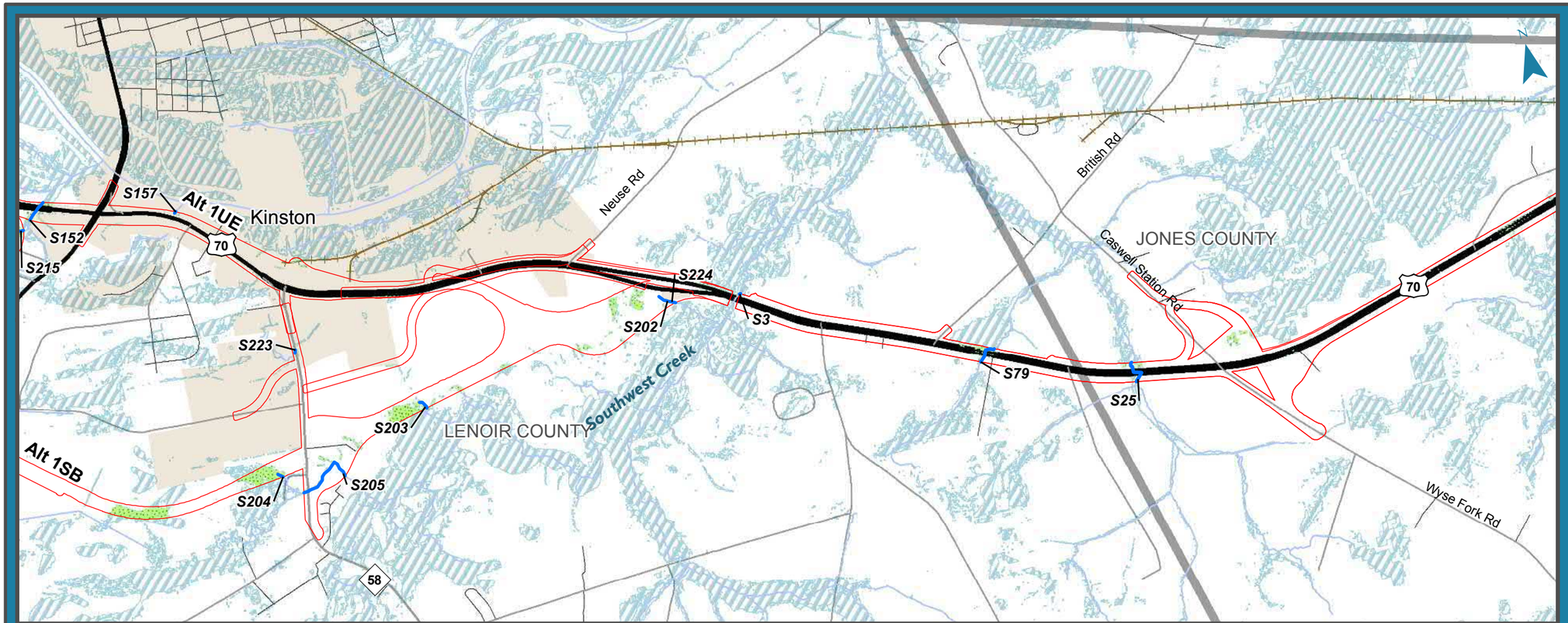
Figure 4-38:
Wetland and stream impacts - Alternatives 1UE and 1SB - B

Legend

- Alts 1 UE and 1 SB Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- State Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



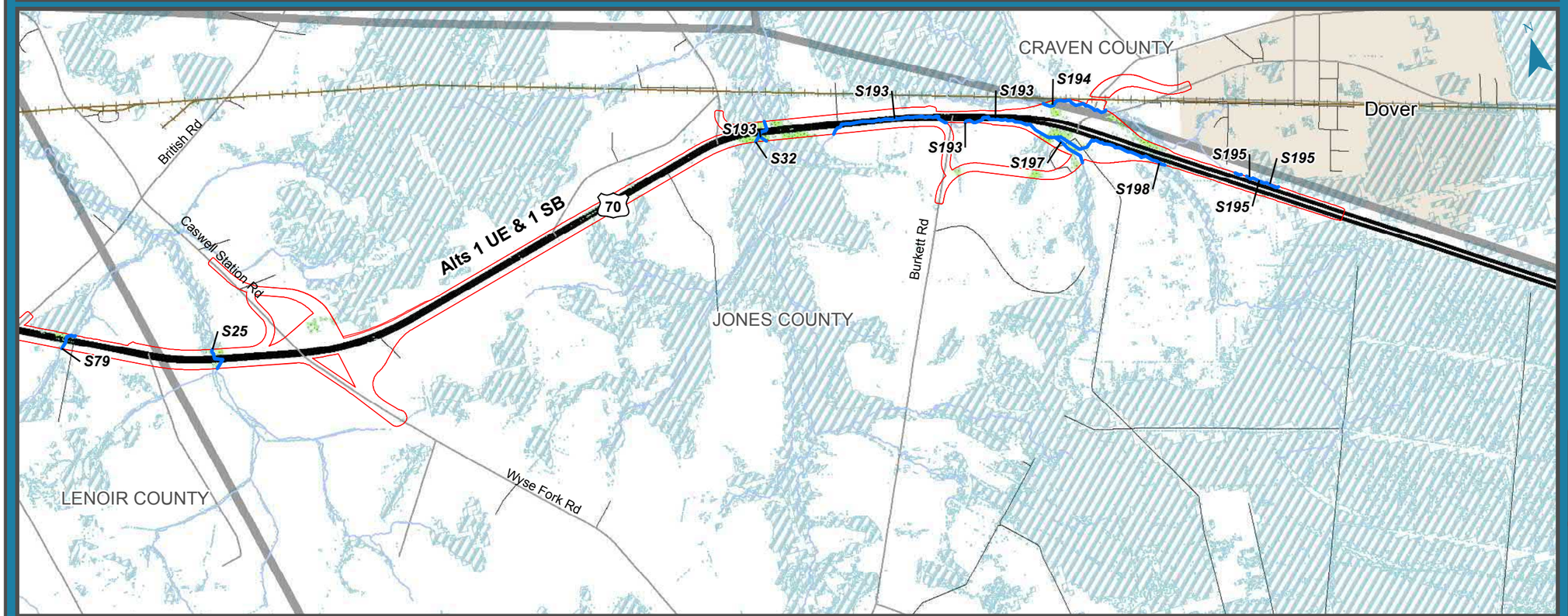


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Figure 4-39: Wetland and stream impacts - Alternatives 11 and 12 - A

Legend

- Alts 11 and 12 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: CGIA, NCDOT, NCDEQ, NCDCM, Craven County, NCEM, Lenoir County, Jones County, City of Kinston, NCOneMap, NCWRC, NCSHPO, EPA, USFWS, USDA, NRCS, DWR, ESRI and AECOM.

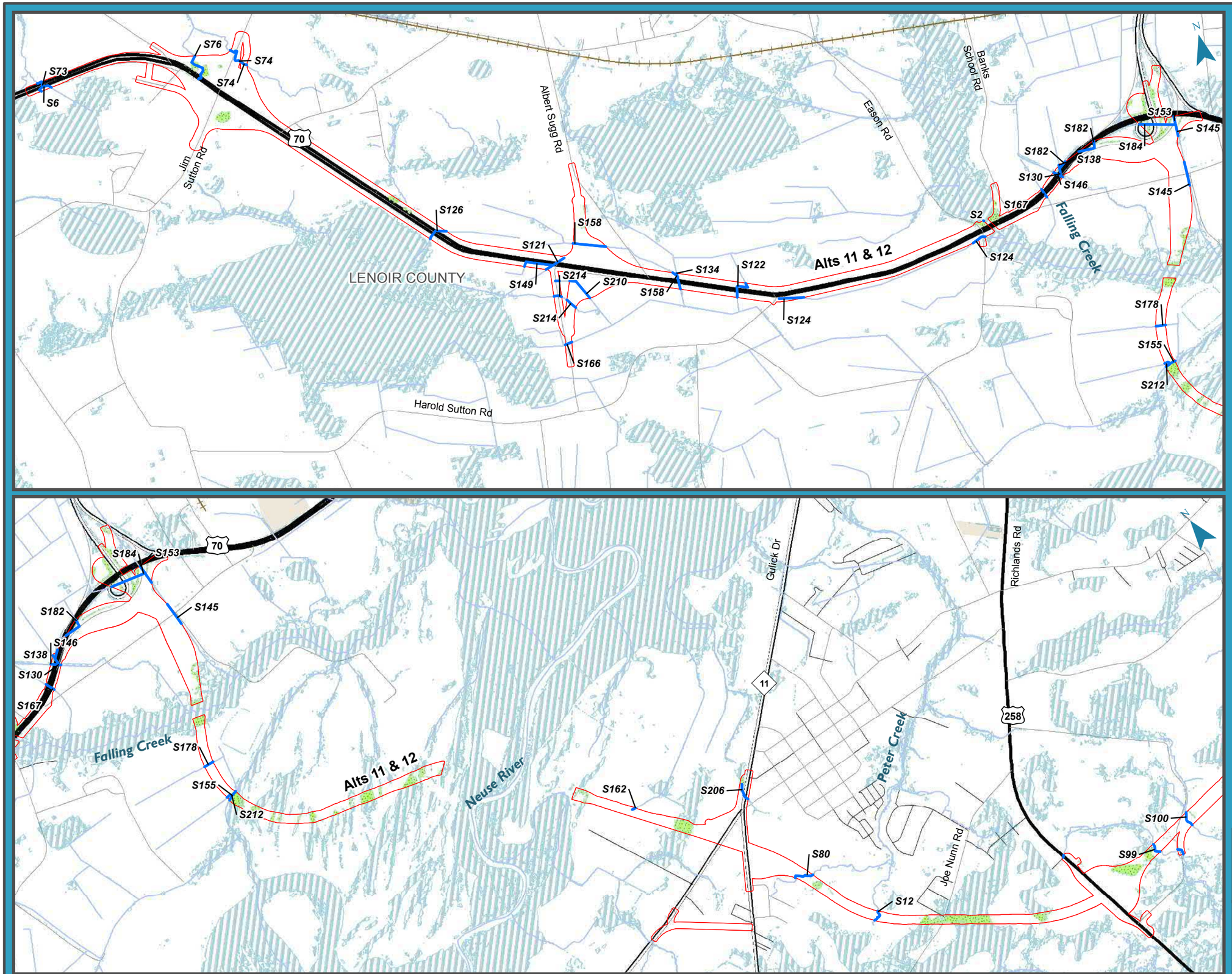

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Figure 4-40: Wetland and stream impacts - Alternatives 11 and 12 - B

Legend

- Alts 11 and 12 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: CGIA, NCDOT, NCDEQ, NCDCM, Craven County, NCEM, Lenoir County, Jones County, City of Kinston, NCOneMap, HPO, USFWS, NRCS, ESRI and AECOM.

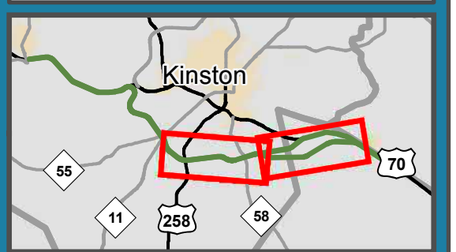

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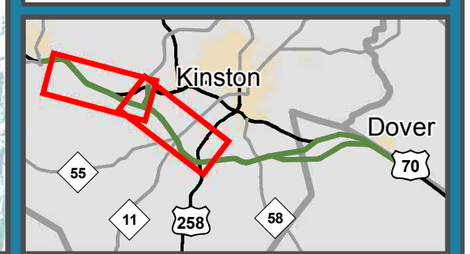
Figure 4-41: Wetland and stream impacts - Alternatives 31 and 32 - A

Legend

- Alts 31 and 32 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: CGIA, NCDOT, NCDEQ, NCDCM, Craven County, NCEM, Lenoir County, Jones County, City of Kinston, NCOneMap, HPO, USFWS, NRCS, ESRI and AECOM.



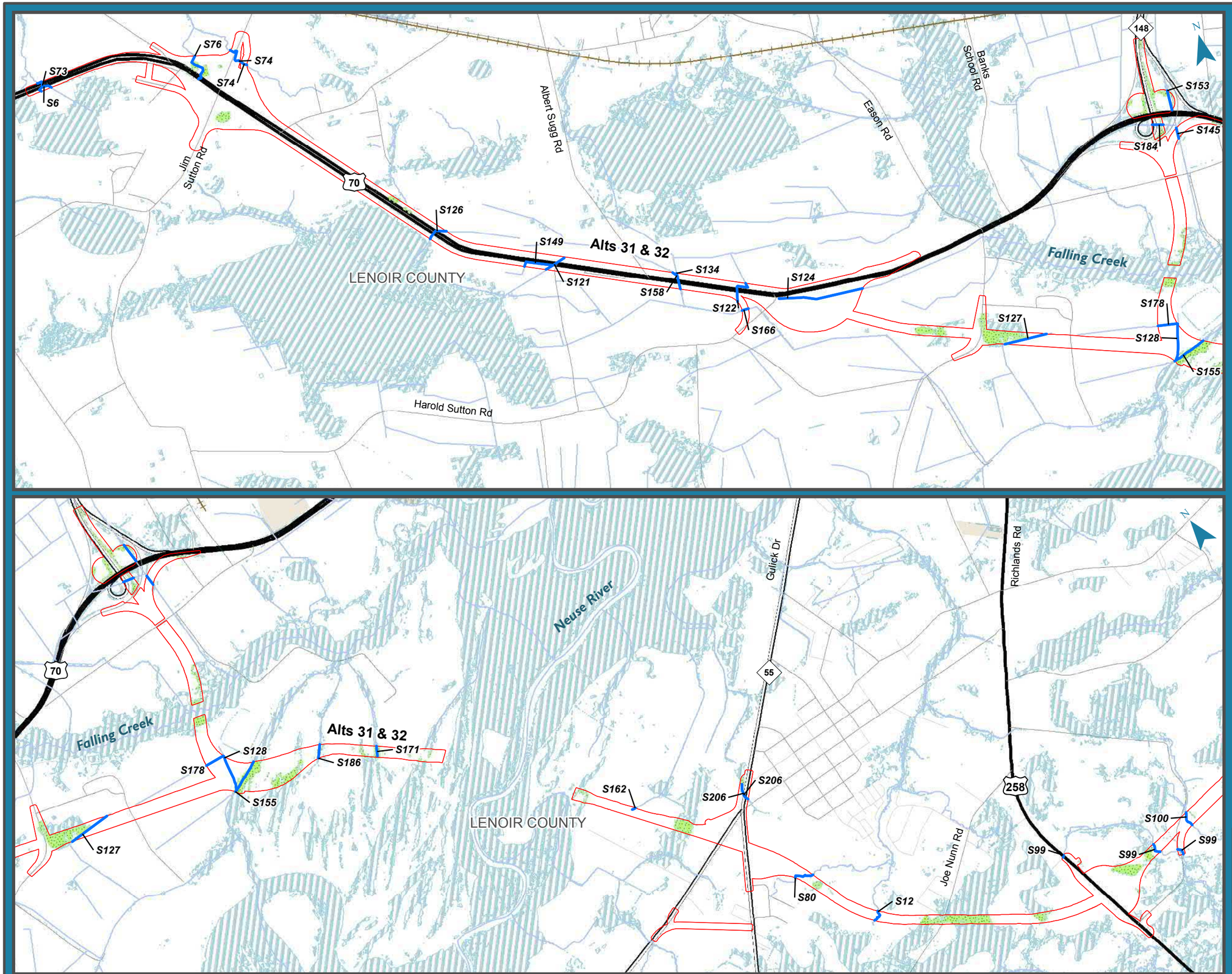


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Figure 4-42: Wetland and stream impacts - Alternatives 31 and 32 - B

Legend

- Alts 31 and 32 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- State Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: CGIA, NCDOT, NCDEQ, NCDCM, Craven County, NCEM, Lenoir County, Jones County, City of Kinston, NCOneMap, HPO, USFWS, NRCS, ESRI and AECOM.

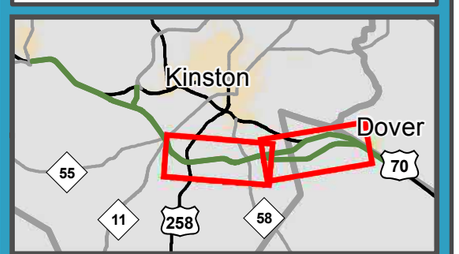

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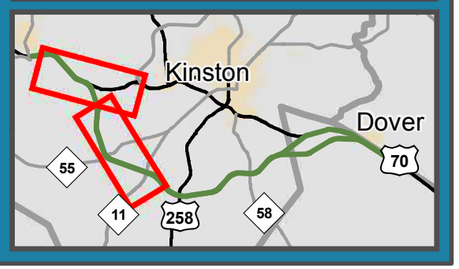
Figure 4-43: Wetland and stream impacts - Alternatives 35 and 36 - A

Legend

- Alts 35 and 36 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: CGIA, NCDOT, NCDEQ, NCDCM, Craven County, NCEM, Lenoir County, Jones County, City of Kinston, NCOneMap, HPO, USFWS, NRCS, ESRI and AECOM.



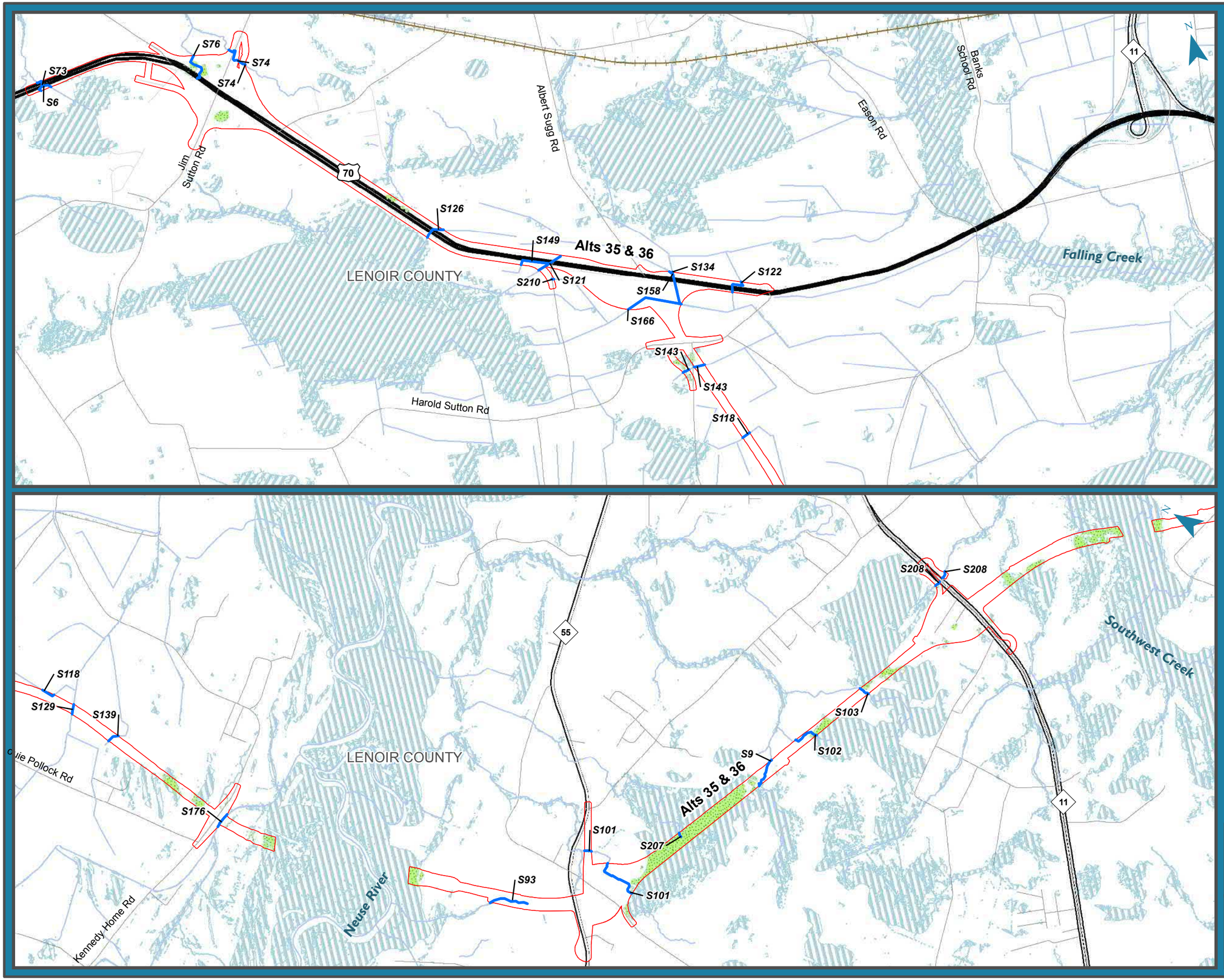


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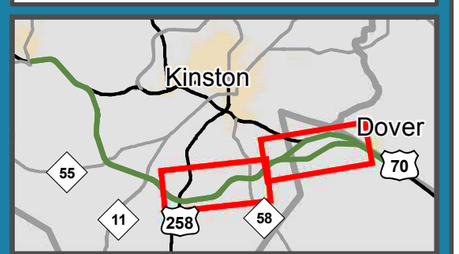
Figure 4-44: Wetland and stream impacts - Alternatives 35 and 36 - B

Legend

- Alts 35 and 36 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: CGIA, NCDOT, NCDEQ, NCDCM, Craven County, NCEM, Lenoir County, Jones County, City of Kinston, NCOneMap, HPO, USFWS, NRCS, ESRI and AECOM.



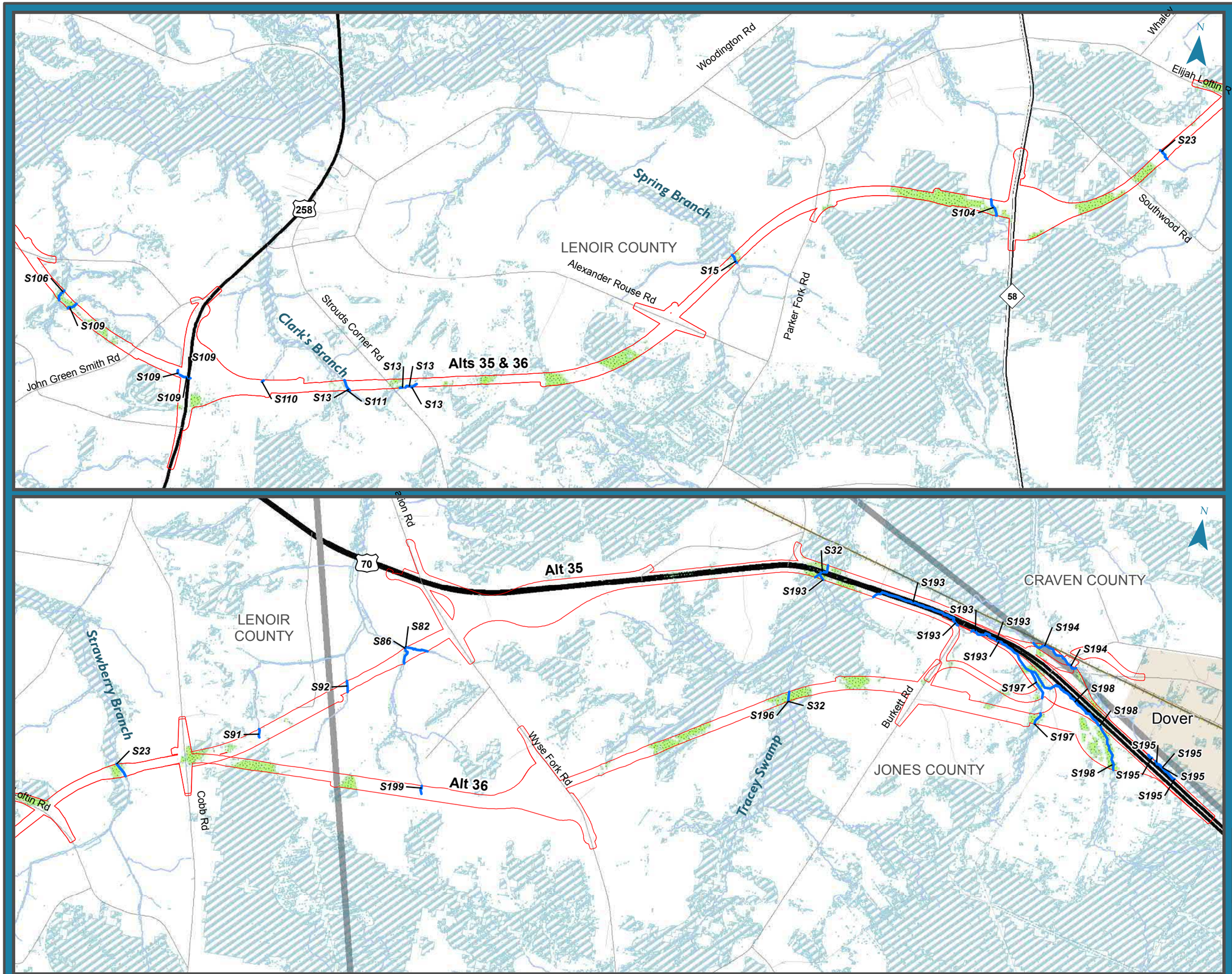


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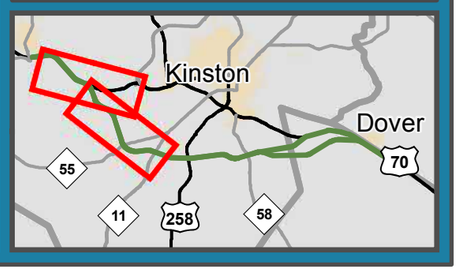
Figure 4-45: Wetland and stream impacts - Alternatives 51 and 52 - A

Legend

- Alts 51 and 52 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: CGIA, NCDOT, NCDEQ, NCDCM, Craven County, NCEM, Lenoir County, Jones County, City of Kinston, NCOneMap, HPO, USFWS, NRCS, ESRI and AECOM



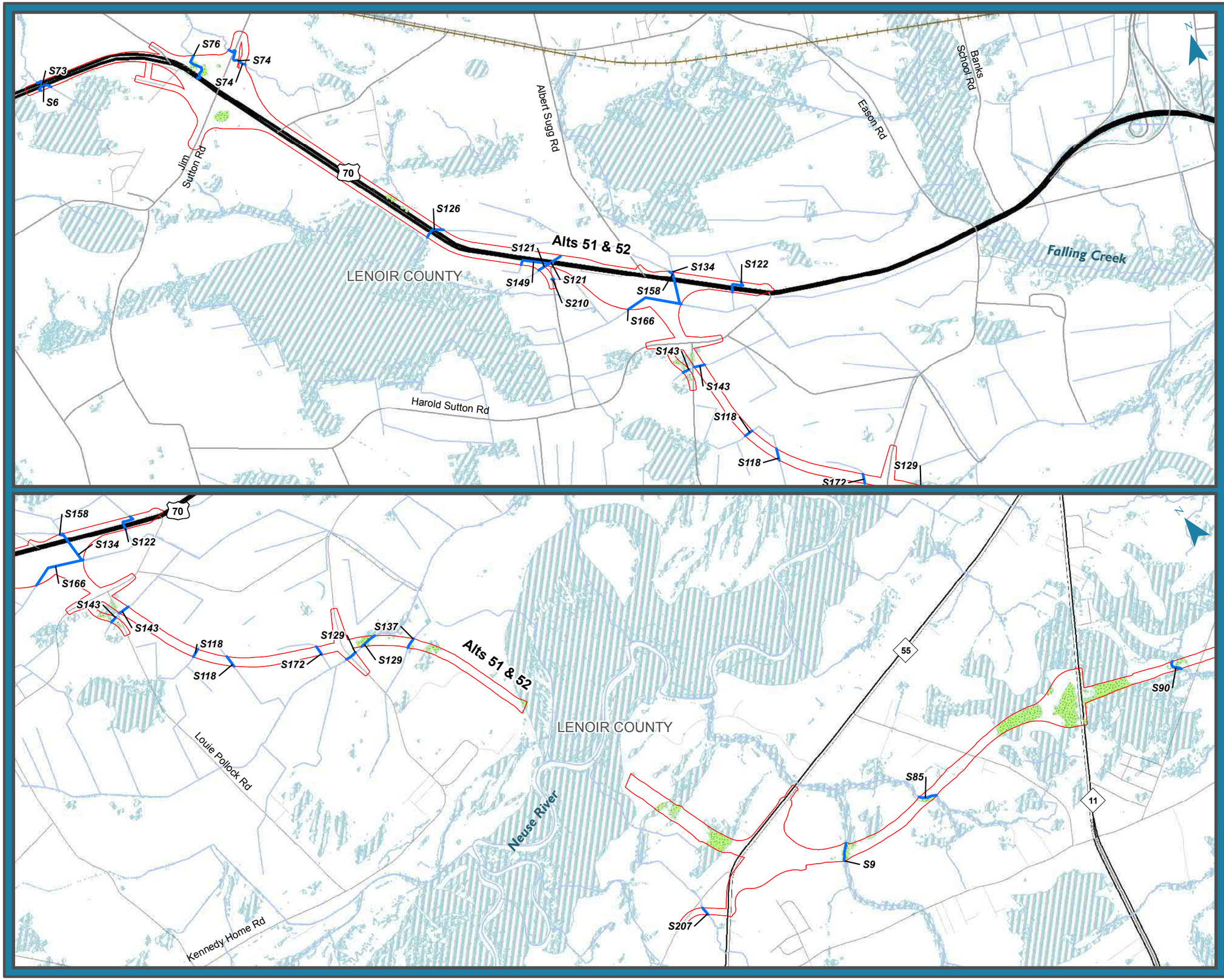


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Figure 4-46: Wetland and stream impacts - Alternatives 51 and 52 - B

Legend

- Alts 51 and 52 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: CGIA, NCDOT, NCDEQ, NCDCM, Craven County, NCEM, Lenoir County, Jones County, City of Kinston, NCOneMap, HPO, USFWS, NRCS, ESRI and AECOM

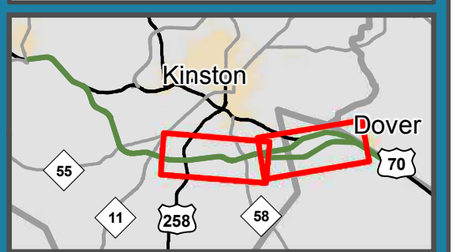

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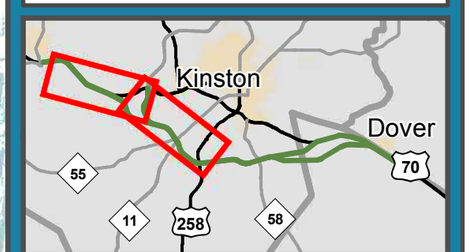
Figure 4-47: Wetland and stream impacts - Alternatives 63 and 65 - A

Legend

- Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



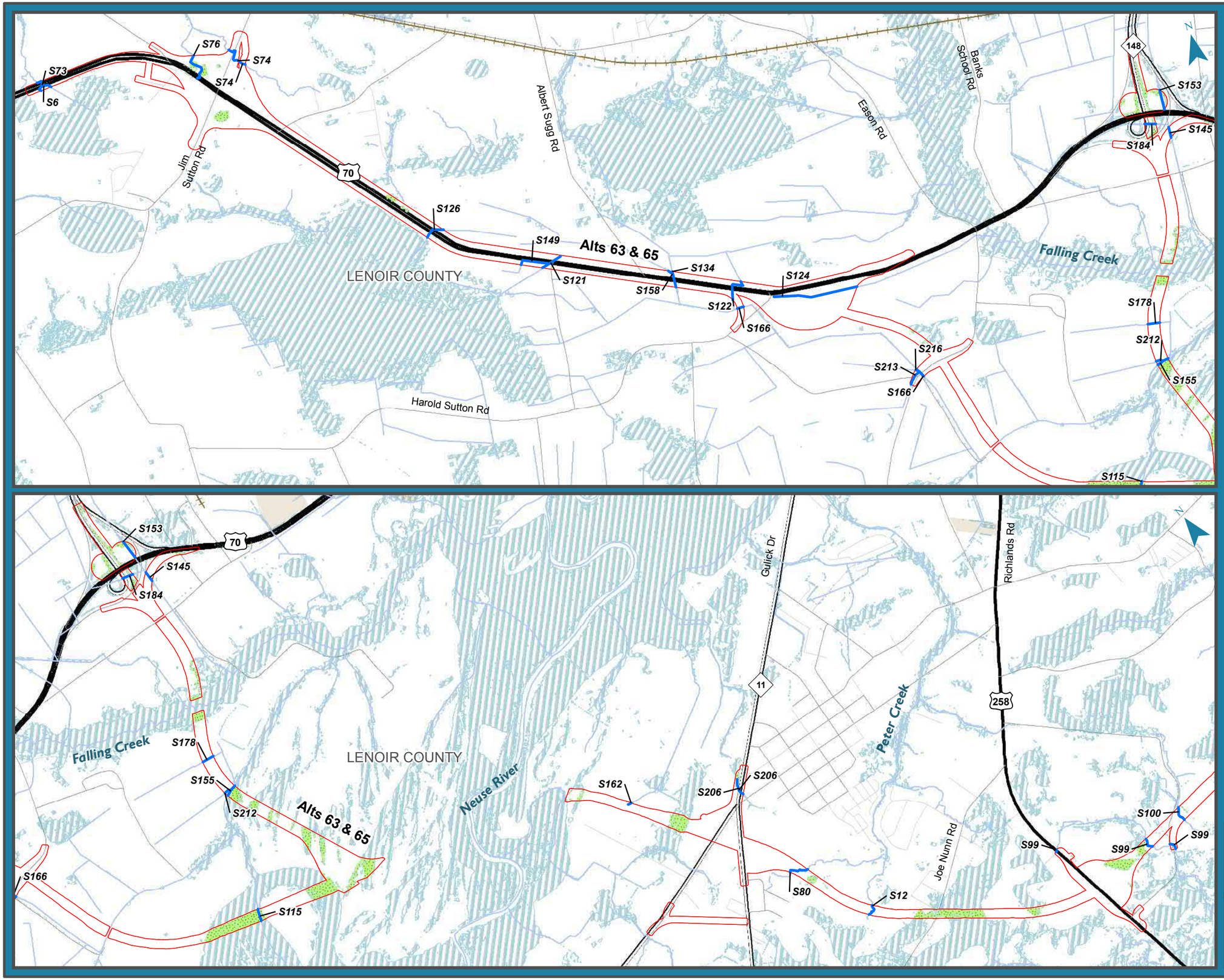


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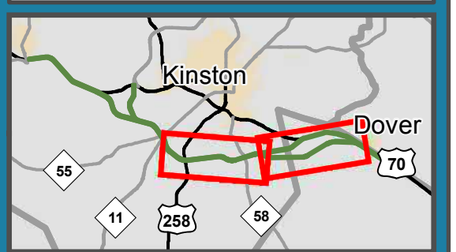
Figure 4-48: Wetland and stream impacts - Alternatives 63 and 65 - B

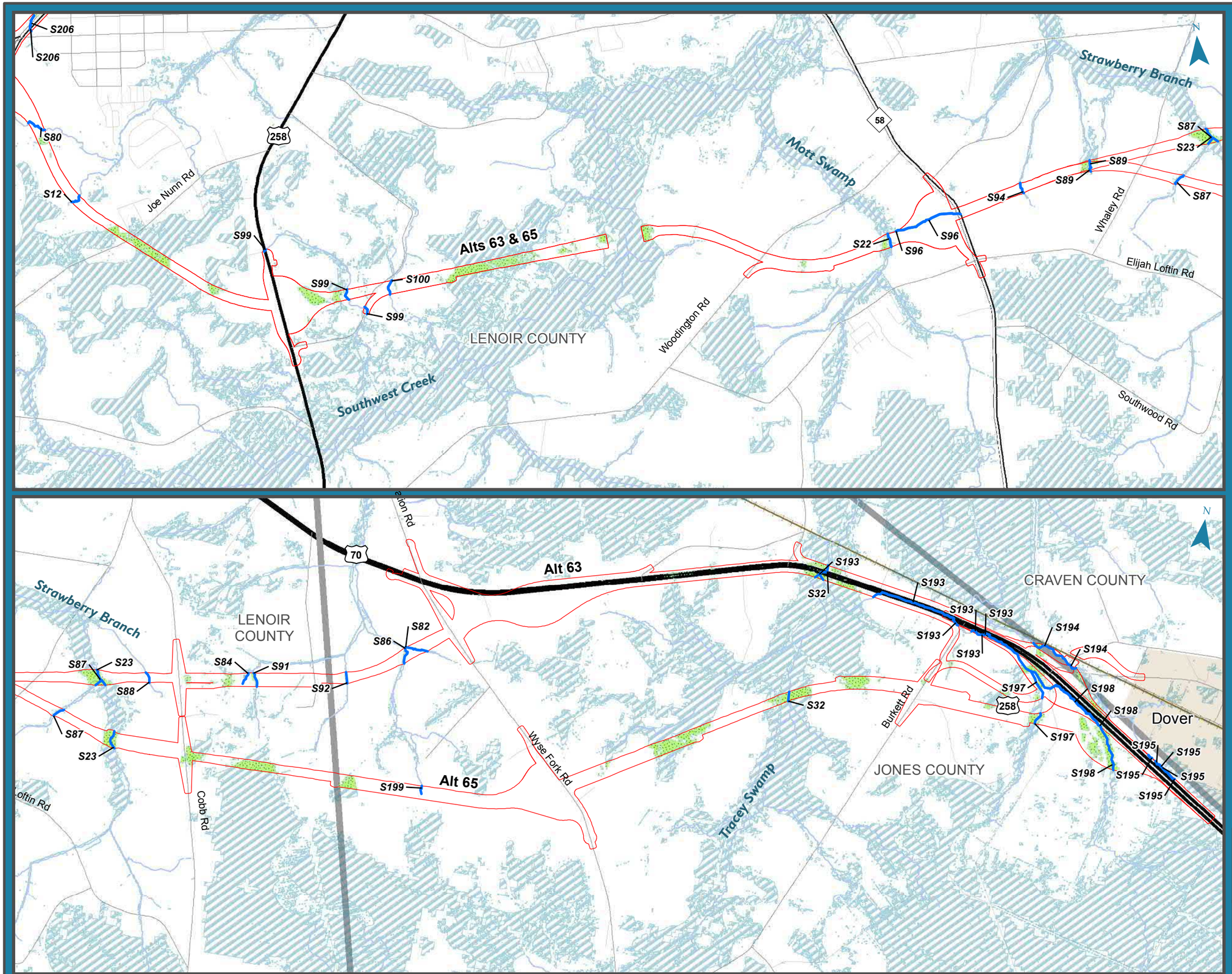
Legend

- Alts 63 and 65 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Predicted Streams
- Predicted Wetlands
- Predicted Stream Impacts
- Predicted Wetland Impacts

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

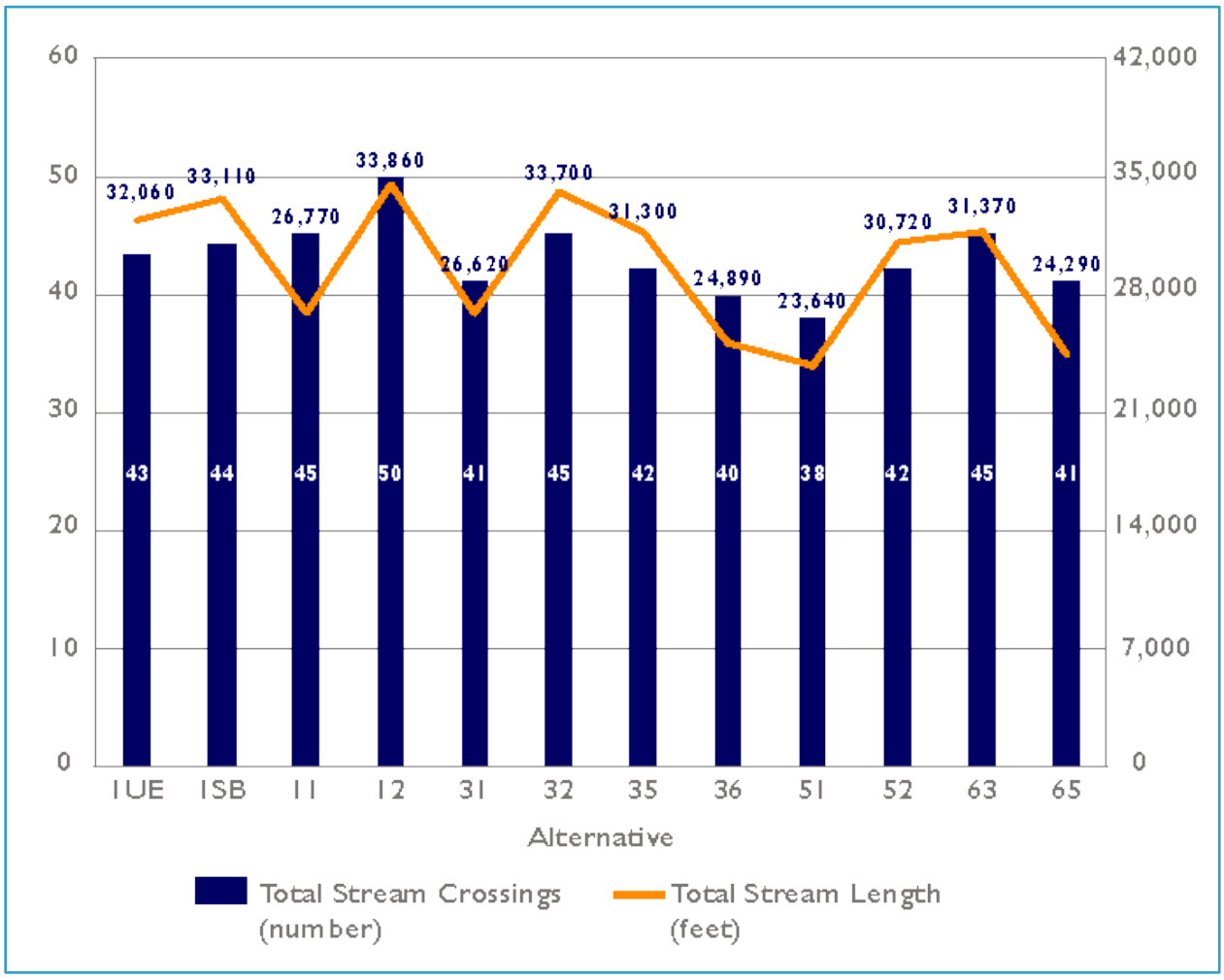




4.6.7.2 Streams

Permanent impacts to jurisdictional streams for each DSA are summarized in Table 4-15 and shown on Figure 4-37 through Figure 4-48. Detailed impact numbers for each stream segment and alternative are shown in Table F-4 of Appendix F. A jurisdictional stream model was created by NCDWR. Jurisdictional stream models were developed for the three ecoregions present in the project study area by utilizing 20-foot grid cell digital elevation models generated from bare-earth Light Detection and Ranging data and subsequent terrain derivatives and other ancillary data as variables. Additional discussions of the model and methodology used are included in the 2017 NRTR. The linear feet shown in Table 4-15 do not include areas where bridges would be placed over larger stream systems. The bridged areas have been removed from the analysis. The No-Build Alternative would have no impact to jurisdictional streams.

Table 4-15: Jurisdictional stream impacts



Note: Impacts were calculated using the construction slope stake limits plus a 40-foot buffer of the functional designs.

4.6.7.3 Coastal Area Management Act Areas of Environmental Concern

AEC determinations and potential impacts will be established once the applicant's preferred alternative is selected and formal consultation with the NCDCM has been completed. The No-Build Alternative would not impact any AECs.

4.6.7.4 North Carolina River Basin Buffer Rules

Potential impacts to protected stream buffers will be determined once the applicant's preferred alternative is selected and formal stream delineations have been conducted.

4.6.7.5 Rivers and Harbors Act Section 10 Navigable Waters

Impacts to navigable waters in the form of bridge piers will be determined once the applicant's preferred alternative is selected and bridge designs have been completed. Coordination with the USCG will take place through the Merger Team.

4.6.7.6 Wild and Scenic Rivers

No rivers or sections of river within or near the project study area are designated as wild, scenic, or recreational under the National Wild and Scenic Rivers Act or designated under the North Carolina Natural and Scenic Rivers Act. There would be no impacts to these resources. The No-Build Alternative would not impact any natural, wild, and/or scenic rivers.

4.7 FLOODPLAINS AND FLOODWAYS

4.7.1 Existing Floodplains and Floodways

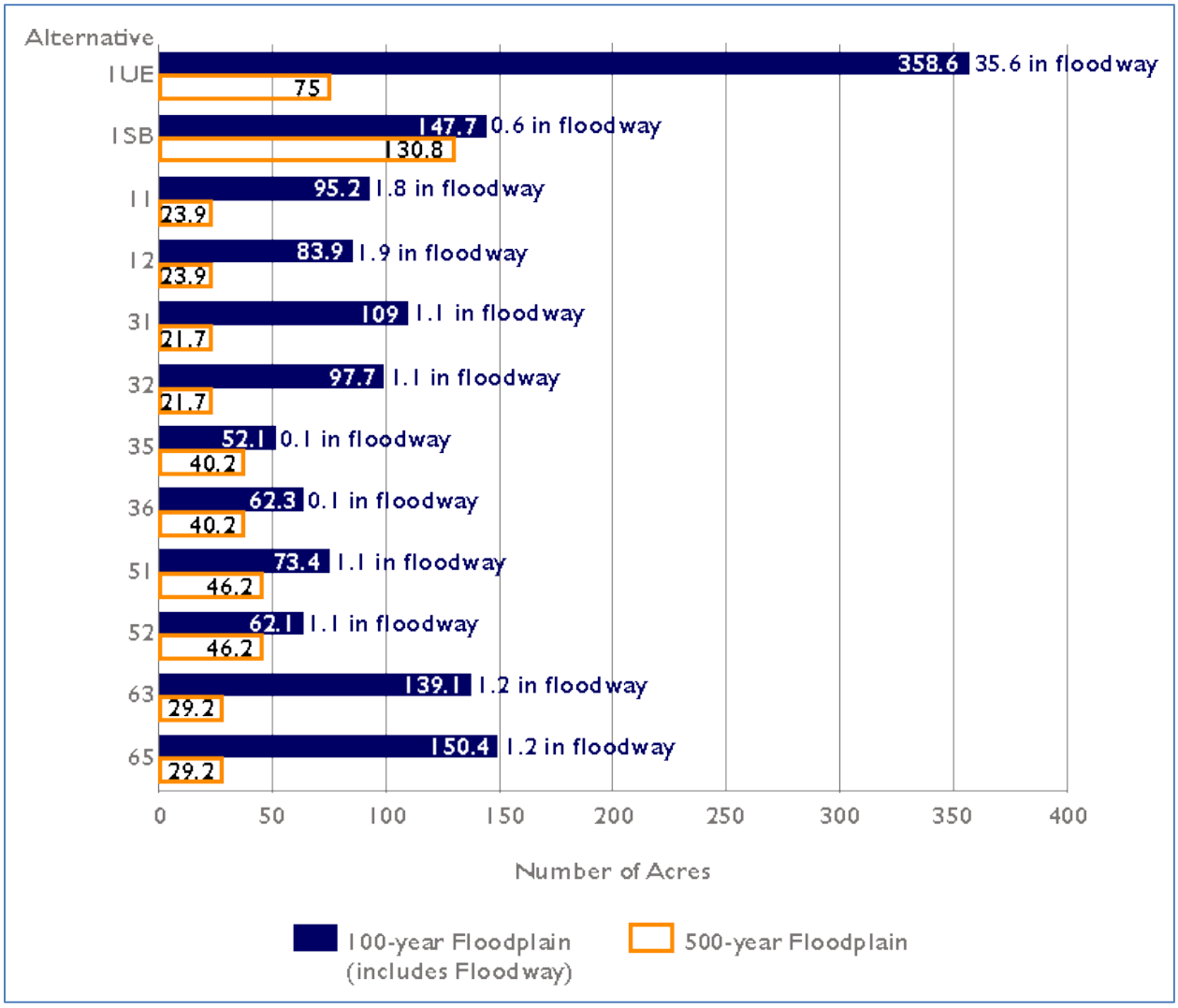
All DSAs would cross floodplains and floodways associated with the Neuse River. A floodway is defined as the channel of a river or watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Some DSAs would also cross floodplains and floodways associated with Southwest Creek, Falling Creek, Strawberry Branch, and Tracey Swamp. Permanent impacts to floodplains and floodways for each DSA are summarized in Table 4-16 and shown on Figure 4-49 through Figure 4-60. The acreages shown in Table 4-16 do not include areas where bridges would be placed over larger stream and wetland systems. Alternatives 1UE and 1SB would cause the most impacts to floodplains and floodways. The No-Build Alternative would not impact floodplains or floodways.

National Flood Insurance Regulatory Program

If a proposed action would, upon construction, affect an existing regulatory floodway, FEMA requires a Conditional Letter of Map Revision, which FEMA uses to comment on the proposed action. A Letter of Map Revision, which legally modifies the existing regulatory floodway, is also required from FEMA.

For all new location crossings on FEMA-regulated streams, a Conditional Letter of Map Revision and Letter of Map Revision will be prepared and submitted to the North Carolina Floodplain Mapping Program for approval.

Table 4-16: Impacts to floodplains and floodways



Note: Impacts were calculated using right-of-way limits of the functional designs.

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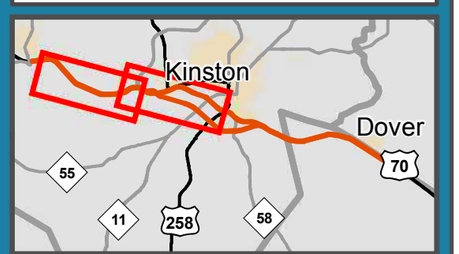
Figure 4-49
Floodplains and floodways impacts - Alternatives 1UE and 1SB - A

Legend

- Alts 1UE and 1SB Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



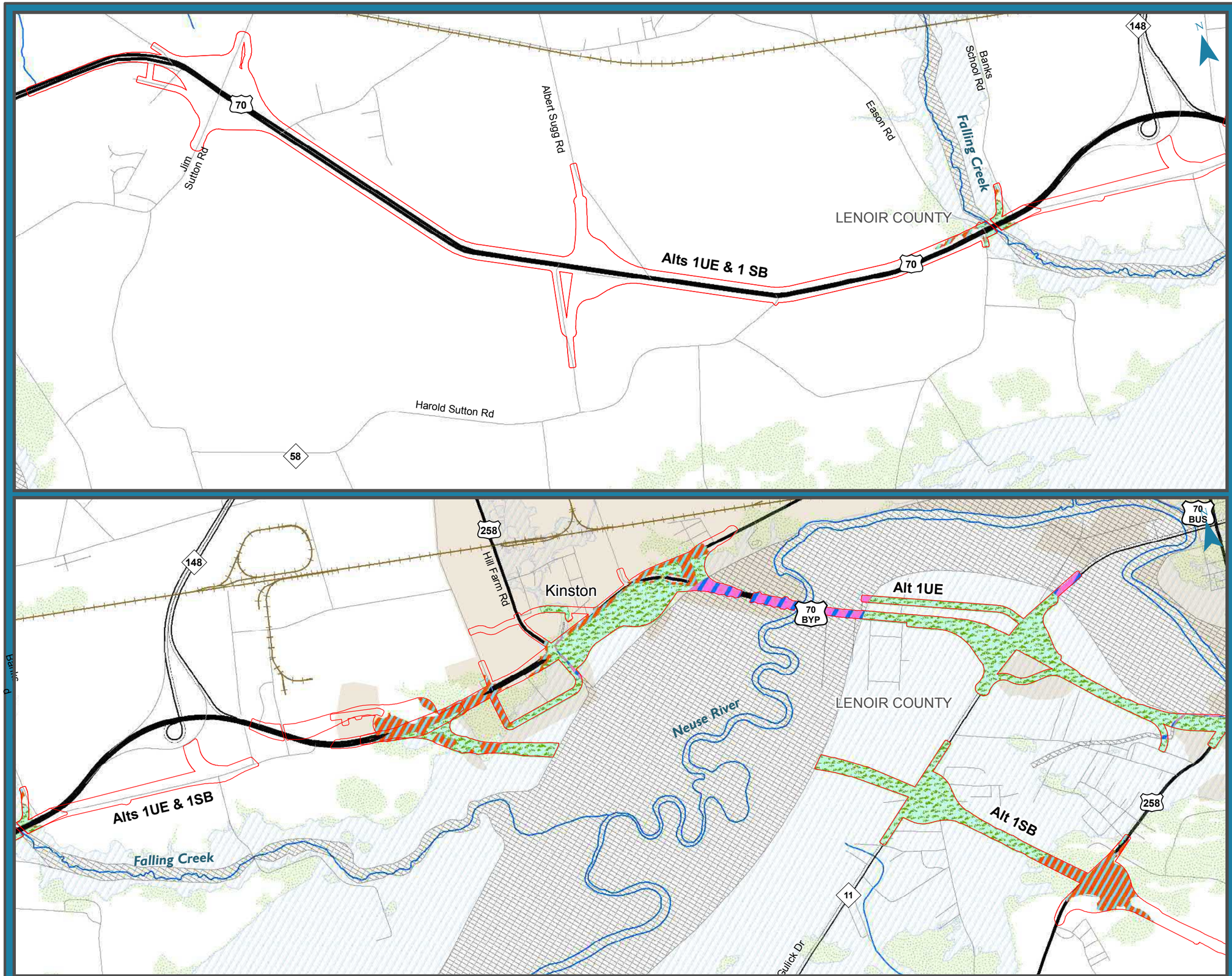


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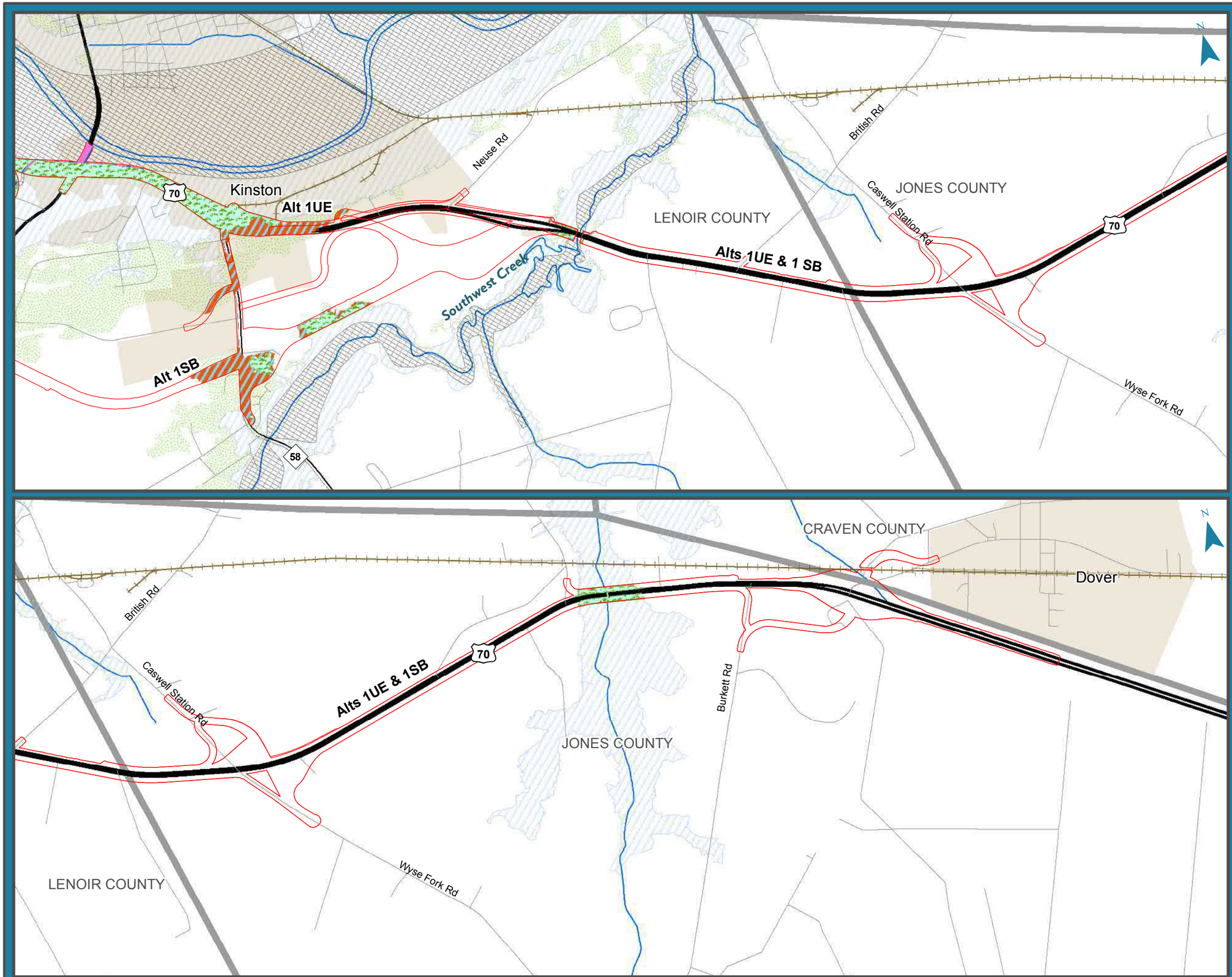
Figure 4-50
Floodplains and floodways impacts - Alternatives 1UE and 1SB - B



Legend

- Alts 1UE and 1SB Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

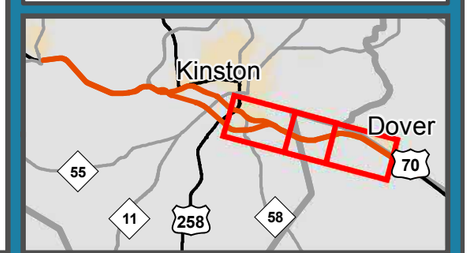


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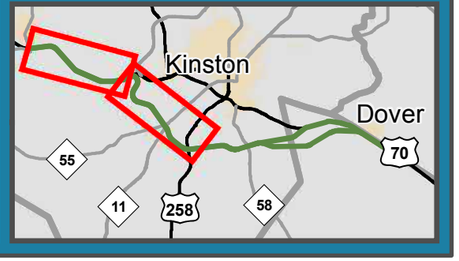
Figure 4-51: Floodplains and floodways impacts - Alternatives 11 and 12 - A

Legend

- Alts 11 and 12 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Regulatory Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



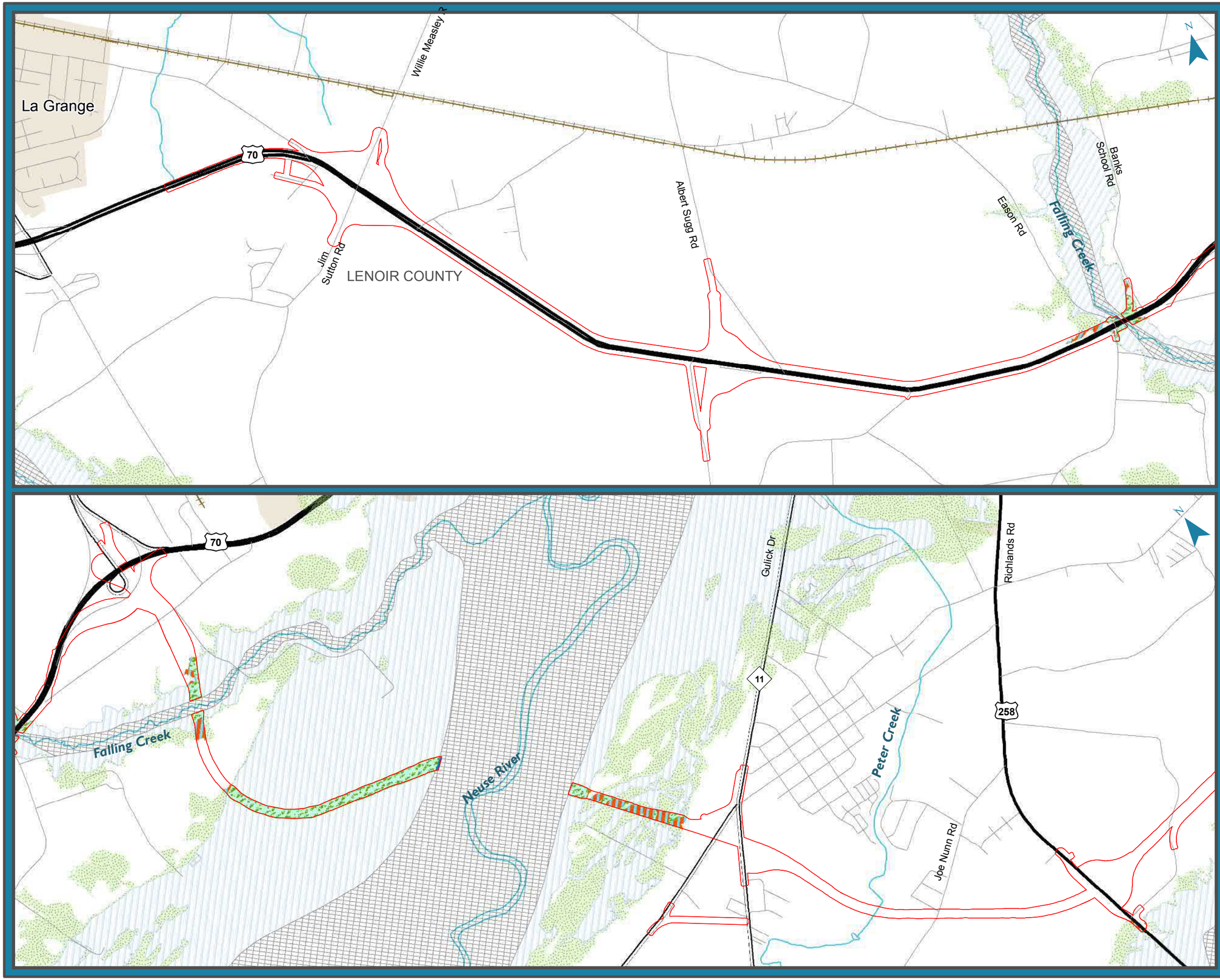


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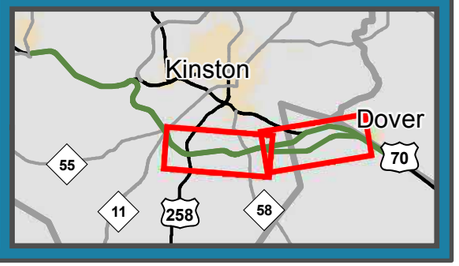
Figure 4-52: Floodplains and floodways impacts - Alternatives 11 and 12 - B

Legend

- Alts 11 and 12 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Regulatory Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



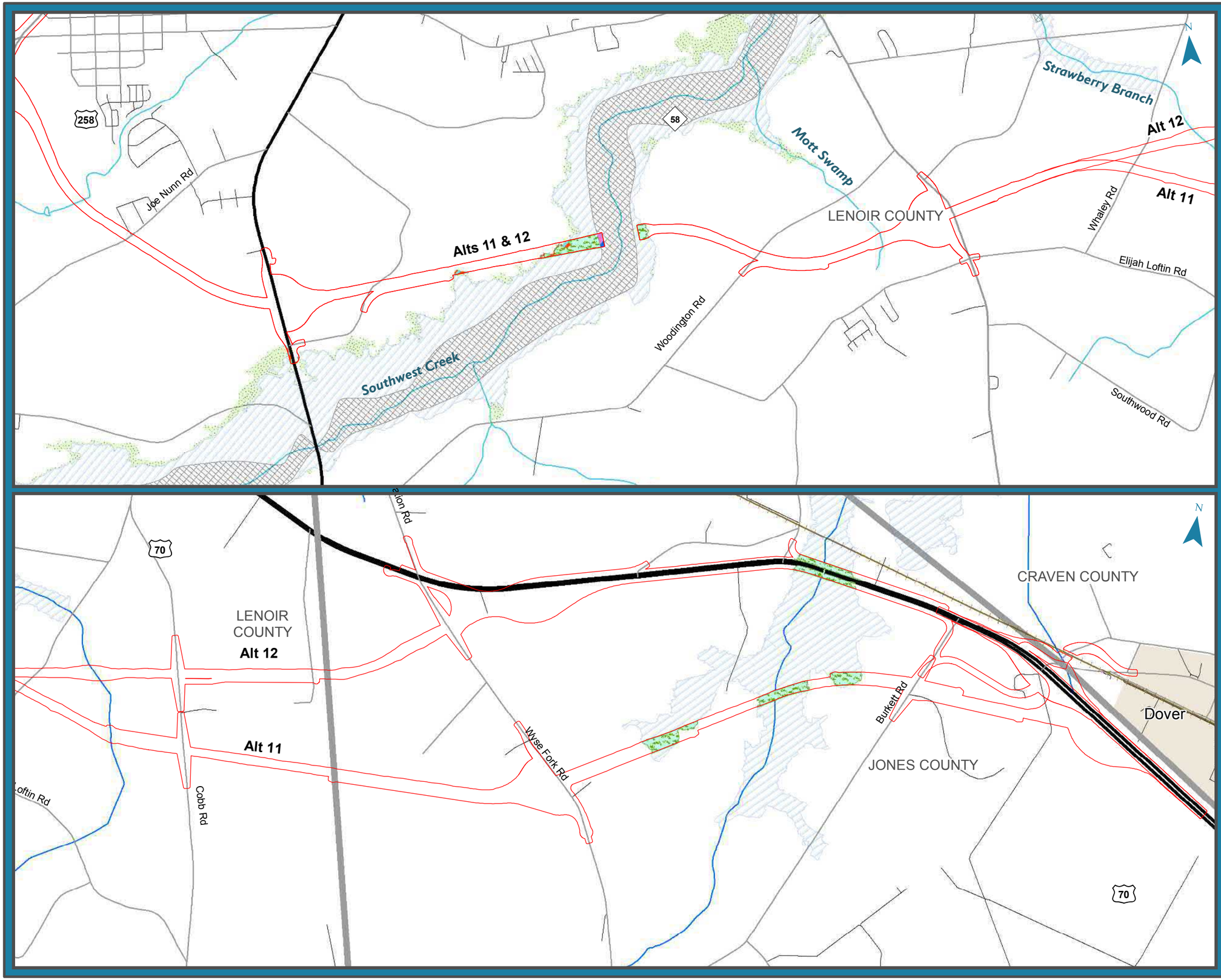


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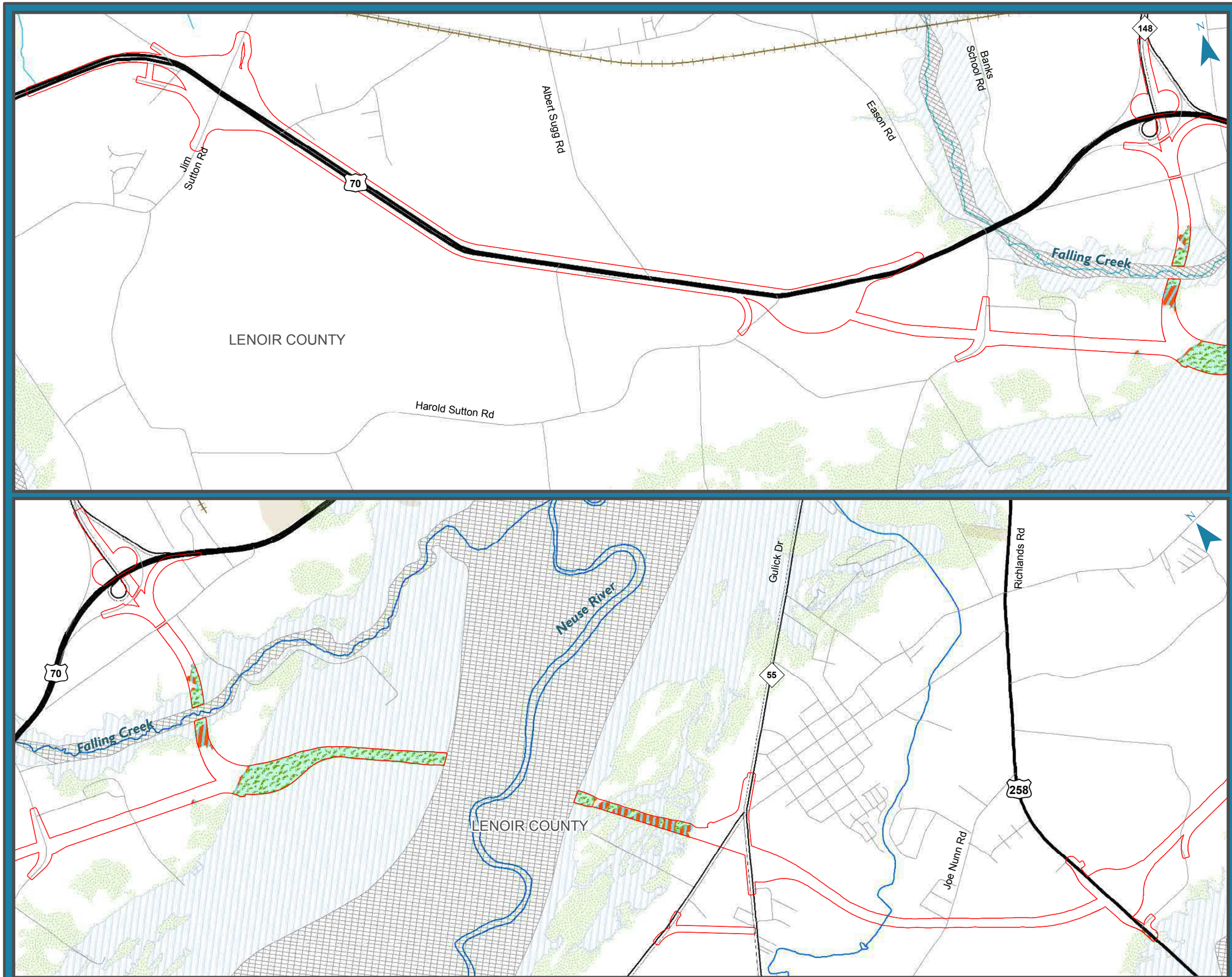
Figure 4-53: Floodplain and floodways impacts - Alternatives 31 and 32 - A



Legend

- Alts 31 and 32 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Regulatory Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

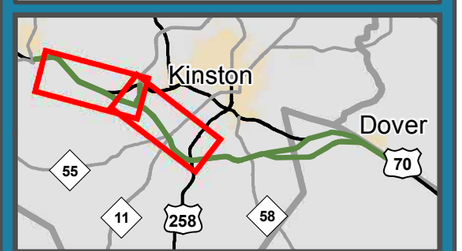


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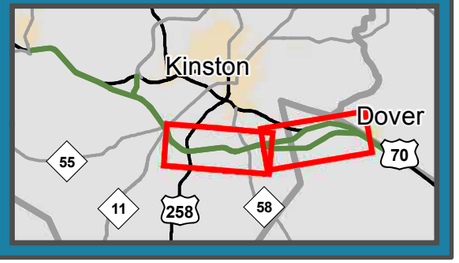
Figure 4-54: Floodplains and floodways impacts - Alternatives 31 and 32 -B

Legend

- Alts 31 and 32 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Regulatory Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



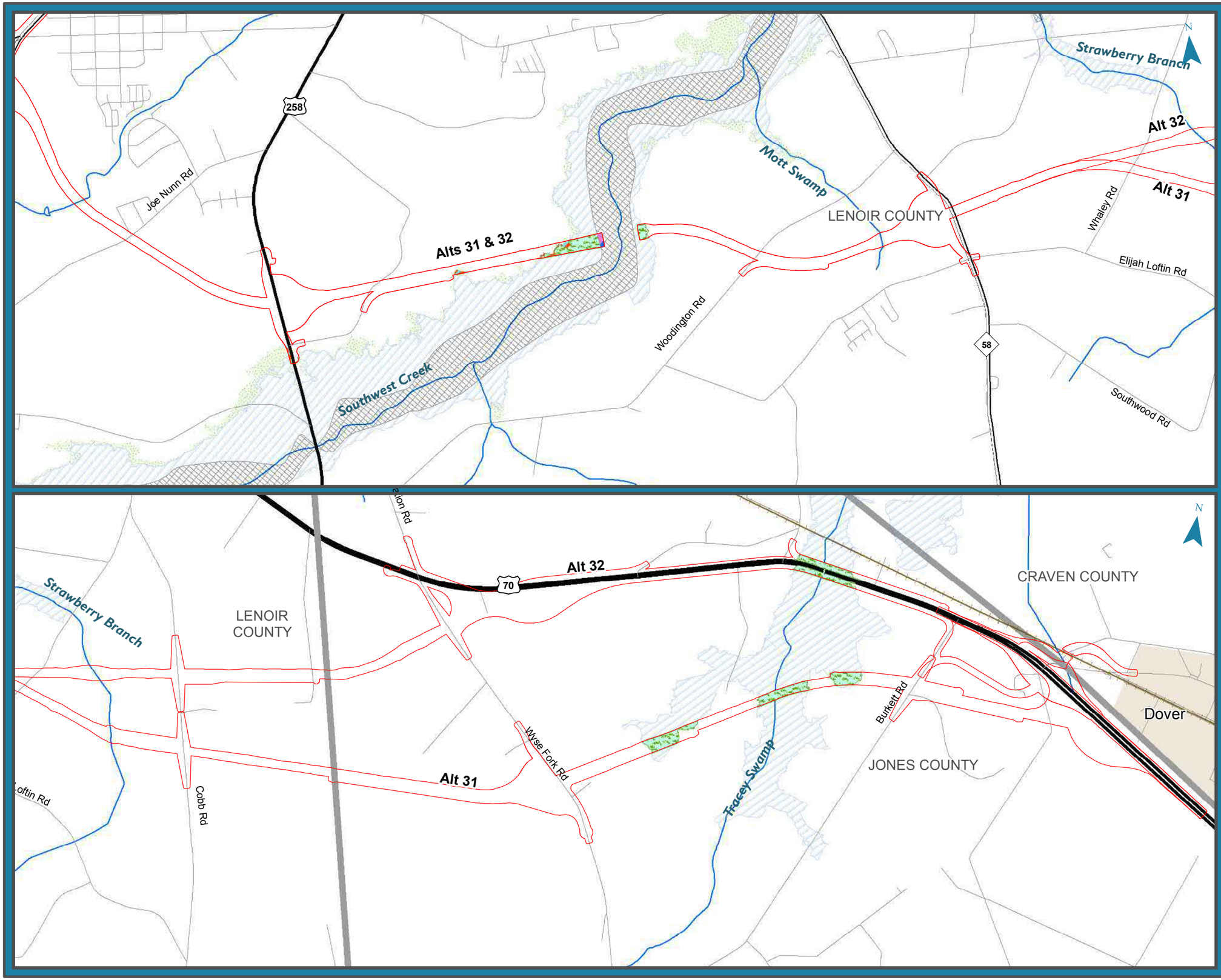


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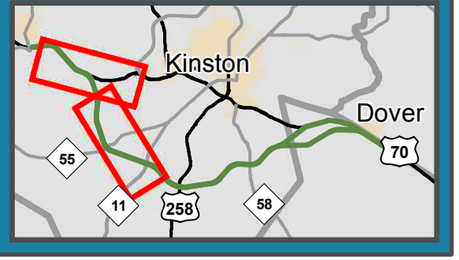
Figure 4-55: Floodplains and floodways impacts - Alternatives 35 and 36 - A

Legend

- Alts 35 and 36 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Regulatory Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



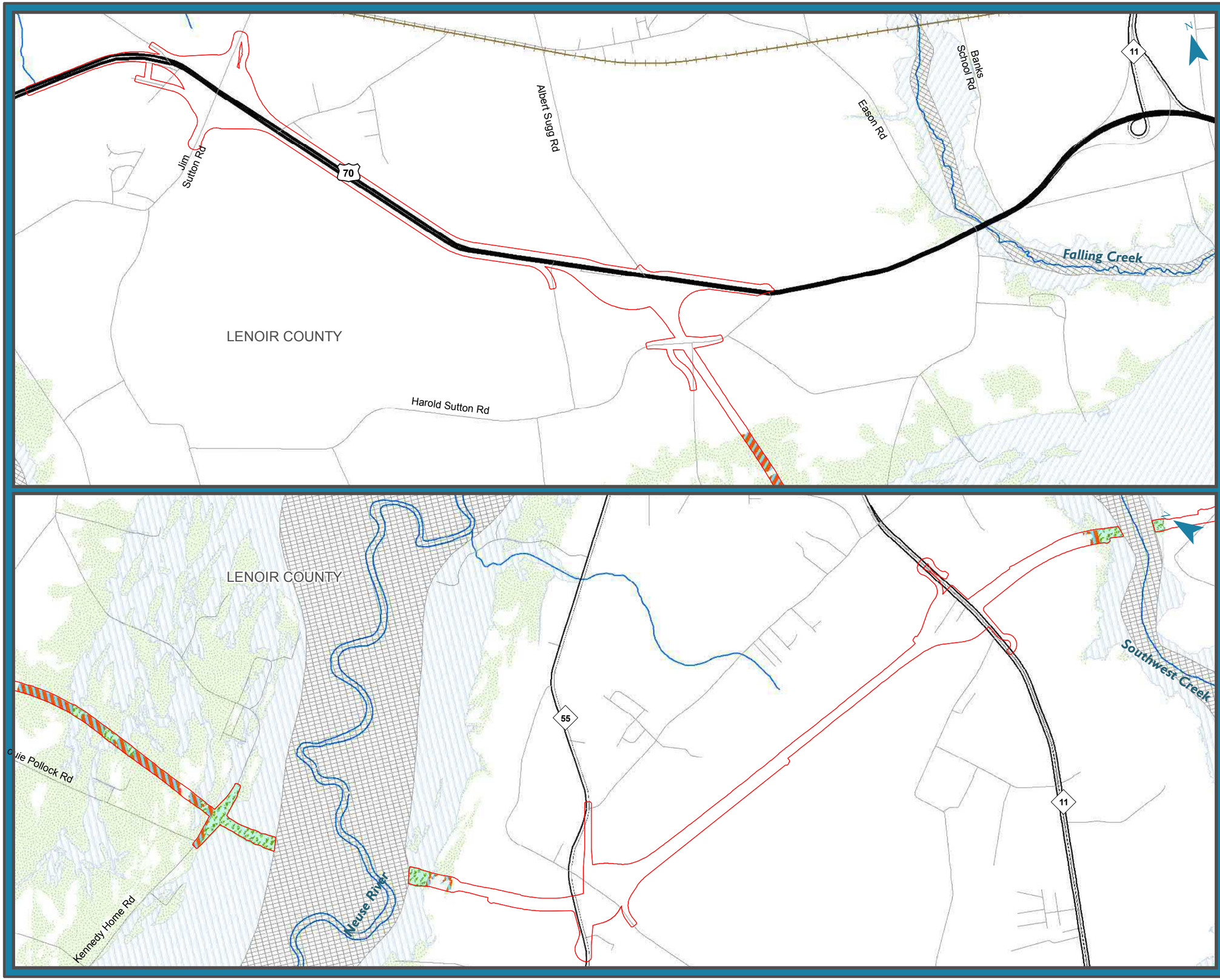


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Figure 4-56: Floodplains and floodways impacts - Alternatives 35 and 36 - B

Legend

- Alts 35 and 36 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Regulatory Floodway
- 100-year Floodplain
- 500-year Floodplain

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

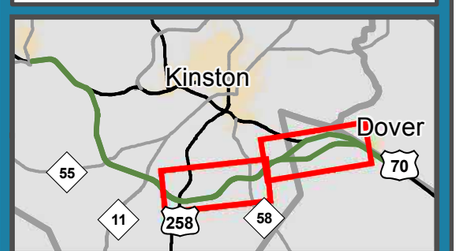

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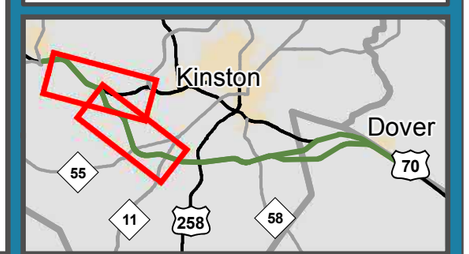
Figure 4-57: Floodplains and floodways impacts - Alternatives 51 and 52 - A

Legend

- Alts 51 and 52 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Regulatory Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



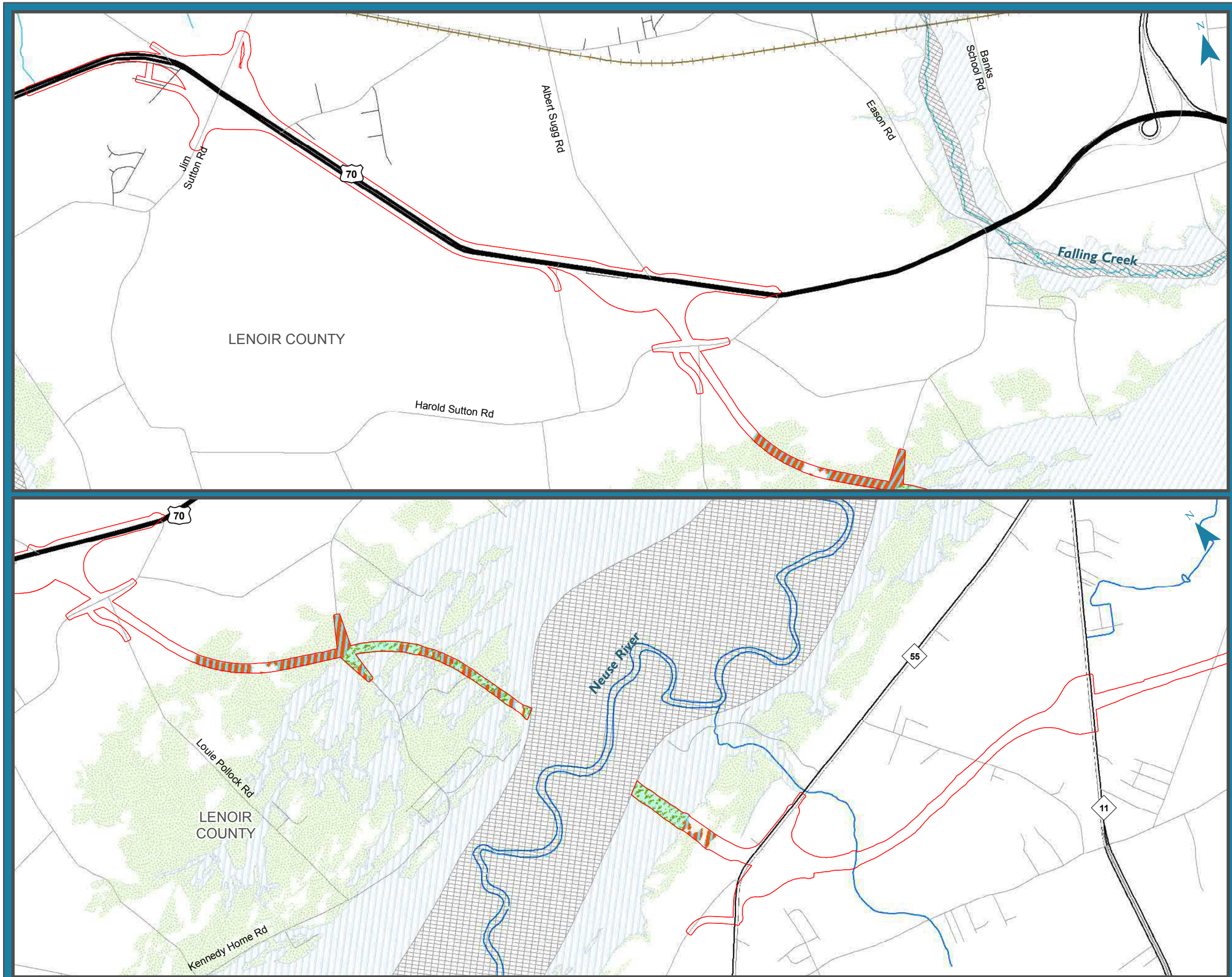


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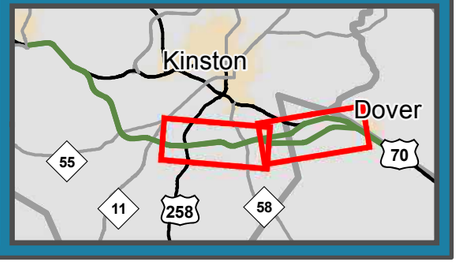
Figure 4-58: Floodplains and floodways impacts - Alternatives 51 and 52 - B

Legend

- Alts 51 and 52 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Regulatory Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



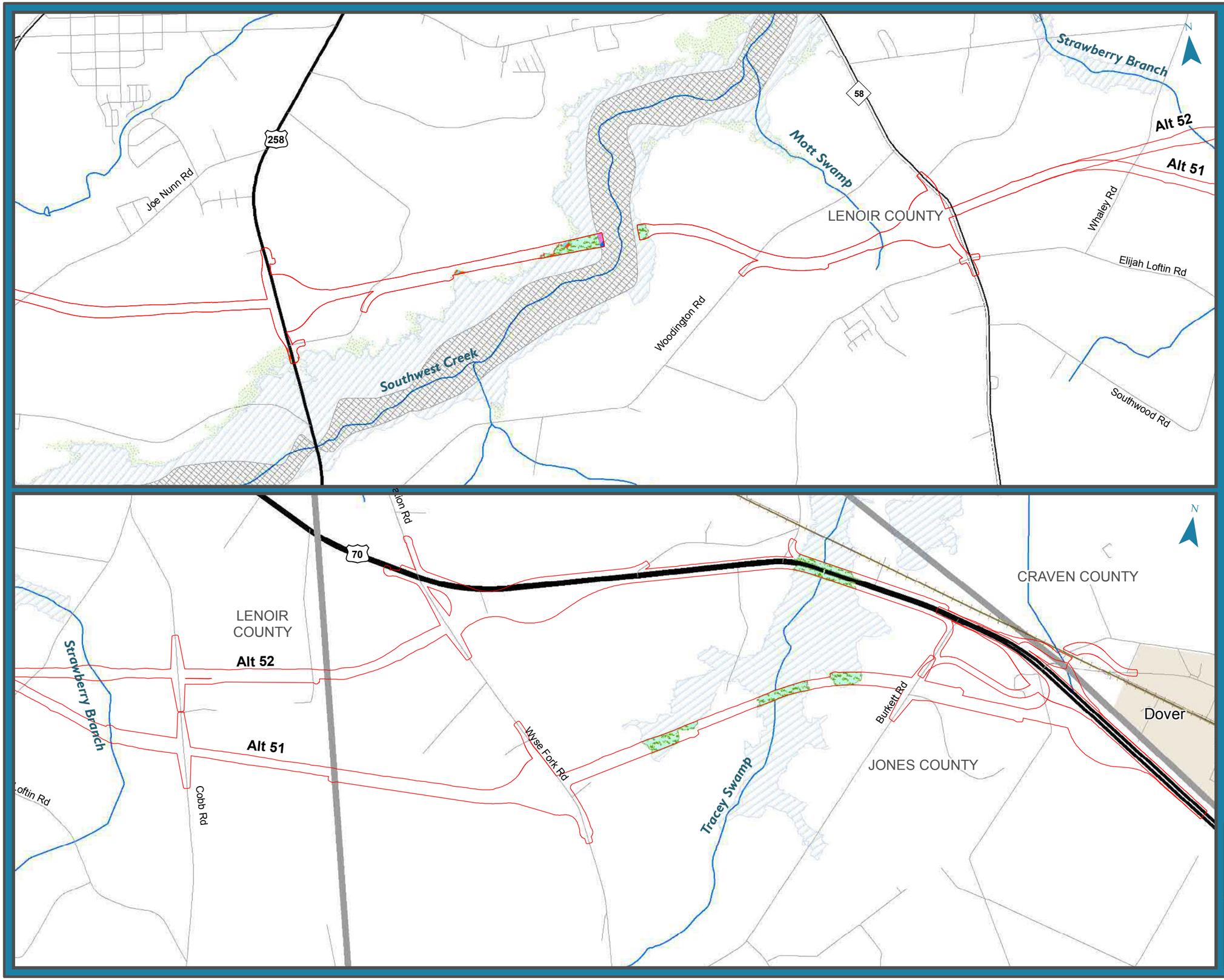


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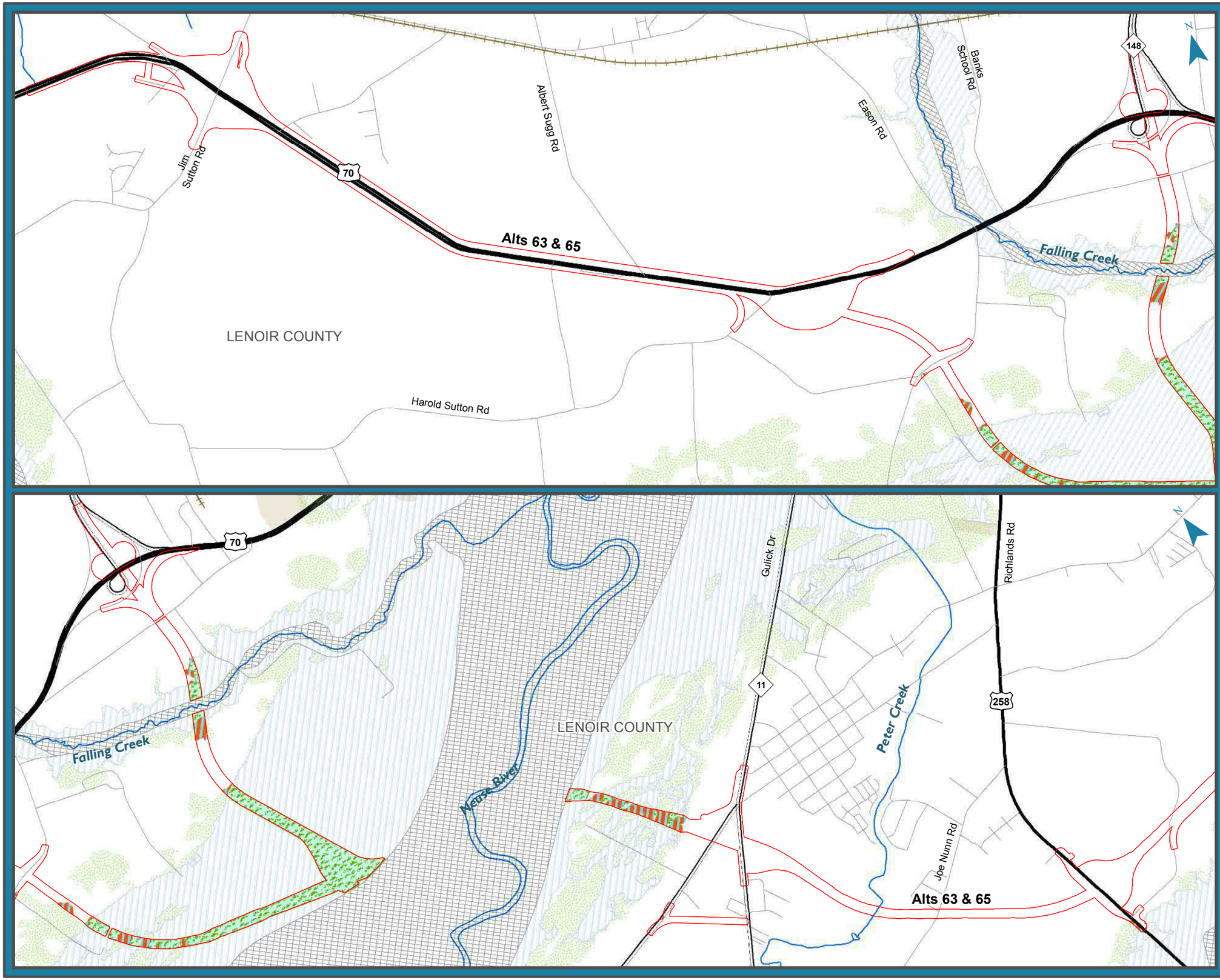
Figure 4-59: Floodplains and floodways impacts - Alternatives 63 and 65 - A



Legend

- Alts 63 and 65 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

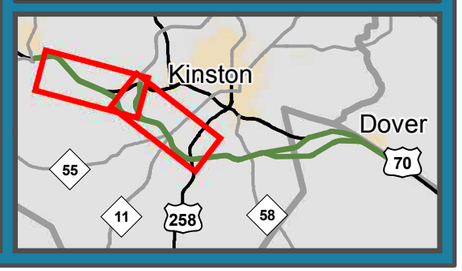


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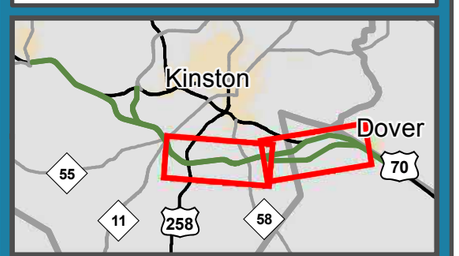
Figure 4-60: Floodplains and floodways impacts - Alternatives 63 and 65 - B

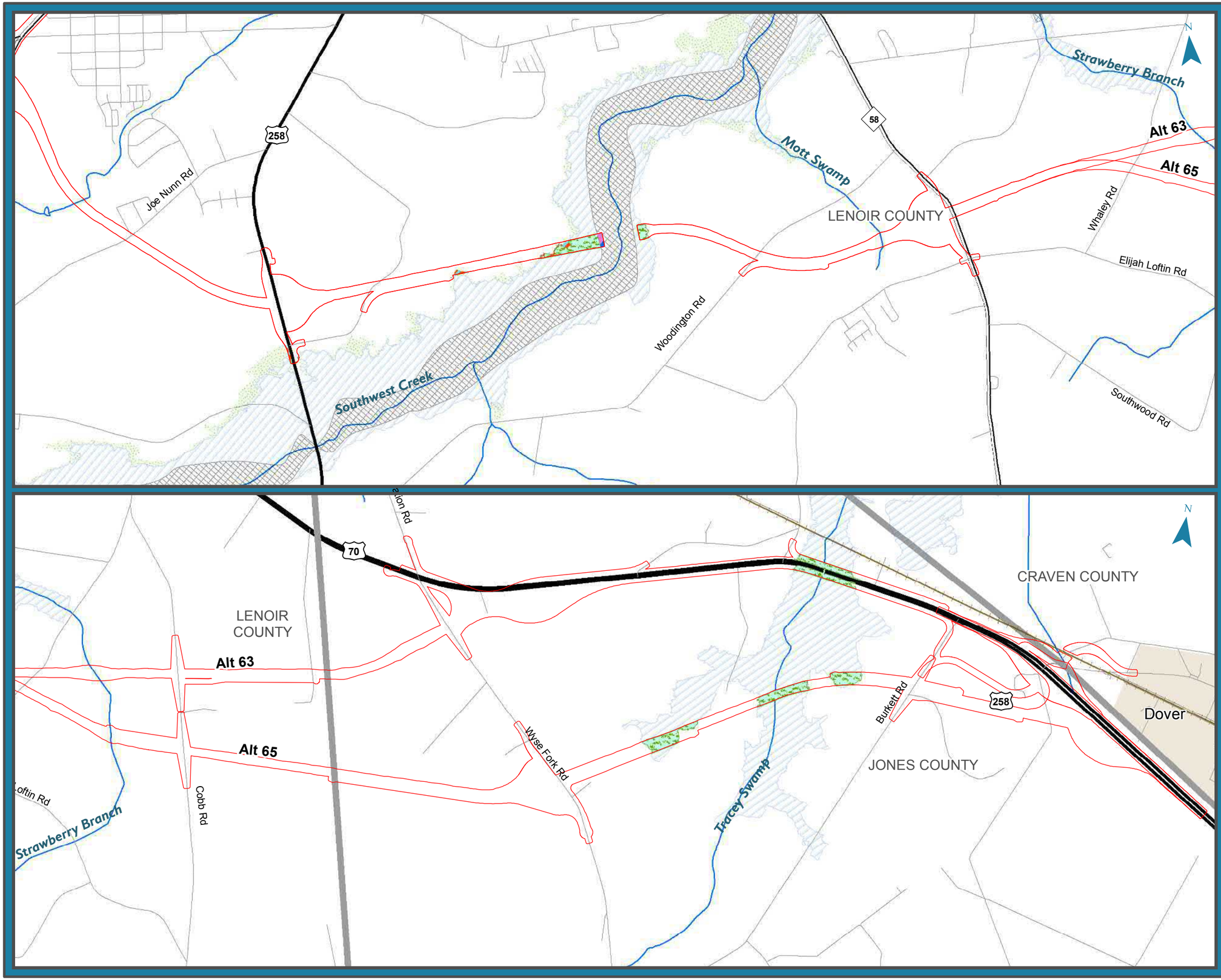
Legend

- Alts 63 and 64 Slope Stake Limits Plus 40 Feet
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Regulatory Floodway Impact
- 100-year Floodplain Impact
- 500-year Floodplain Impact

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS





4.7.2 Flood Analysis

Flood Analysis Memo

The Flood Analysis Memo for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

The flood analysis resulted in data showing the difference between the proposed road surface elevation and the water surface elevation for the 1 percent annual flood chance, 4 percent annual flood chance, and flood levels resulting from Hurricane Matthew. Of the three water surface elevations evaluated, the 1 percent water surface elevation was the highest. Mapping was developed to show the difference in elevation between the proposed roadway and the 1 percent water surface elevation for all areas where the proposed roadway intersected the Neuse River floodplain or crossed the 1 percent floodplain on tributaries to the Neuse River with a freeboard of 3 feet or less. The roadway path was color coded such that areas below the 1 percent water surface elevation are shown in red, areas between 0 and 3 feet above the 1 percent water surface elevation area shown in yellow, and areas that are greater than 3 feet above the 1 percent water surface elevation are shown in green.

According to the analysis, none of the new location DSAs is inundated by the 1 percent annual flood chance event as shown on Figure 4-61 through Figure 4-82. The other two events evaluated have lower water surface elevations than the 1 percent and will therefore not overtop any of the potential routes. The analysis did show potential issues within proposed sag locations along each alternative that would fall between 0 and 3 feet above the 1 percent water surface elevation. If one of the new location DSAs is chosen to be the applicant's preferred alternative, the vertical alignment of the mainline will be revised. During final design, revisions to the sag locations will be made to show a minimum of a 1.5-foot freeboard at the proposed shoulder point during a 1 percent annual chance flooding event.

The analysis was only performed for the Neuse River and backwater to the Neuse River due to data availability. More information regarding methodologies and data used within the analysis is included in the R-2553 Kinston Bypass Flood Analysis Memo that is available on the project website.

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Figure 4-61: Elevation above 1 percent water surface elevation - Alternative 1UESB

Legend

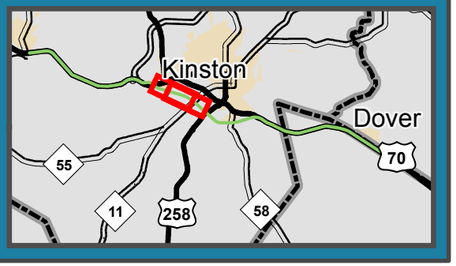
- Alt. 1UESB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



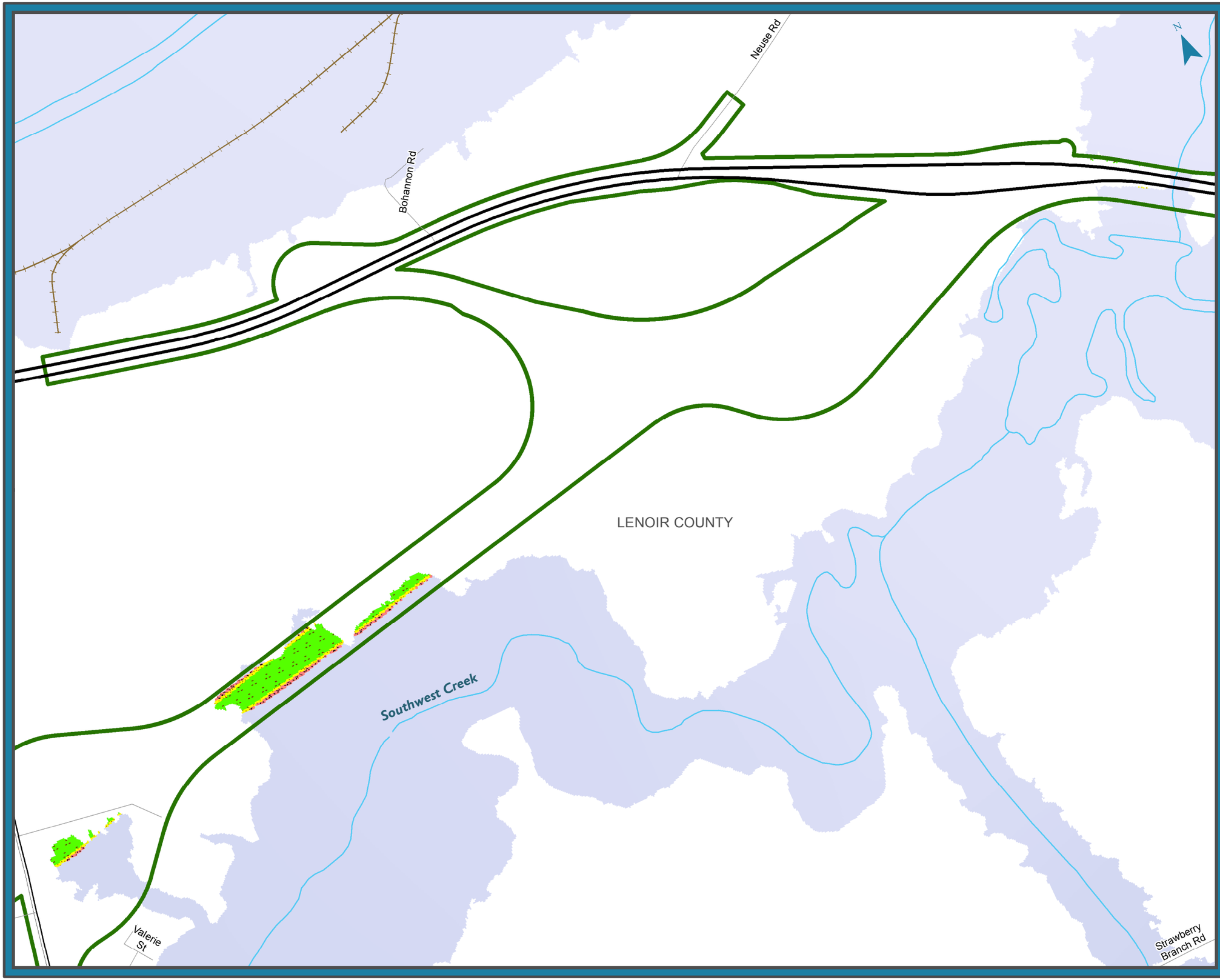


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Figure 4-62: Elevation above 1 percent water surface elevation - Alternative 1UESB - B

Legend

- Alt. 1UESB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

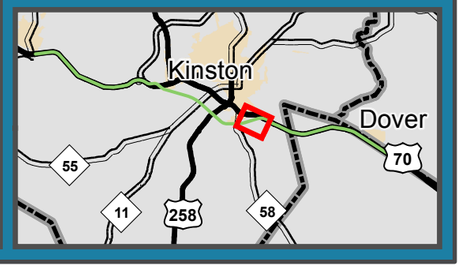

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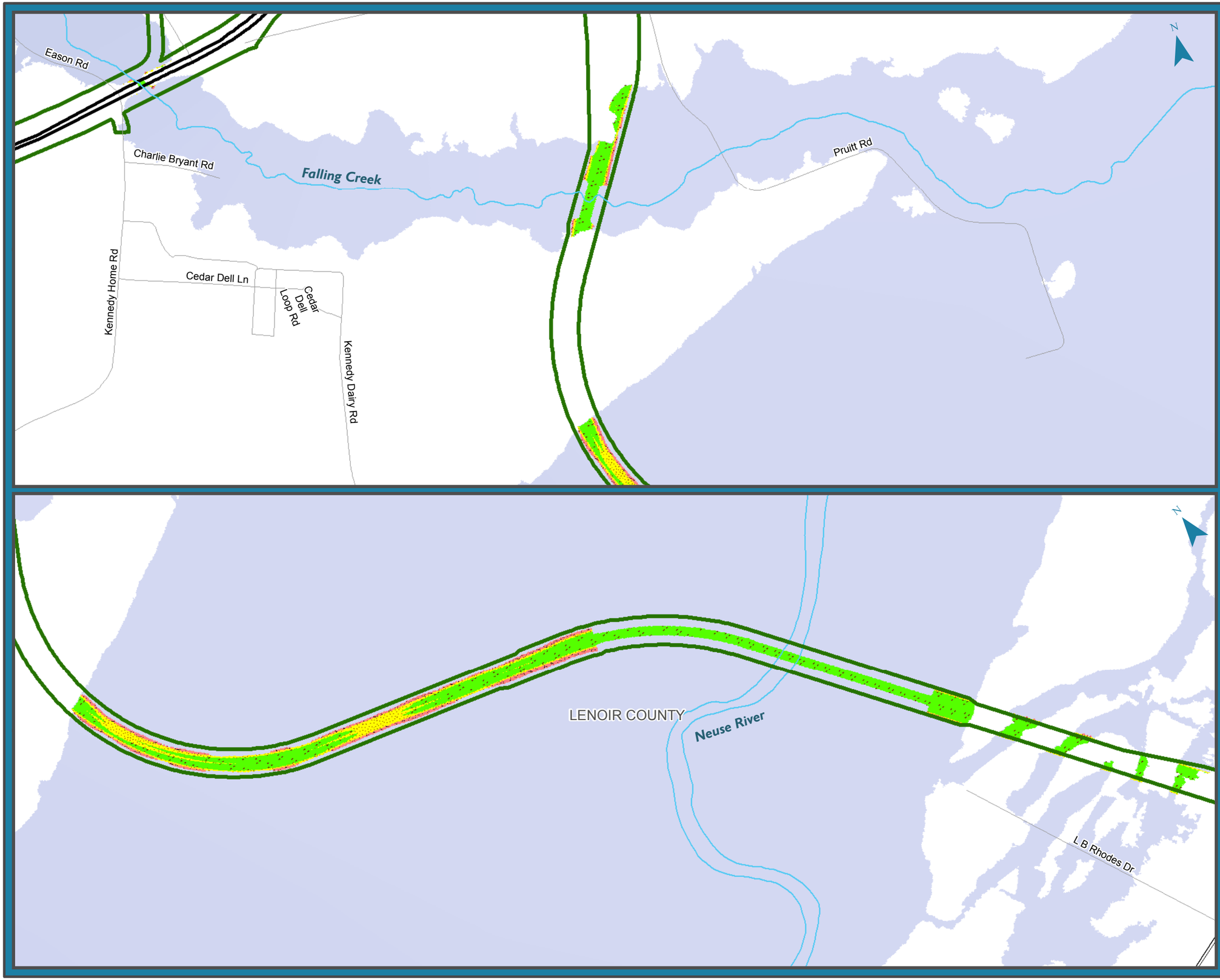
Figure 4-63: Elevation above 1 percent water surface elevation - Alternative 11 - A



Legend

- Alt. 11 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

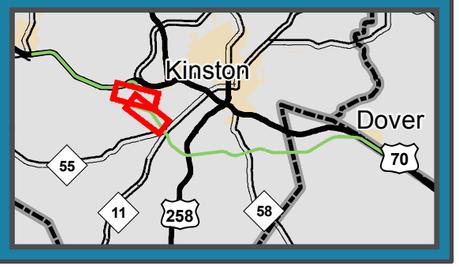


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Figure 4-64: Elevation above 1 percent water surface elevation - Alternative 11 - B

Legend

- Alt. 11 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

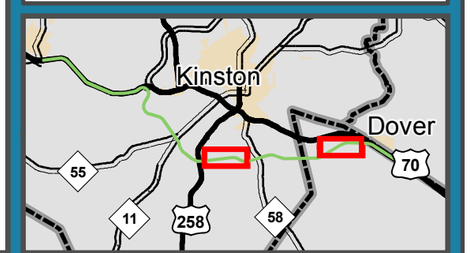

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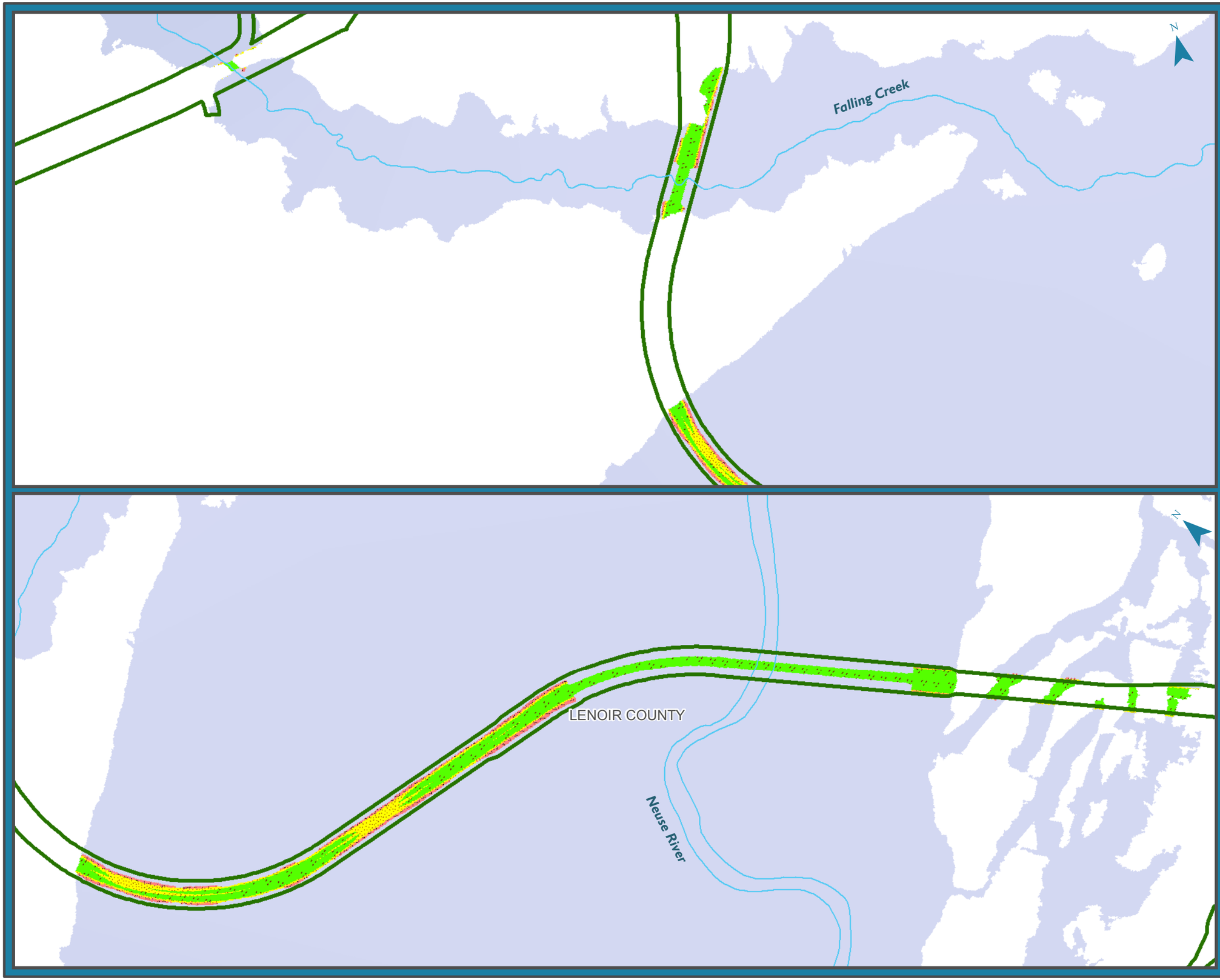
Figure 4-65: Elevation above 1 percent water surface elevation - Alternative 12 - A



Legend

- Alt. 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

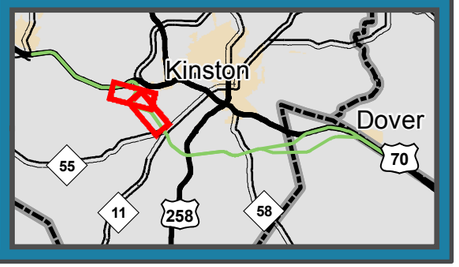


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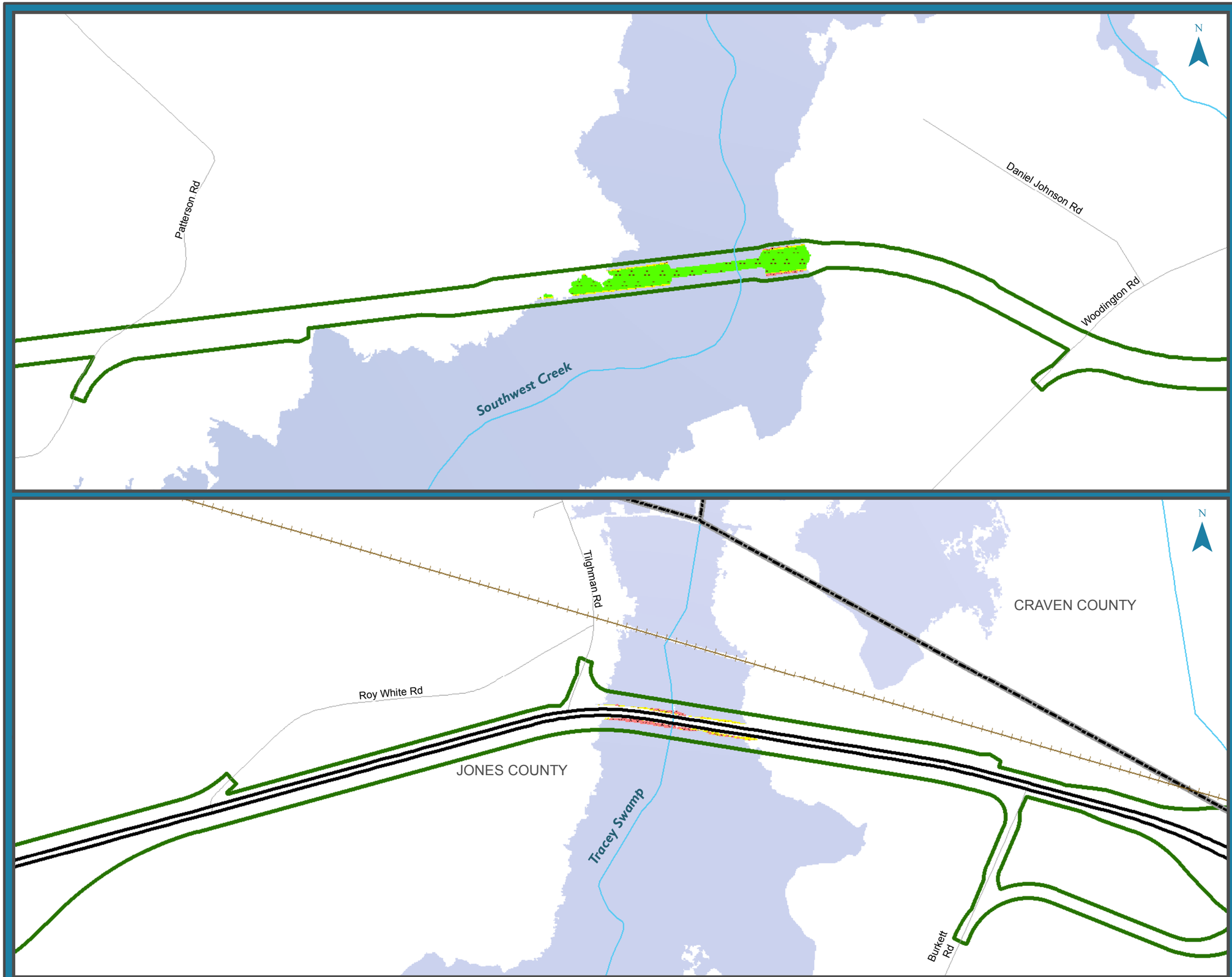
Figure 4-66: Elevation above 1 percent water surface elevation - Alternative 12 - B



Legend

- Alt. 11 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

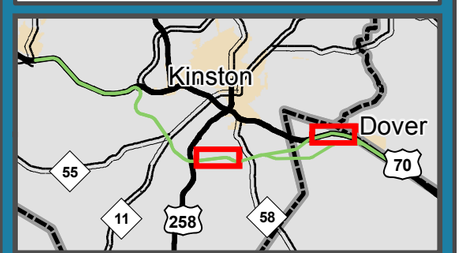


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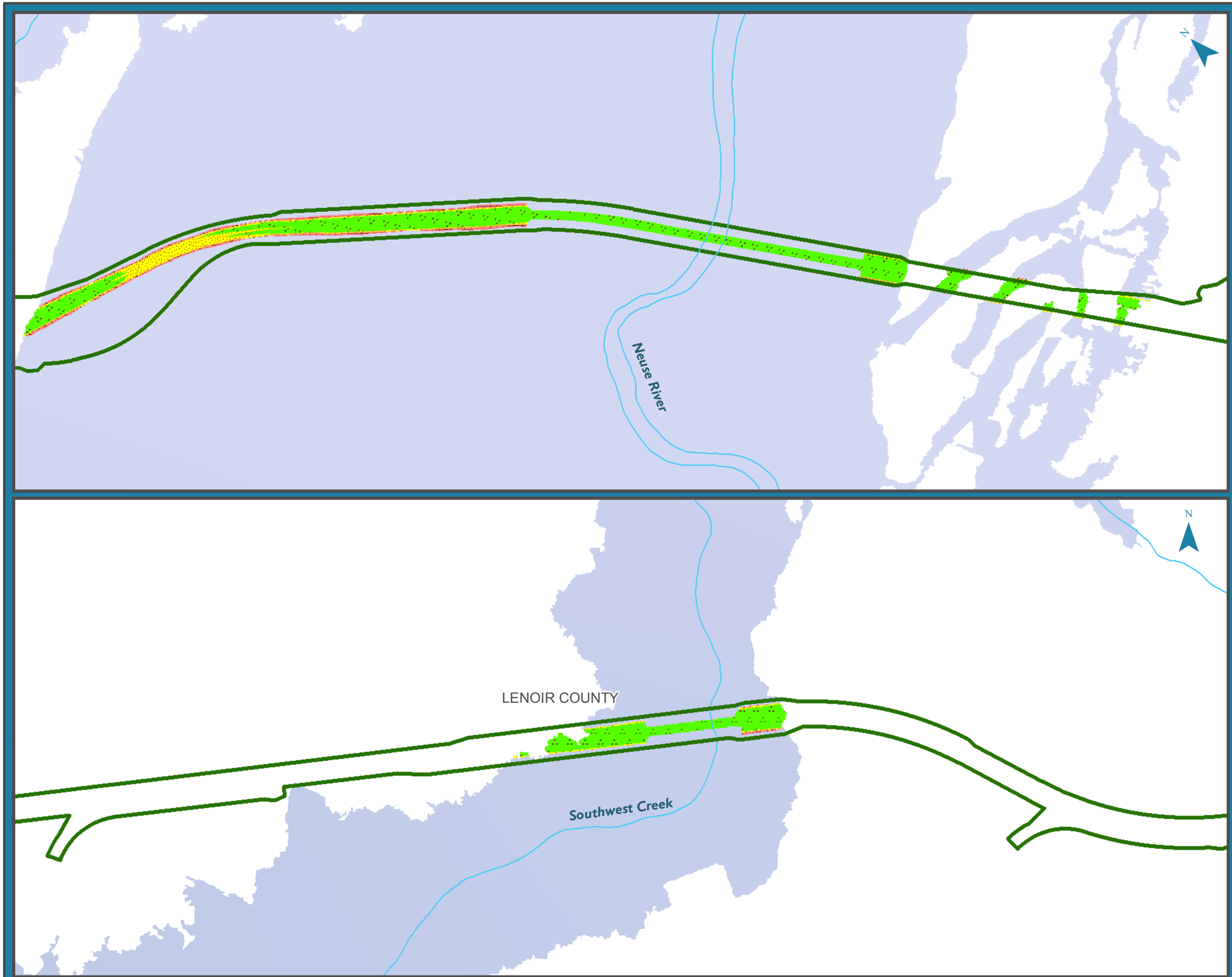
Figure 4-67: Elevation above 1 percent water surface elevation - Alternative 31 - A



Legend

- Alt. 11 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

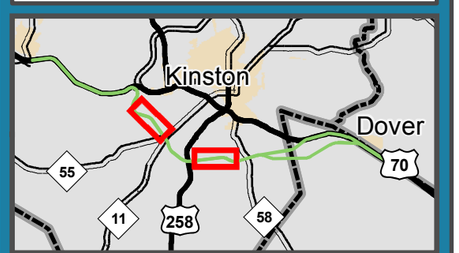


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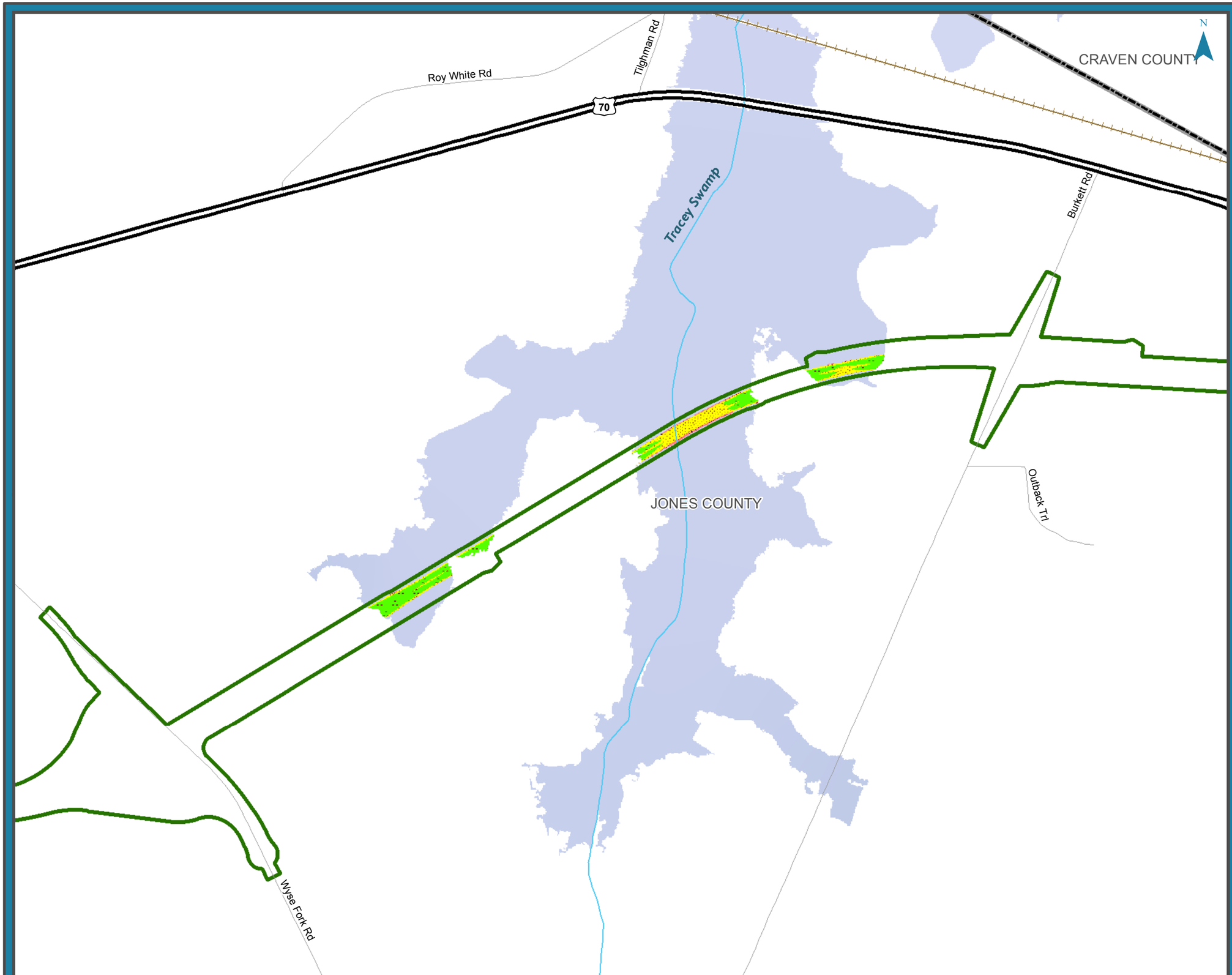
Figure 4-68: Elevation above 1 percent water surface elevation - Alternative 31 - B



Legend

- Alt. 31 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

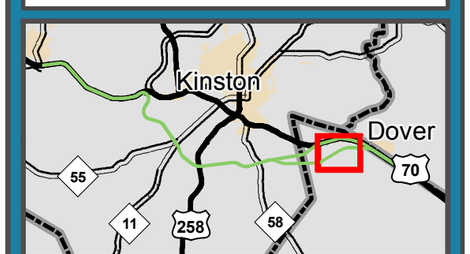


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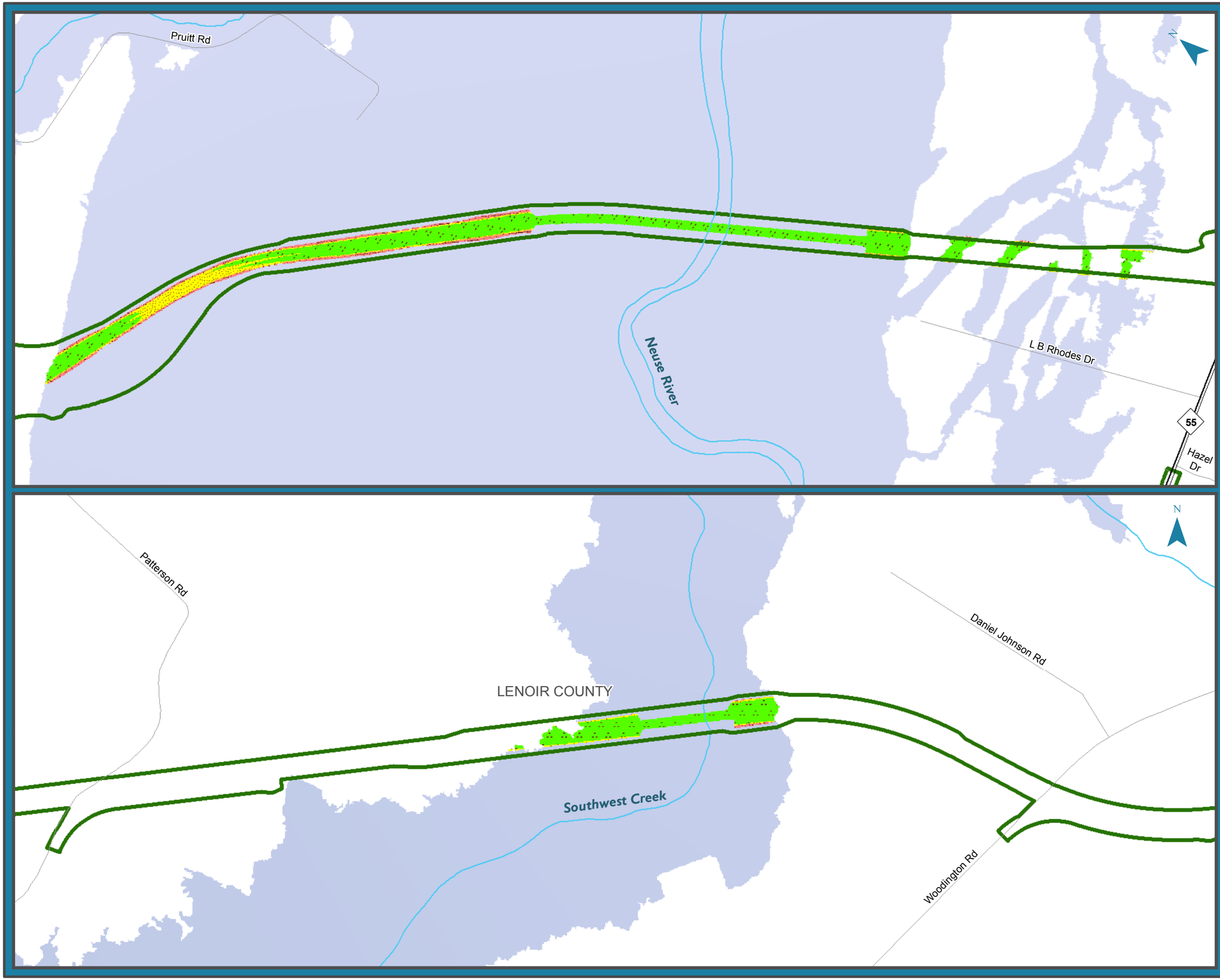
Figure 4-69: Elevation above 1 percent water surface elevation - Alternative 32 - A



Legend

- Alt. 11 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

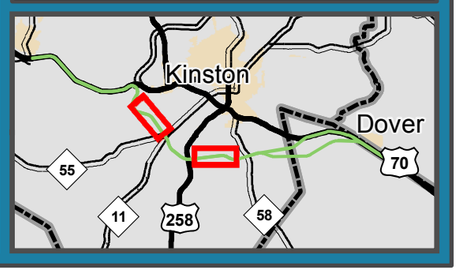


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Figure 4-70: Elevation above 1 percent water surface elevation - Alternative 32 - B

LENOIR COUNTY
CRAVEN COUNTY
JONES COUNTY
Tilghman Rd
Frazier Ln
Roy White Rd
Tracey Swamp
Burkett Rd
Outback Trl
Wyse Fork Rd
70

N

Legend

- Alt. 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

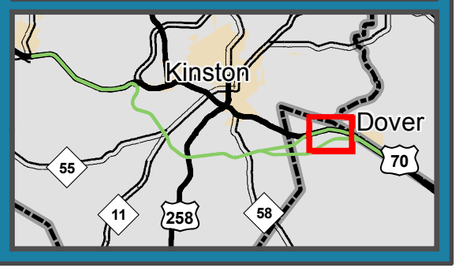

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Figure 4-71: Elevation above 1 percent water surface elevation - Alternative 35 - A

Legend

- Alt. 35 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Elevation Above 1% Water

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

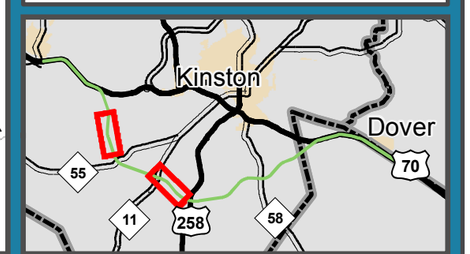

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Figure 4-72: Elevation above 1 percent water surface elevation - Alternative 35 - B

N

LENOIR COUNTY

CRAVEN COUNTY

JONES COUNTY

Tilghman Rd

Frazier Ln

Roy White Rd

Neuse River

Tracey Swamp

Burkett Rd

Outback Trl

70

Legend

- Alt. 35 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Elevation Above 1% Water

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

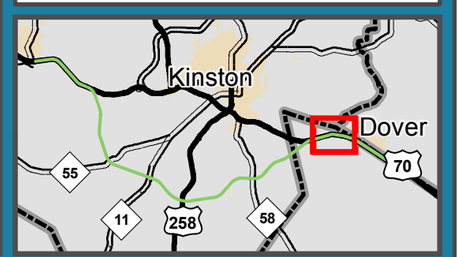

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Figure 4-73: Elevation above 1 percent water surface elevation - Alternative 36 - A

Legend

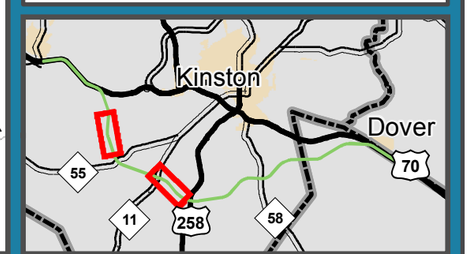
- Alt. 36 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

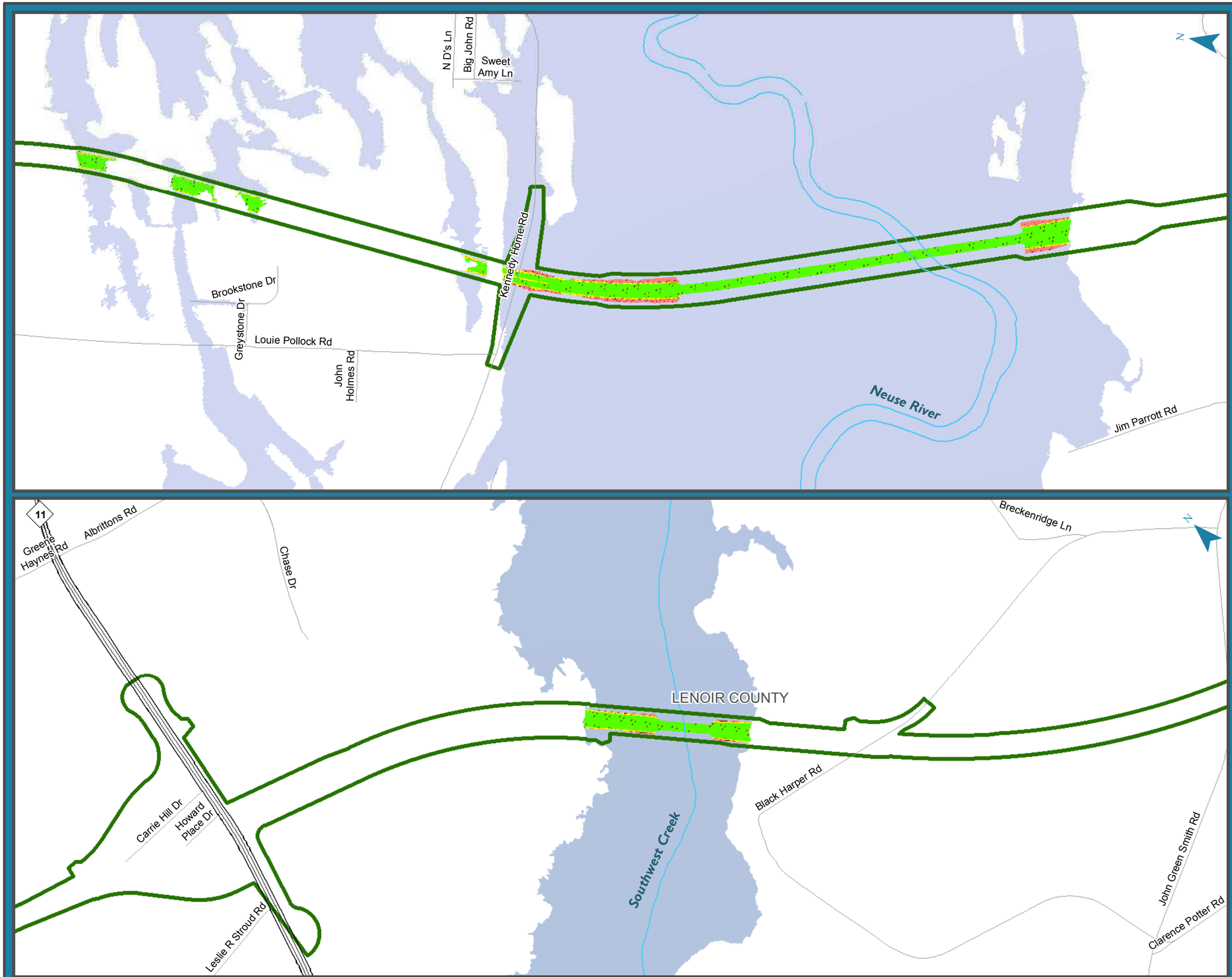
Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS





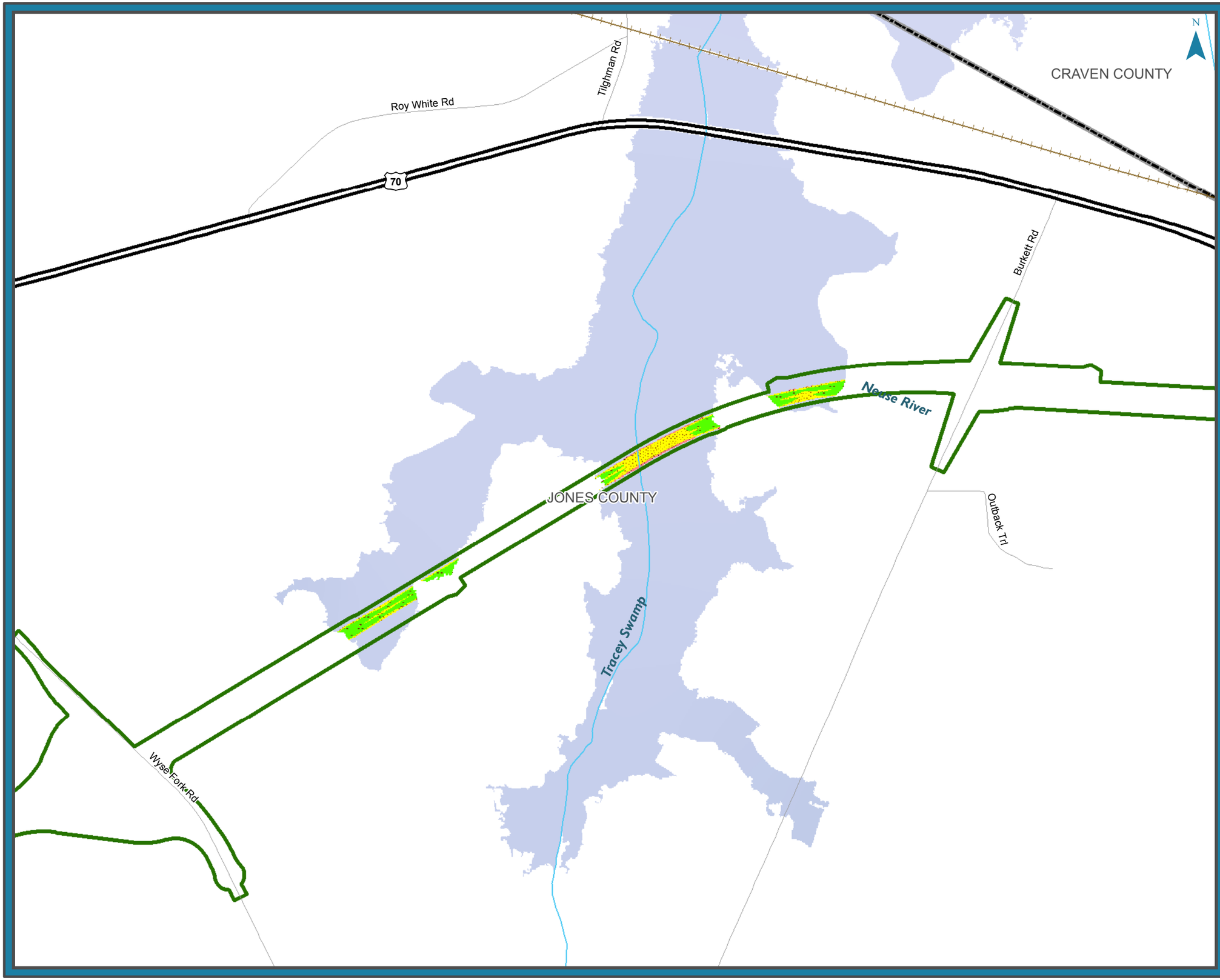


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Figure 4-74
Elevation above 1 percent water surface elevation - Alternative 36 - B

Legend

- Alt. 36 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

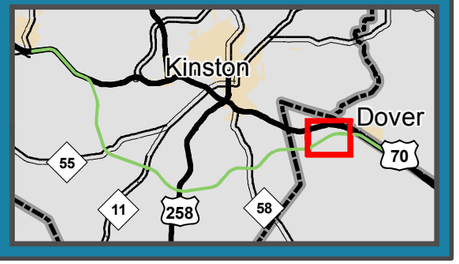

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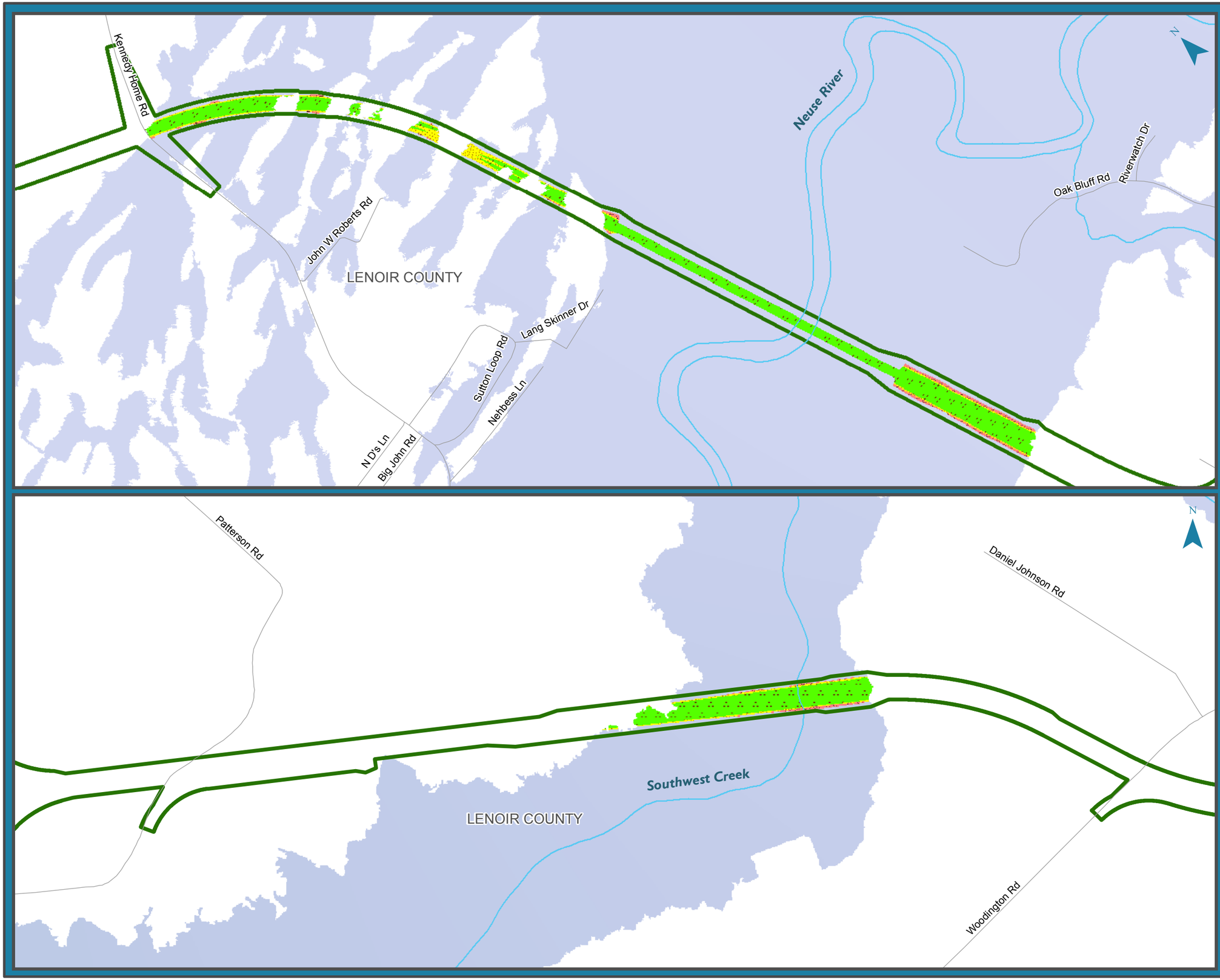
Figure 4-75: Elevation above 1 percent water surface elevation Alternative 51 - A



Legend

- Alt. 51 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- 18 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

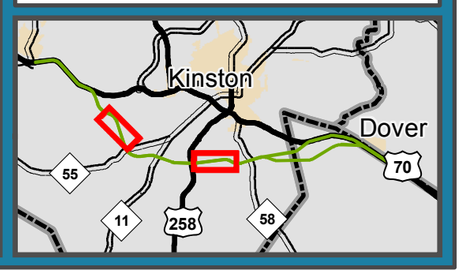


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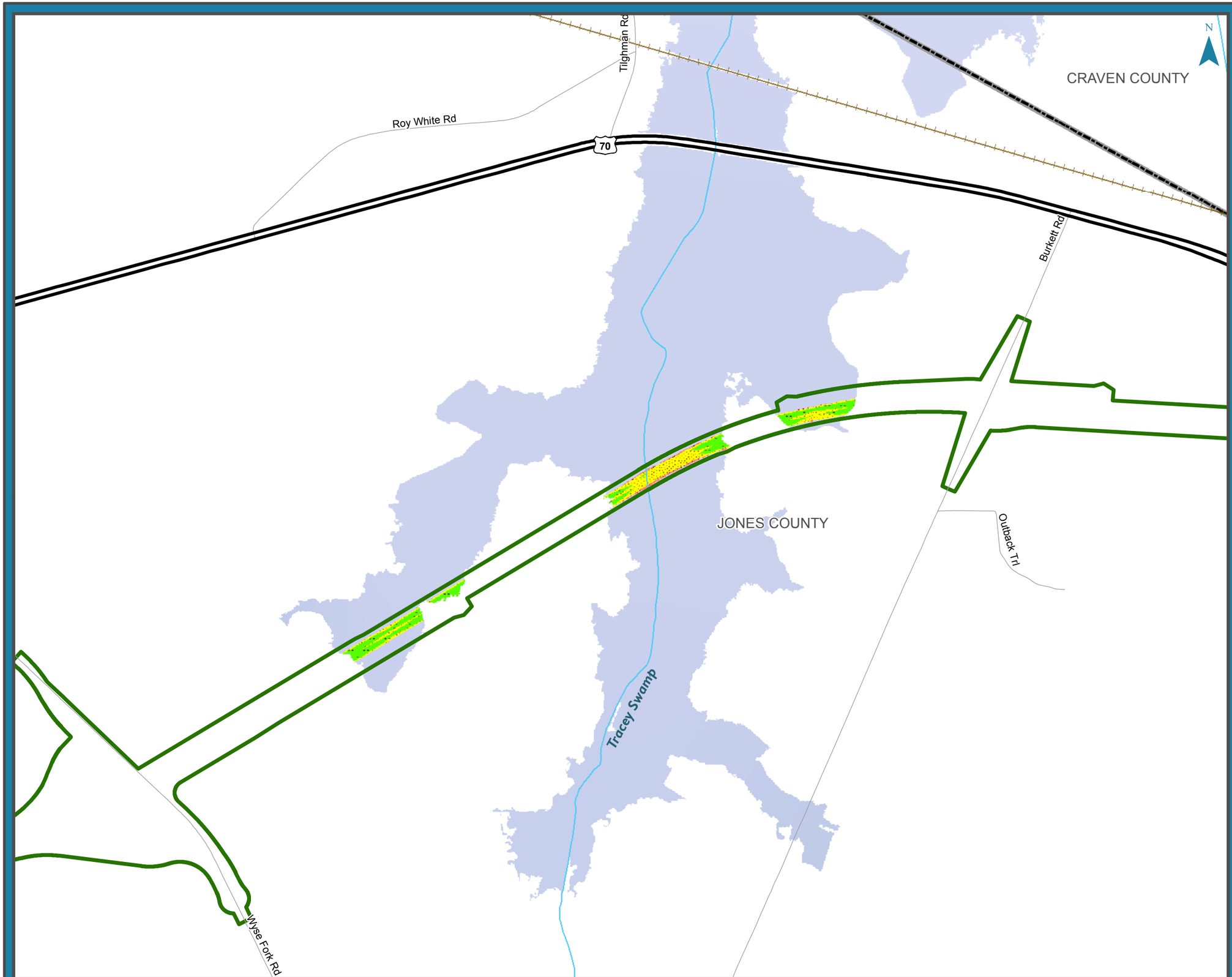
Figure 4-76: Elevation above 1 percent water surface elevation - Alternative 51 - B



Legend

- Alt. 51 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -18 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

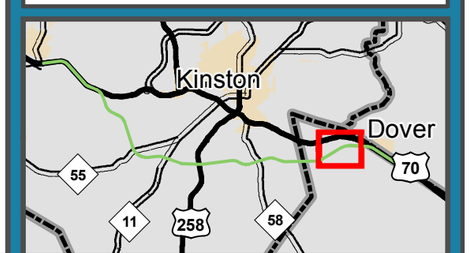


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Figure 4-77: Elevation above 1 percent water surface elevation - Alternative 52 - A

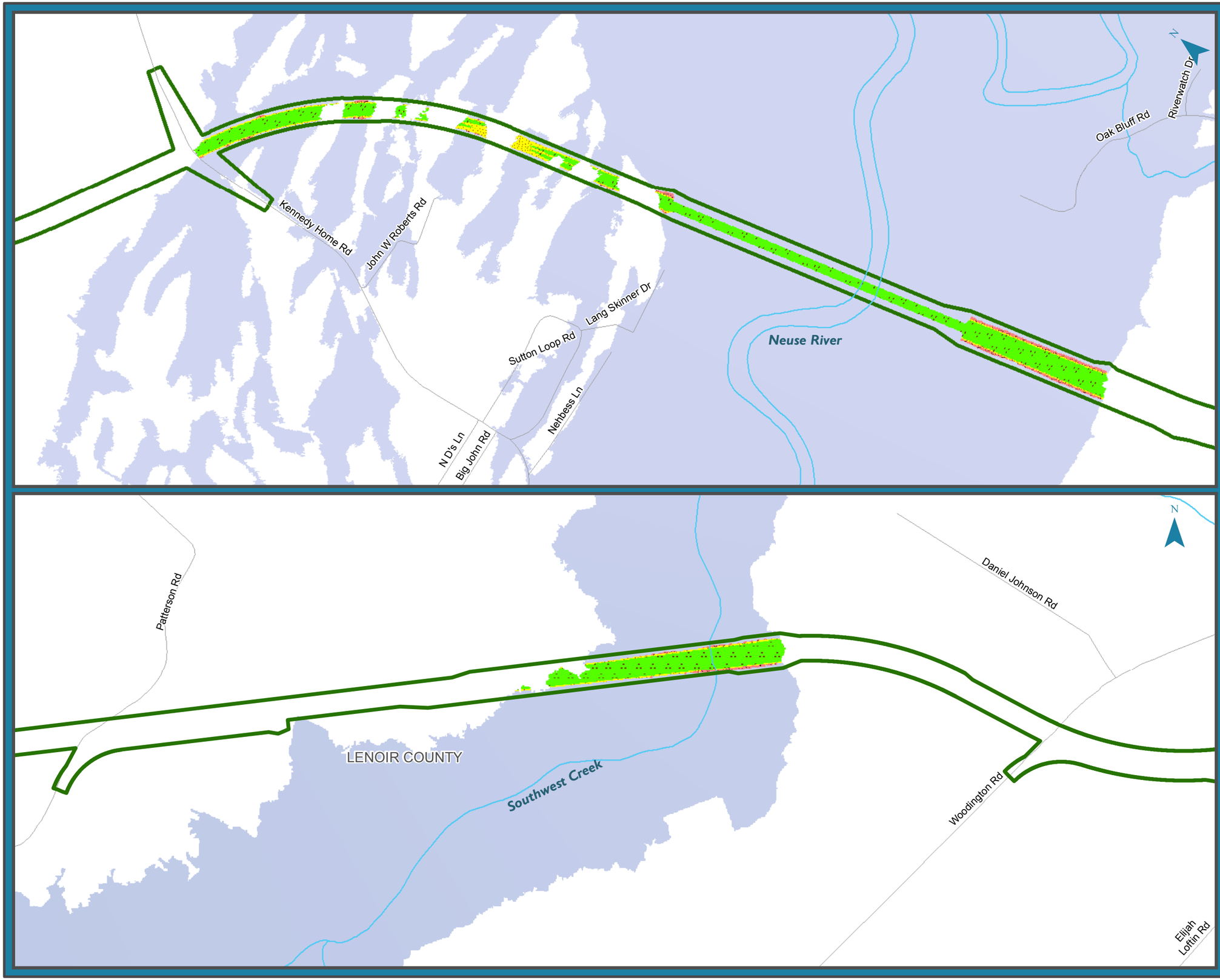
Legend

- Alt. 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles



This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

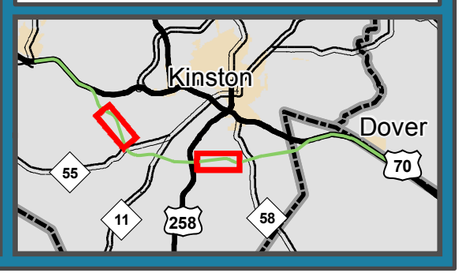


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Figure 4-78: Elevation above 1 percent water surface elevation - Alternative 52 - B

LENOIR COUNTY

CRAVEN COUNTY

JONES COUNTY

Frazier Ln

Tilghman Rd

Roy White Rd

Tracey Swamp

Burkett Rd

Outback Trl

Wyse Fork Rd

70

N

Legend

- Alt. 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

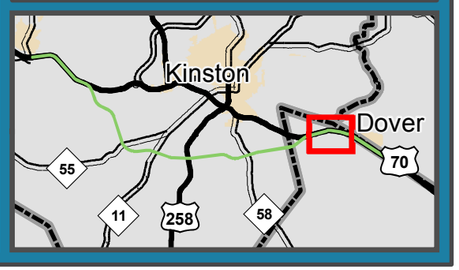

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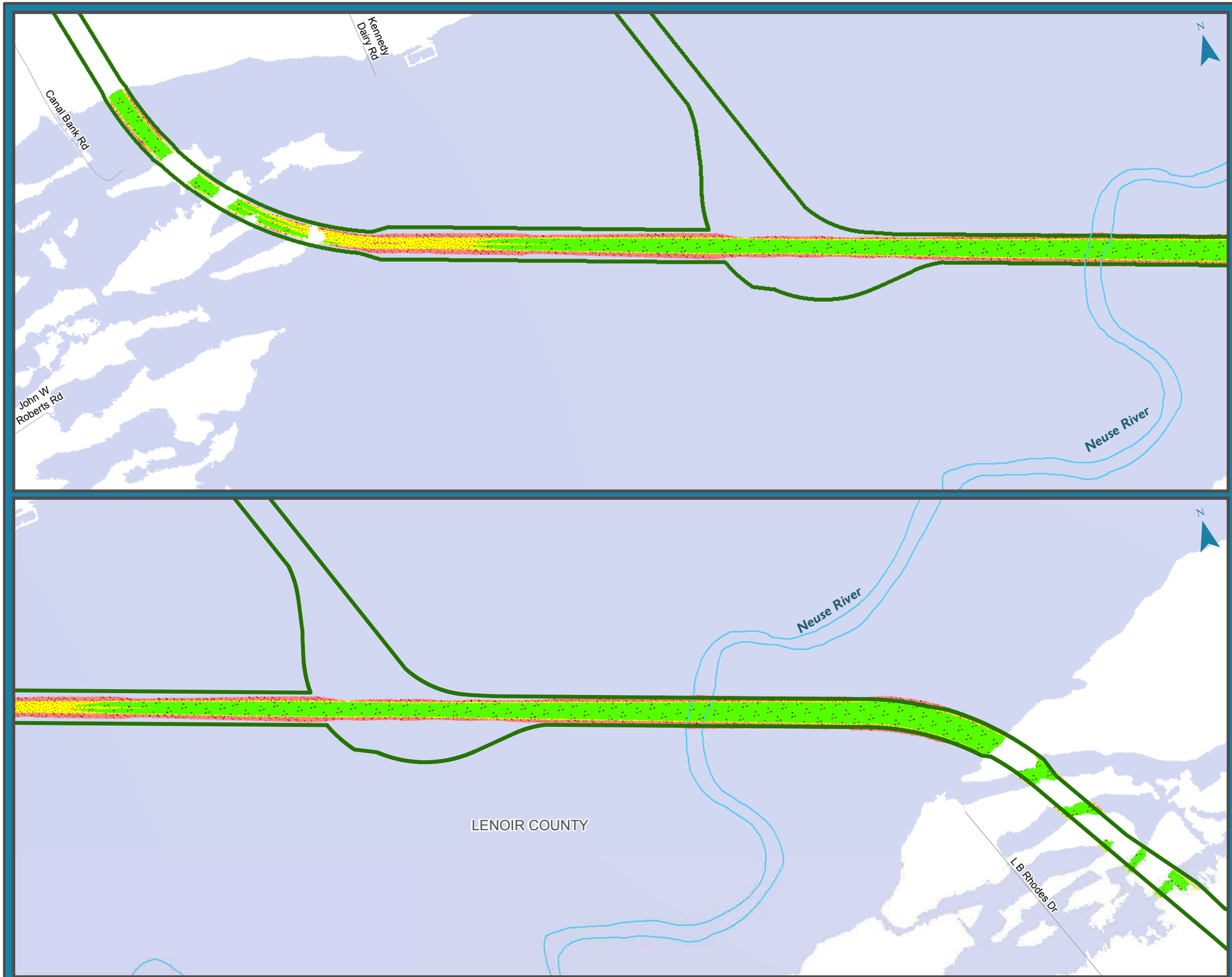
Figure 4-79: Elevation above 1 percent water surface elevation - Alternative 63 - A



Legend

- Alt. 63 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3-35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

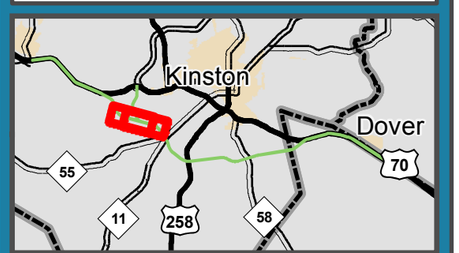


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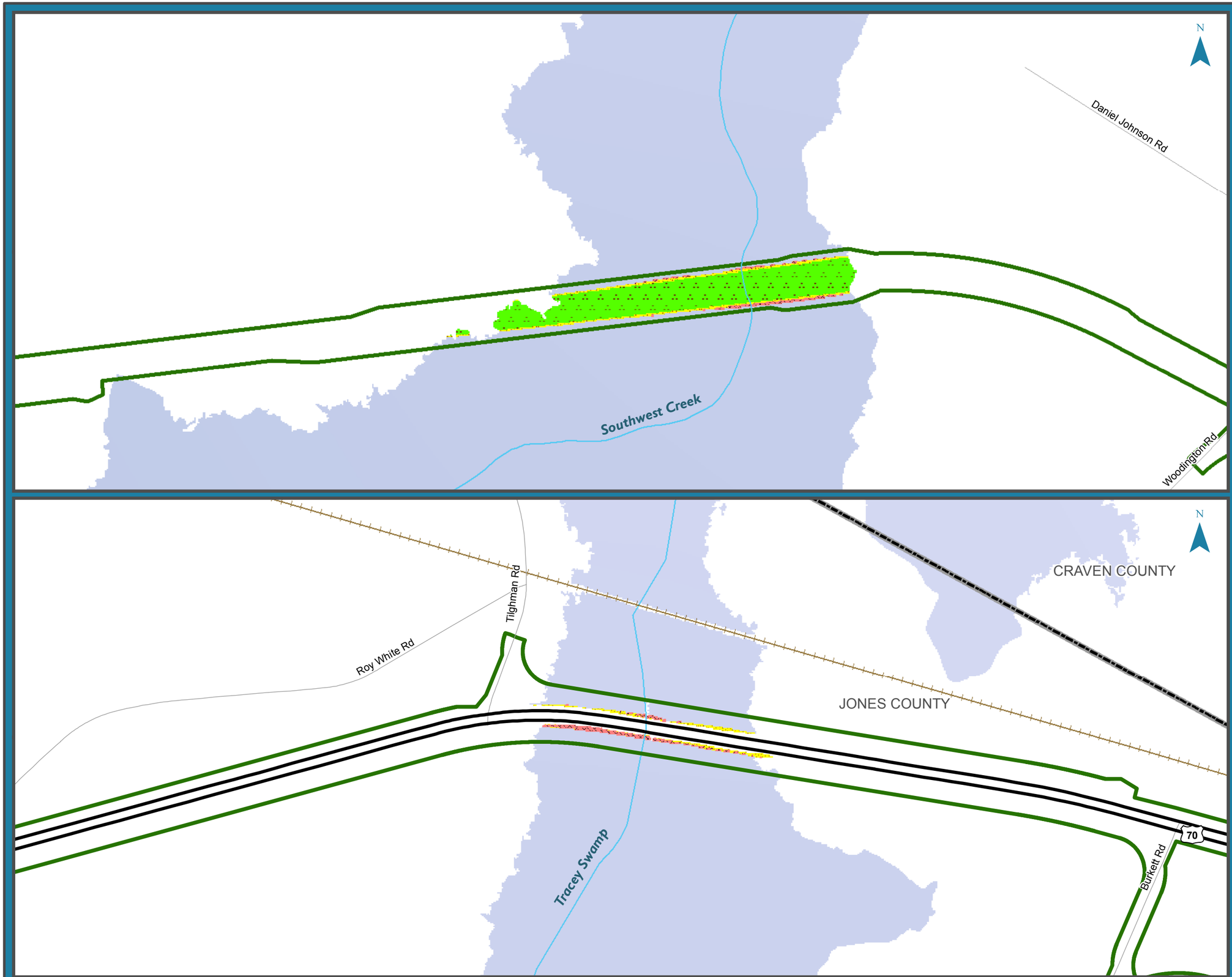
Figure 4-80: Elevation above 1 percent water surface elevation - Alternative 63 - B



Legend

- Alt. 63 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3-35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

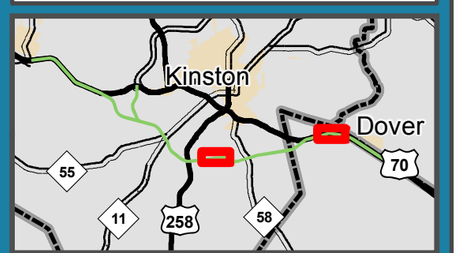


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Figure 4-81: Elevation above 1 percent water surface elevation - Alternative 65 - A

Legend

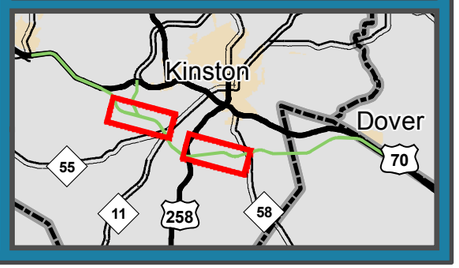
- Alt. 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- County Boundary

Elevation Above 1% Water Surface

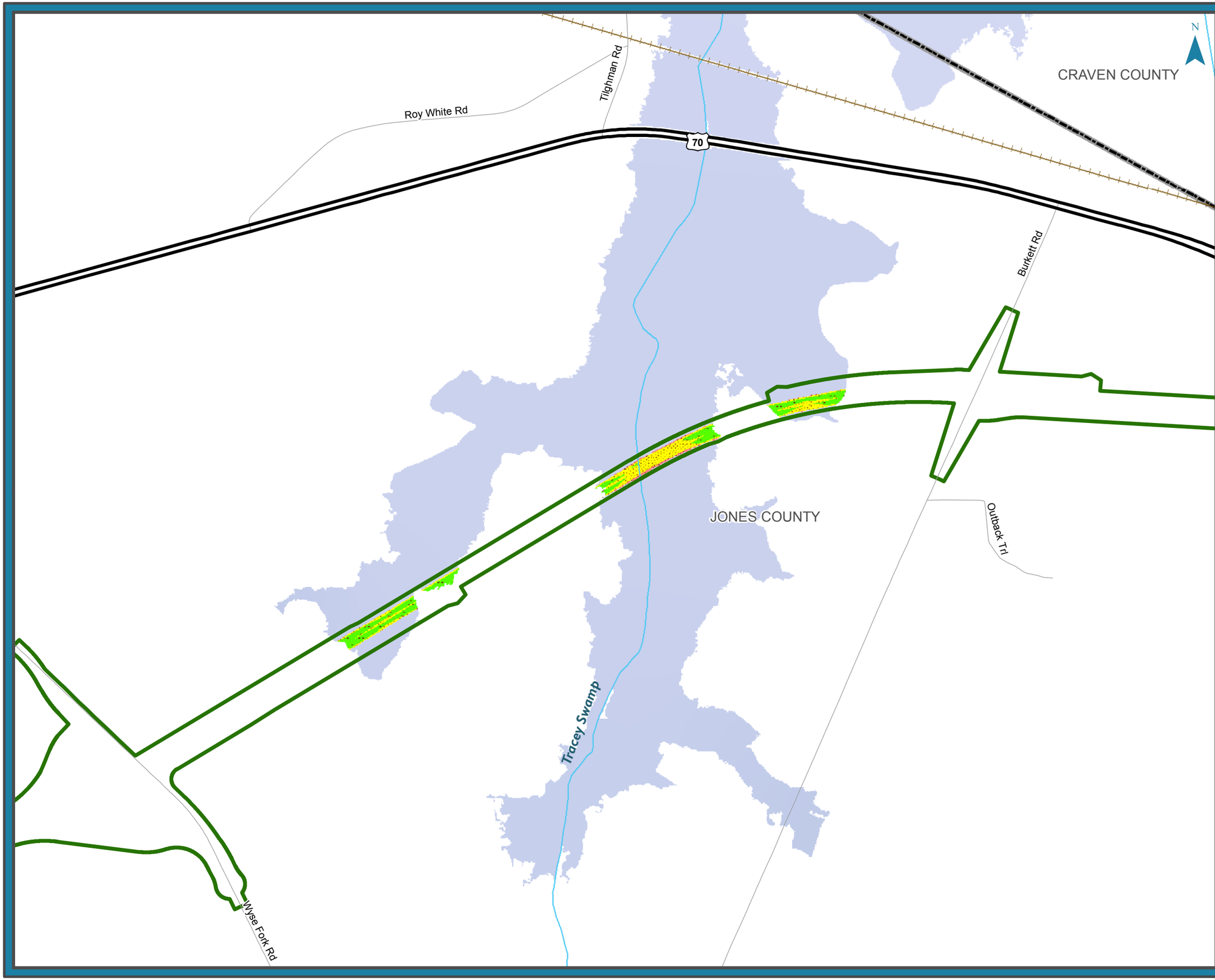
- 3-35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



Canal Bank Rd
Kennedy Dairy Rd
Neuse River
John W Roberts Rd
L B Rhodes Dr
Tyree Rd
11
55
Hazel Dr
Sherry Dr
Sutton Loop Rd
Lang Skinner Dr
Pearson Rd
Daniel Johnson Rd
58
Joe Nunn Rd
258
Patterson Rd
LENOIR COUNTY
Southwest Creek
Woodington Rd
Elijah Loftin Rd
Ridgeview Dr
Spring Creek Dr
Driftwood Dr
Village Creek Dr
Larry Loftin Ln
Baileys Park Ln
Parker Fork Rd



70 KINSTON BYPASS
DEIS | R-2553

Figure 4-82:
Elevation above 1 percent water surface elevation - Alternative 65 - B

Legend

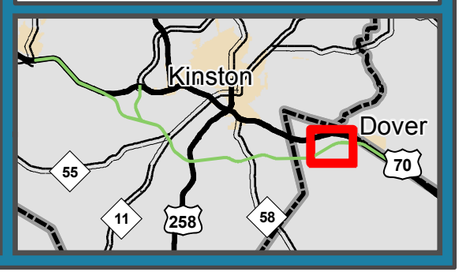
- Alt. 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road

Elevation Above 1% Water Surface

- 3 - 35 ft
- 0 - 3 ft
- -20 - 0 ft
- 100 Year Floodplain

0 0.125 0.25
Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



4.8 FARMLAND

North Carolina Executive Order 96, Conservation of Prime Agricultural and Forest Lands, requires all state agencies to consider the impact of land acquisition and construction projects on prime farmland soils, as designated by the NRCS (State of North Carolina 1983).

The Farmland Protection Policy Act does not regulate nonfederal land or private farmland, but is intended to minimize the impact federal programs have on the conversion of farmland to nonagricultural uses. Table 4-17 summarizes impacts to farmland soils, including prime and unique farmland soils. Impacts to prime farmland would be lower with Alternatives 1UE and 1SB. Alternatives 11 and 12 would have the highest impacts to unique farmland.

Table 4-17: Acreage impacts to farmland soils by alternative

	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Farmland of Unique Importance (acres)	Prime Farmland if Drained (acres)
Alt 1UE	282.2	172.2	53.3	305.9
Alt 1SB	302.3	222.4	53.3	361.5
Alt 11	392.5	236.8	56.7	423.0
Alt 12	422.3	210.2	56.7	439.0
Alt 31	404.3	263.7	51.7	365.5
Alt 32	434.0	236.6	51.7	382.3
Alt 35	432.4	203.4	47.3	589.4
Alt 36	415.2	225.6	47.3	553.8
Alt 51	410.2	224.4	48.8	426.2
Alt 52	440.1	198.3	48.8	443.2
Alt 63	420.5	218.2	51.7	379.0
Alt 65	390.6	243.7	51.7	362.0

Note: Impacts were calculated using right-of-way limits of the functional designs.

4.8.1 Agricultural Resources

Impacts to individual agricultural operations are likely with any of the DSAs under consideration including changes in access and division of farms and agriculture fields. Alternatives 1UE, 1SB, 11, 12, 31, 32, 63, and 65 would result in temporary and permanent changes in access to the Sanderson Farms Processing Plant.

NCDOT will ensure that access is maintained during construction for farm equipment and impacts to agricultural operations are minimized during construction.

4.8.2 Voluntary Agricultural Districts

The LUSA identified one VAD in Lenoir County that is comprised of two parcels that has the potential to be impacted (NCDOT 2018g). The two parcels, PINs 450200425447 and 450200523932, are located near Alternatives 35 and 36 along Black Harper Road. The VAD

may be impacted by right-of-way acquisition and land within the VAD may be temporarily converted to non-agricultural use as part of a temporary construction easement. If right-of-way is acquired from the VAD property through eminent domain, the Lenoir County VAD Ordinance requires that the Agricultural Advisory Board hold a public hearing on the proposed condemnation before condemnation may be initiated. Any VAD lands converted to non-agricultural use as part of a temporary construction easement must be returned to farmable condition by the project's completion. Three VADs are located south of Alternative 36. These properties would not be impacted by any of the DSAs under consideration.

The LUSA also identified six VADs in Craven County and two VADs in Jones County within the project study area. These properties would not be impacted by any of the DSAs under consideration.

4.9 AIR QUALITY

4.9.1 Attainment Status

The project study area is located in an attainment area; therefore, 40 CFR 51 and 93 are not applicable. The Kinston Bypass project is not anticipated to create any adverse effects on the air quality of this attainment area. Therefore, regional and microscale analyses are not required.

4.9.2 Mobile Source Air Toxics

The proposed alignment of the DSAs for the Kinston Bypass project would move traffic closer to nearby homes and businesses. Localized areas could exist where ambient concentrations of MSATs could be higher under the DSAs than under the No-Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along Alternatives 1SB, 11, 12, 31, 32, 35, 36, 51, 52, 63, and 65 around existing developments, especially in the vicinity of proposed new service interchanges. However, the magnitude and the duration of these potential increases when compared to the No-Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts.

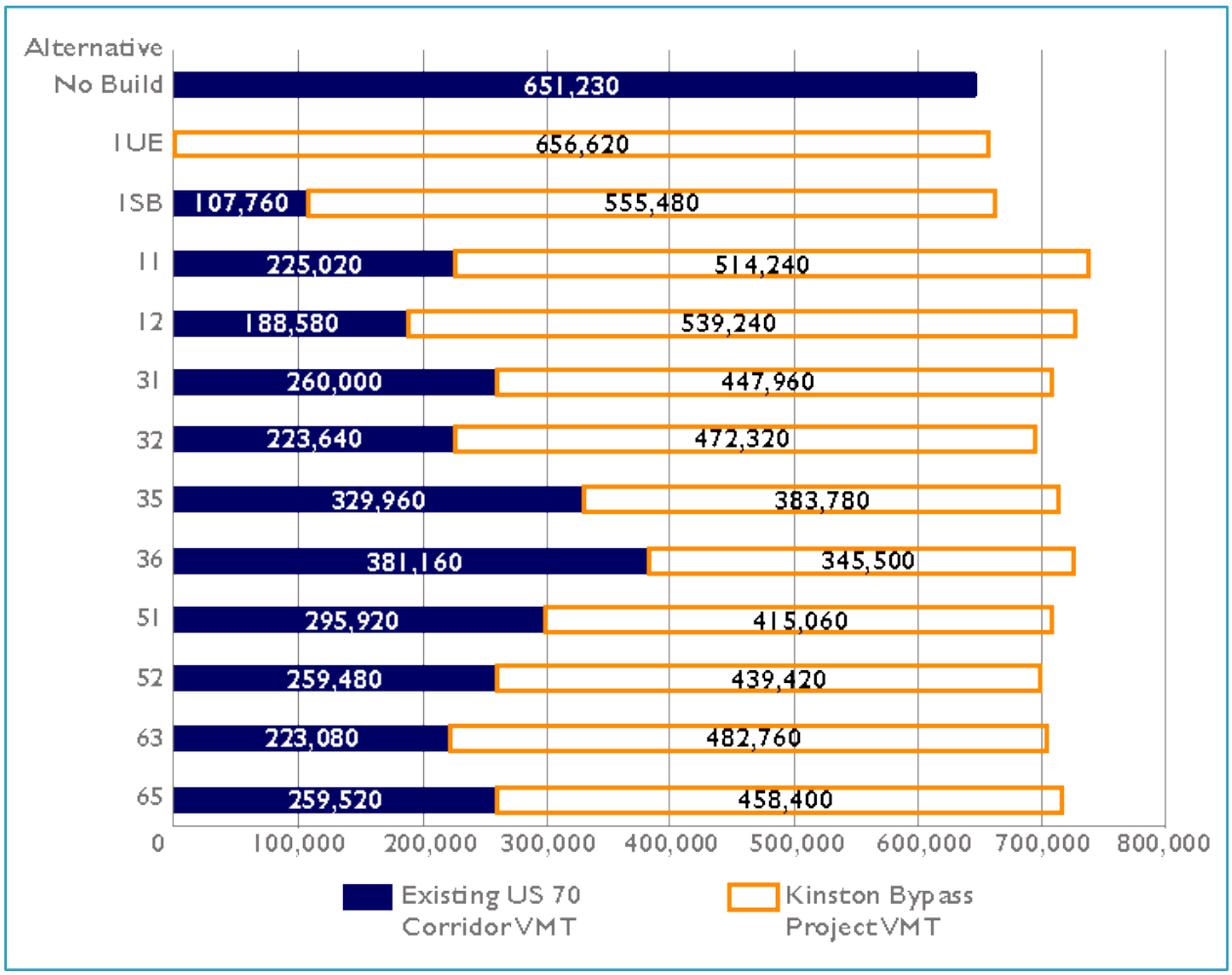
New highways or the widening of existing highways increases localized levels of vehicle emissions, but these increases could be offset due to increases in speeds from reductions in congestion (which are associated with lower MSAT emissions) and because vehicle emissions will decrease in areas where traffic shifts to the new roadway. However, on a regional basis, USEPA's vehicle and fuel regulations, coupled with fleet turnover, will over time result in substantial reductions that in almost all cases will cause region-wide MSAT levels to be substantially lower than exist currently (USEPA 2016).

For the DSAs being considered, the amount of MSATs emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each of the DSAs. Table 4-18 shows the VMT per DSA along both the existing US 70 corridor and the proposed US 70 Bypass alignments. While it is assumed that traffic traveling through Kinston via the US 70 alignments would remain similar among all the DSAs, the total daily VMT varies among the DSAs based on the local traffic that would utilize the new or upgraded facilities. Because the estimated VMT under all DSAs (build and no-build) are similar, varying by less than 14 percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various DSAs. Also, regardless of the DSA chosen, emissions would likely be lower than present

levels in the design year as a result of USEPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (FHWA 2016a). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the project study area are likely to be lower in the future in virtually all locations.

For each DSA there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced for the new location portions of Alternative 1SB near NC 11/55, US 258, and NC 58. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of USEPA's vehicle and fuel regulations. In sum, under DSAs in the design year it is expected there would be reduced MSAT emissions in the immediate area of the project, relative to the No-Build Alternative, due to USEPA's MSAT reduction programs.

Table 4-18: Vehicle miles travelled (per day) - US 70 Kinston Bypass from US 70 near La Grange to US 70 near Dover



4.10 NOISE IMPACT ANALYSIS

The *Traffic Noise Report* presents the preliminary analysis of the probable traffic noise impacts of the US 70 Kinston Bypass project (NCDOT 2018j). The *Traffic Noise Report* is available on the project website. In accordance with the NCDOT *Traffic Noise Policy* (NCDOT 2016c), the *Traffic Noise Report* utilized validated computer models created with the FHWA Traffic Noise Model version 2.5 (FHWA TNM v2.5) to predict future noise levels and define impacted receptors along the proposed action (FHWA 2004). The functional designs for the DSAs were used to update the base year models, as well as create new models in order to predict future year noise levels as a direct result of the project. Base year noise levels were based on traffic and roadway conditions present in the year 2015, and future year noise levels were based on roadway conditions predicted for the year 2040.

Traffic Noise Report

The Traffic Noise Report for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Because noise impacts may affect the quality of life for residents and may be disruptive at other community facilities, a detailed process for calculating noise impacts from projects, such as Kinston Bypass, is followed. Table 4-19 shows the number of impacted receptors by approaching or exceeding NAC, the number of receptors that would experience a substantial noise level increase (predicted design year noise levels are 10 dB(A) or more than existing noise levels), the number of receptors that would experience both impacts (exceeding NAC and increase in noise level), and the number of NSAs that are likely candidates for noise abatement by DSA.

The results of this analysis conclude that the quantity of noise-impacted receptors varies among the DSAs. Alternatives 1SB and 32 would result in the most potential noise impacts. Alternatives 35, 36, and 51 would generally have the fewest number of impacted receptors and likely noise abatement requirements. Table 4-19 presents the number of traffic noise impacts predicted for the DSAs. The locations of noise study areas and receptors are shown on Figure 4-83 through Figure 4-106. Additional details regarding the analysis of traffic noise impacts at each noise sensitive receptor location are included in the *Traffic Noise Report* (NCDOT 2018j).

Consideration for noise abatement measures was given to all impacted receptors in the 2040 build conditions. Following the criteria for feasibility and reasonableness as prescribed in the NCDOT *Traffic Noise Policy*, noise abatement for this project was found to be preliminarily feasible and reasonable for three unique locations, each location applicable to one to six different DSAs (NCDOT 2016c). Noise abatement measures would likely be installed at one location for Alternative 1UE, one location for Alternatives 11 and 12, two locations for Alternatives 31 and 32, and two locations for Alternatives 63 and 65. Theses analyses are preliminary in nature and meant solely to describe noise study areas where potential noise barriers may be successfully employed in accordance with NCDOT reasonableness and feasibility criteria. Once the applicant's preferred alternative is selected, a design noise report will determine more specific details regarding the noise abatement measures.

Table 4-19: Summary of noise-impacted receptors by DSA

Alternative	Number of NAC Receptors Impacted[a]	Substantial Noise Level Increase[b]	Both (NAC and Increase)[c]	NSAs with Likely Abatement
Alt 1UE	38	7	2	1
Alt 1SB	56	15	8	0
Alt 11	34	22	8	1
Alt 12	37	26	9	1
Alt 31	41	34	13	2
Alt 32	44	37	14	2
Alt 35	23	25	10	0
Alt 36	21	23	10	0
Alt 51	24	21	5	0
Alt 52	27	25	6	0
Alt 63	41	28	11	2
Alt 65	38	26	10	2

NAC-Noise abatement criteria

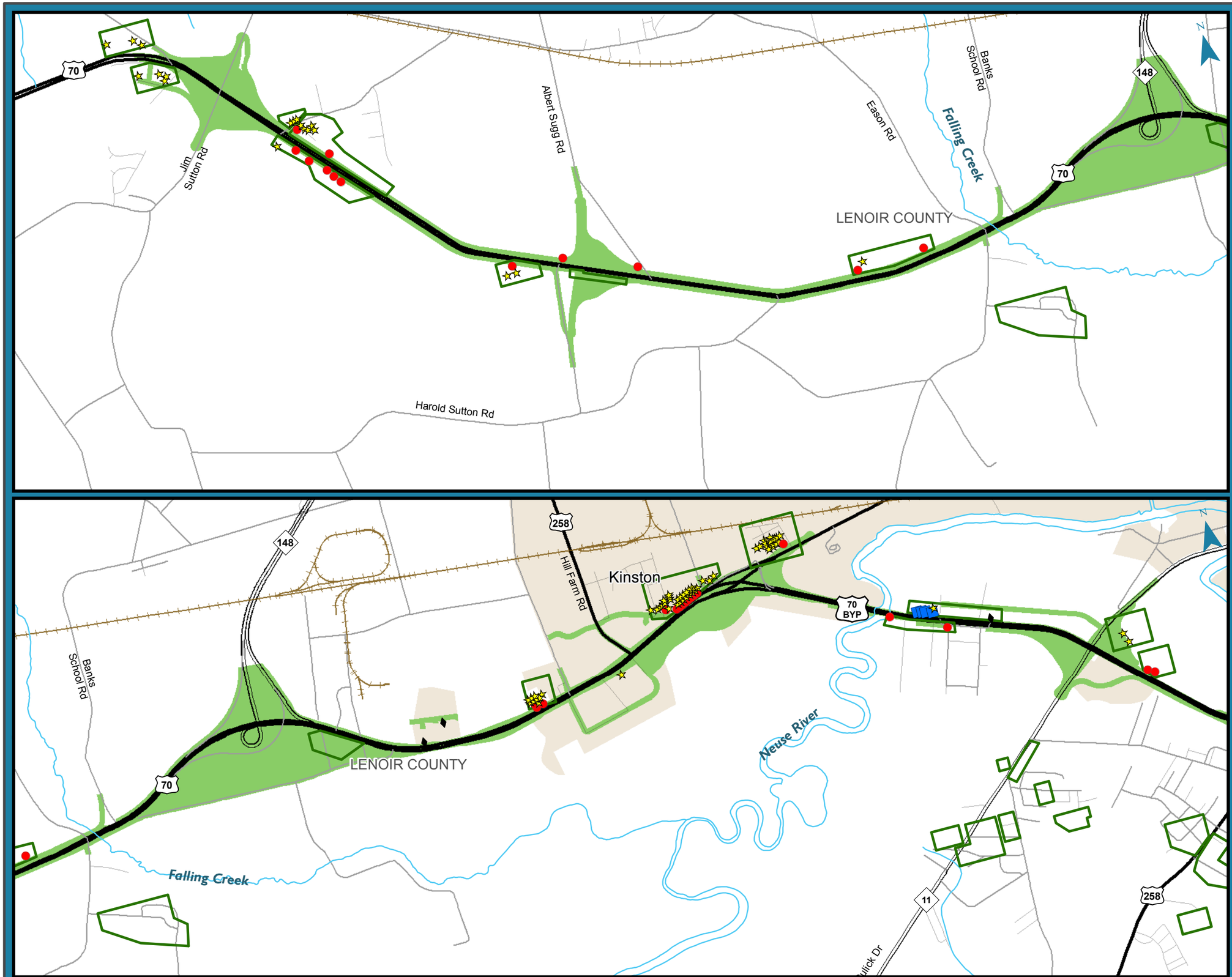
[a] Predicted traffic noise level impact due to approaching or exceeding NAC (refer to Table 3-17).

[b] Predicted "substantial increase" traffic noise level impact (predicted design year noise levels >10 dB(A) more than existing noise levels.

[c] Predicted traffic noise level impact due to exceeding NAC *and* "substantial increase" in noise levels.

KINSTON BYPASS
DEIS | R-2553

Figure 4-83: Noise receptors and noise study areas - Alternative 1UE - A



Legend

- Alt. 1 UE ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

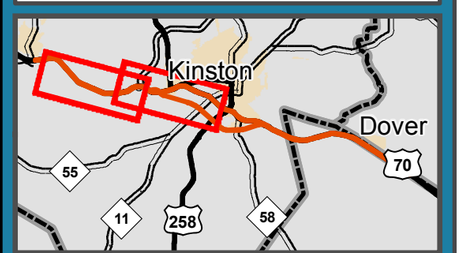


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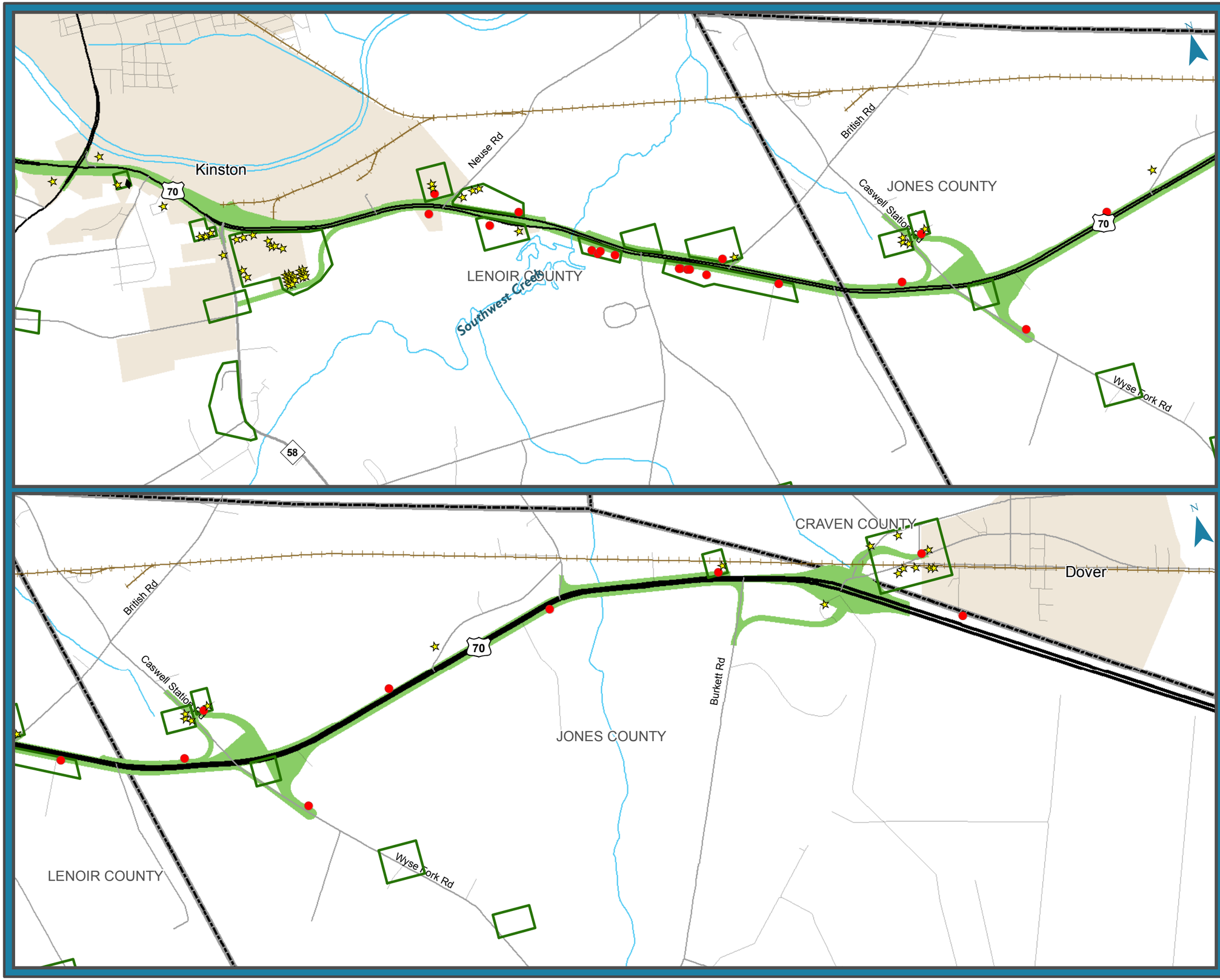
Figure 4-84: Noise receptors and noise study areas - Alternative 1UE - B



Legend

- Alt. 1 UE ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

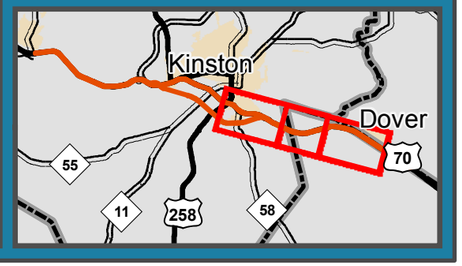


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Figure 4-85: Noise receptors and noise study areas - Alternative 1SB - A

Legend

- Alt. 1SB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

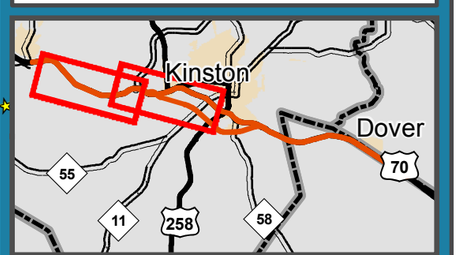

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Figure 4-86: Noise receptors and noise study areas - Alternative 1SB - B

Legend

- Alt. 1SB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

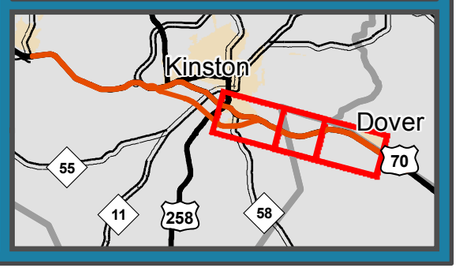

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Figure 4-87: Noise receptors and noise study areas - Alternative 11 - A

Legend

- Alt. 11 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

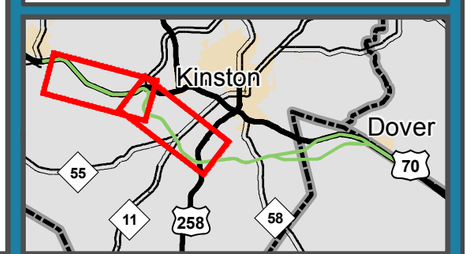

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Figure 4-88: Noise receptors and noise study areas - Alternative 11 - B

Legend

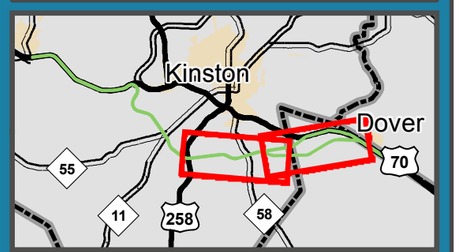
- Alt. 11 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



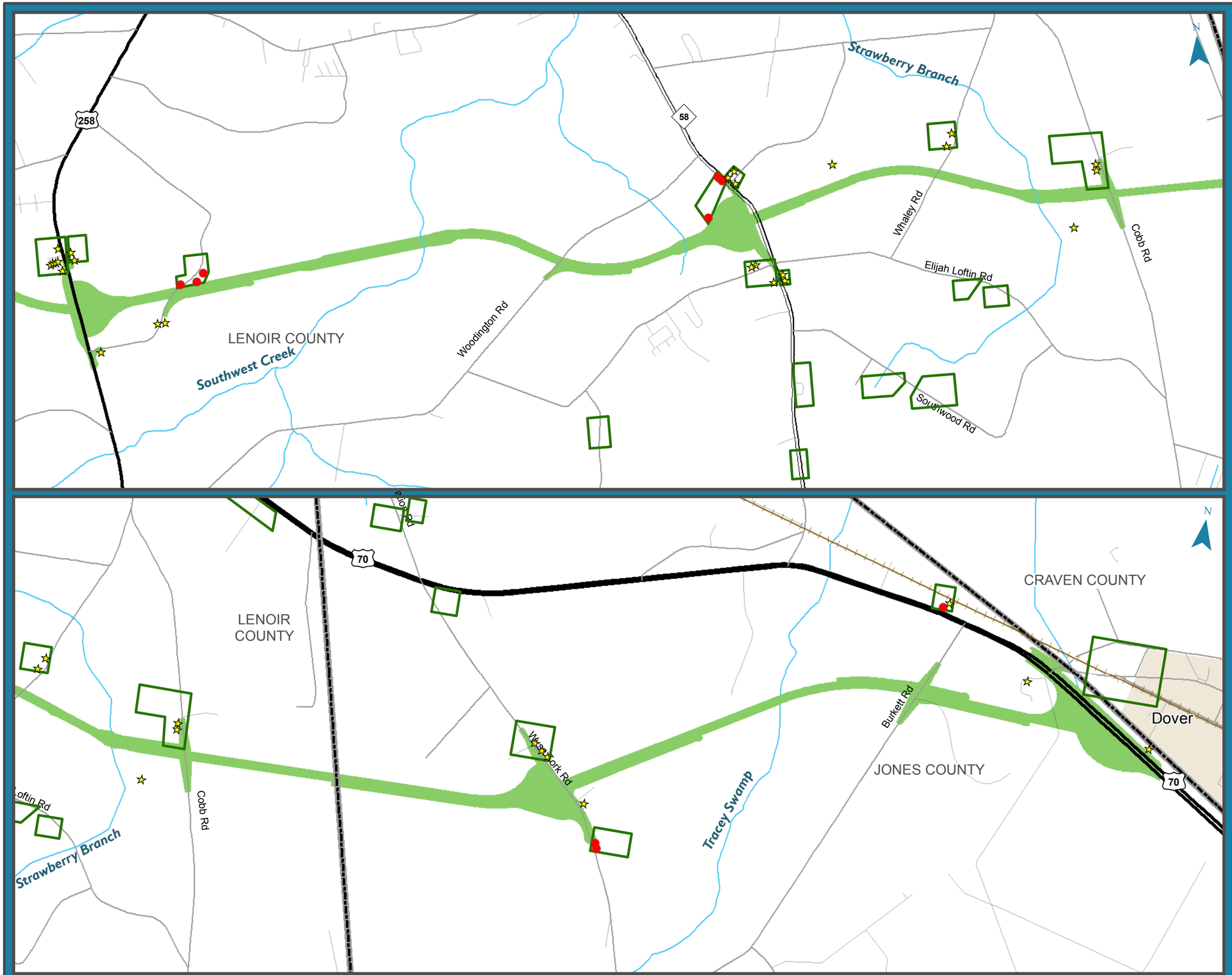


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Figure 4-89: Noise receptors and noise study areas - Alternative 12 - A

Legend

- Alt 12
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

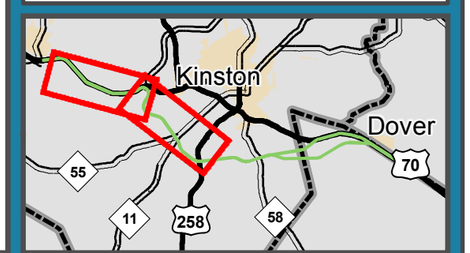

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Figure 4-90: Noise receptors and noise study areas - Alternative 12 - B

Legend

- Alt 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

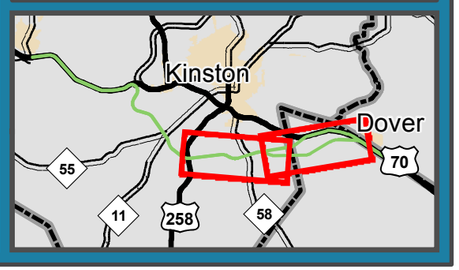

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Figure 4-91: Noise receptors and noise study areas - Alternative 31 - A

Legend

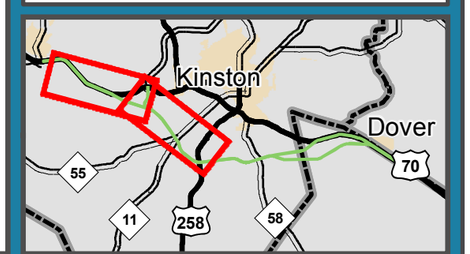
- Alt. 31 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



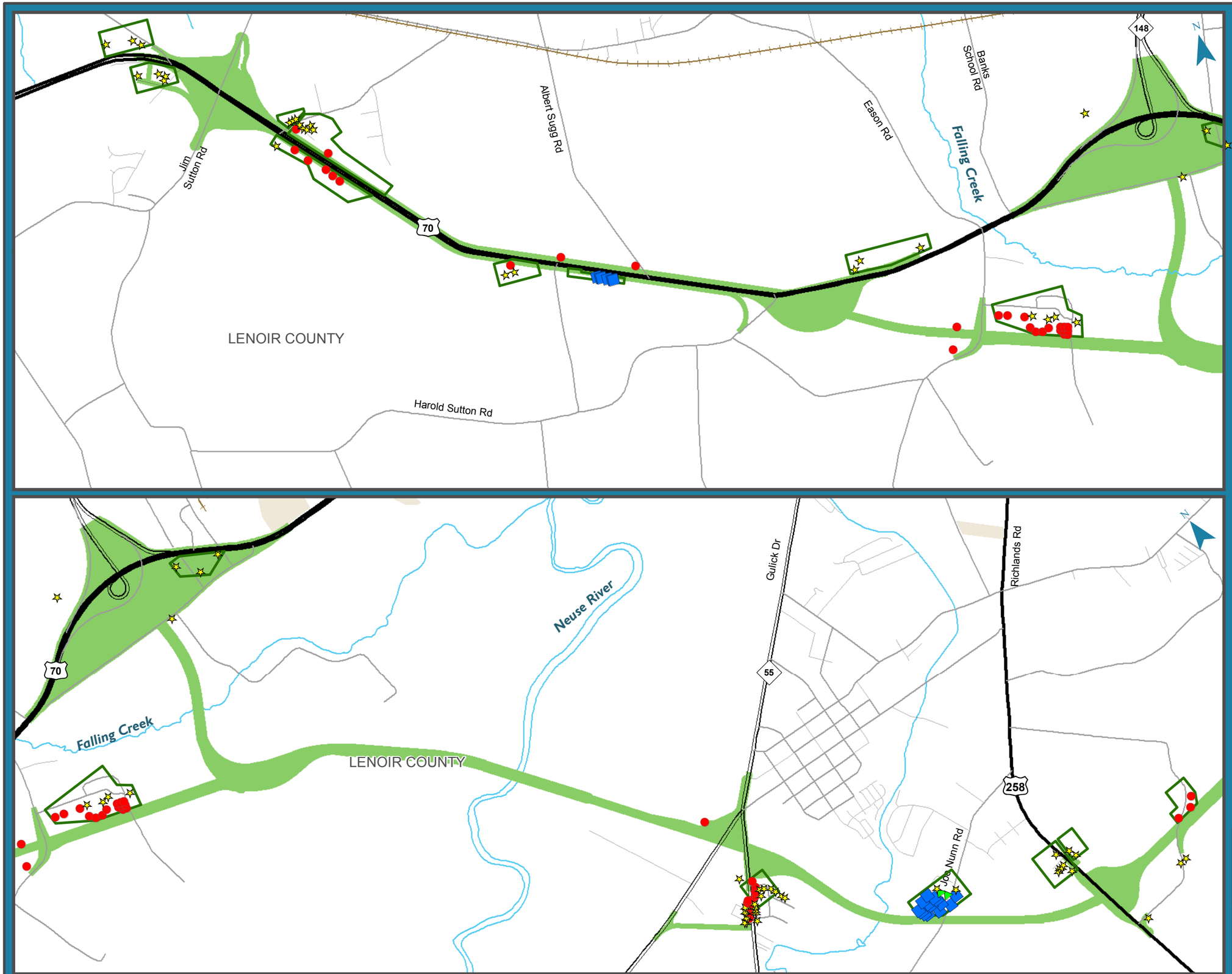


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Figure 4-92: Noise receptors and noise study areas - Alternative 31 - B

Legend

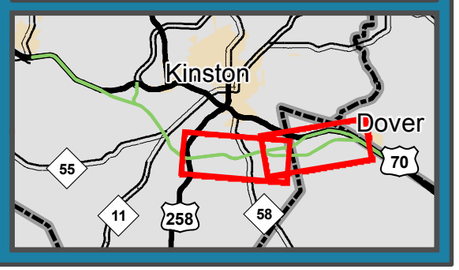
- Alt. 31 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



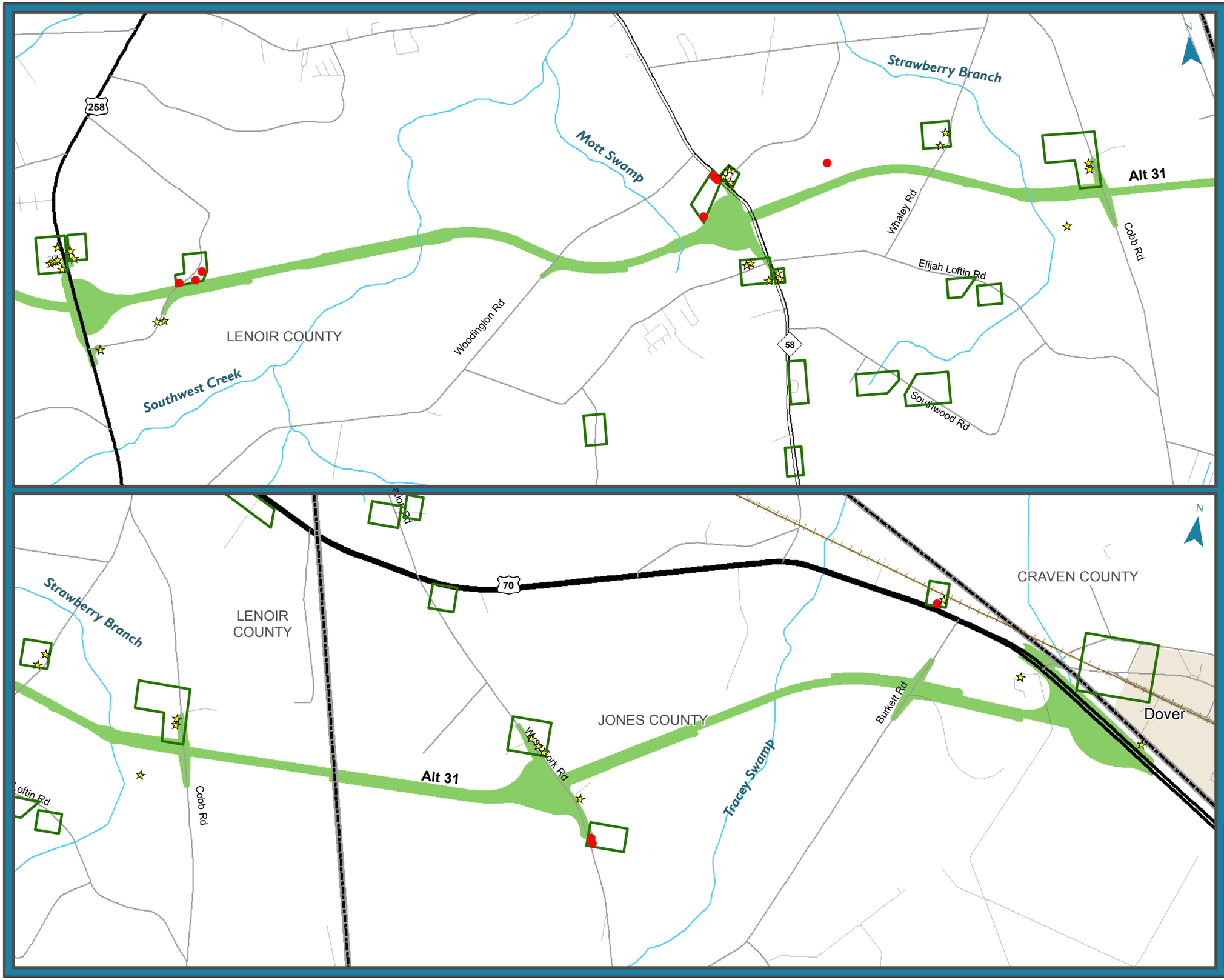


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Figure 4-93: Noise receptors and noise study areas - Alternative 32 - A

Legend

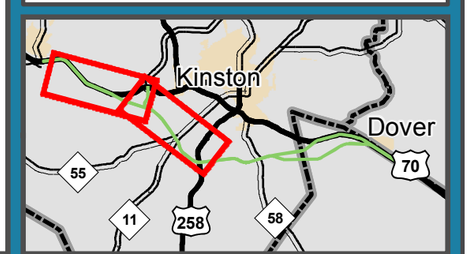
- Alt. 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



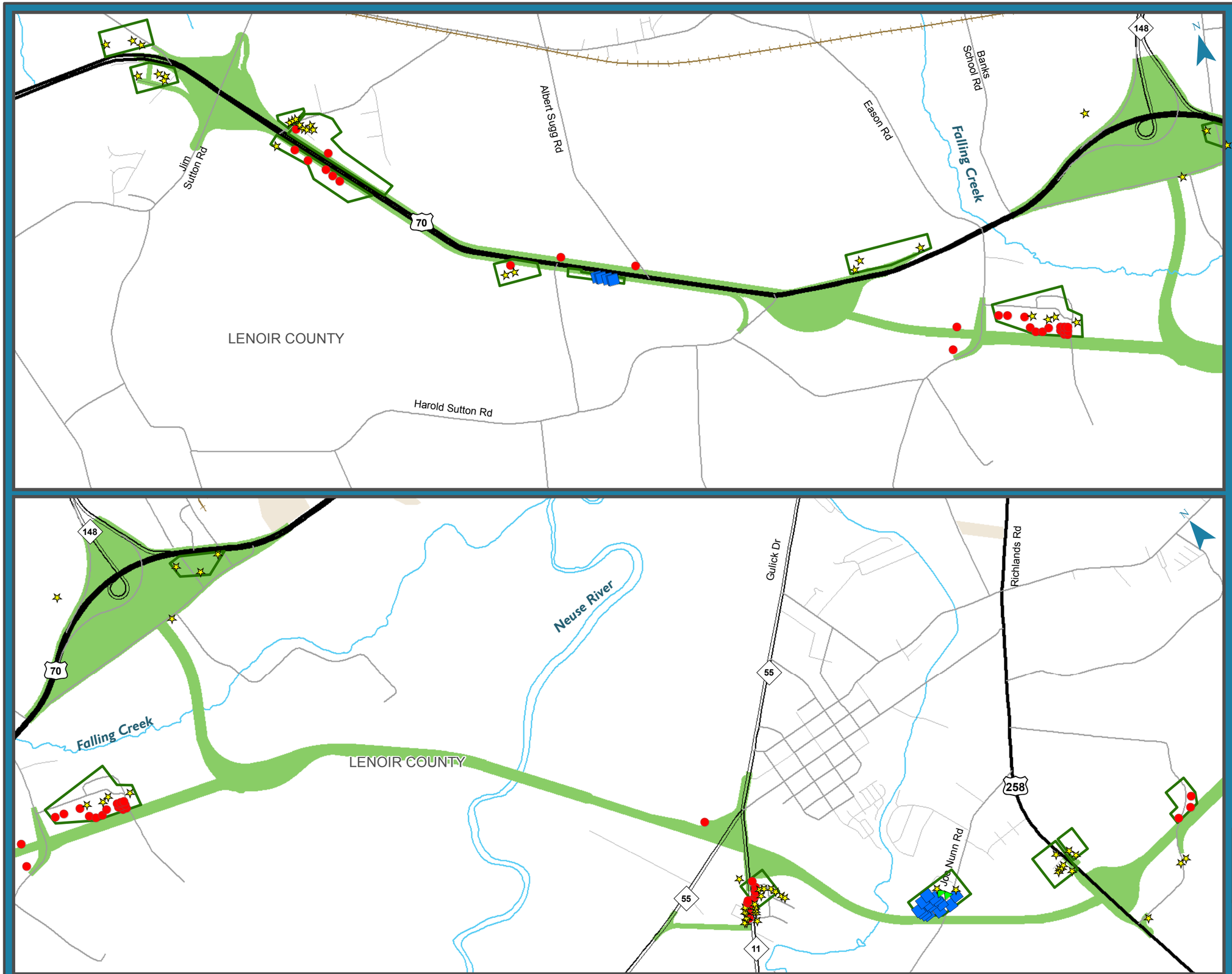


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Figure 4-94: Noise receptors and noise study areas - Alternative 32 - B

Legend

- Alt. 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

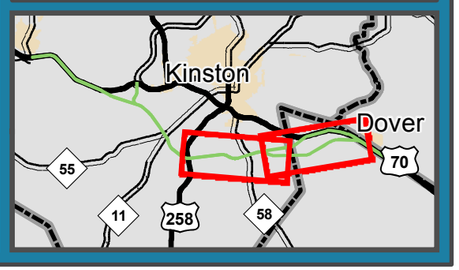

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Figure 4-95: Noise receptors and noise study areas - Alternative 35 - A

Legend

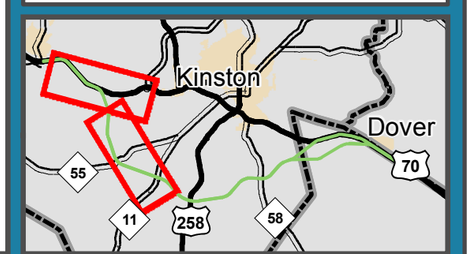
- Alt. 35 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



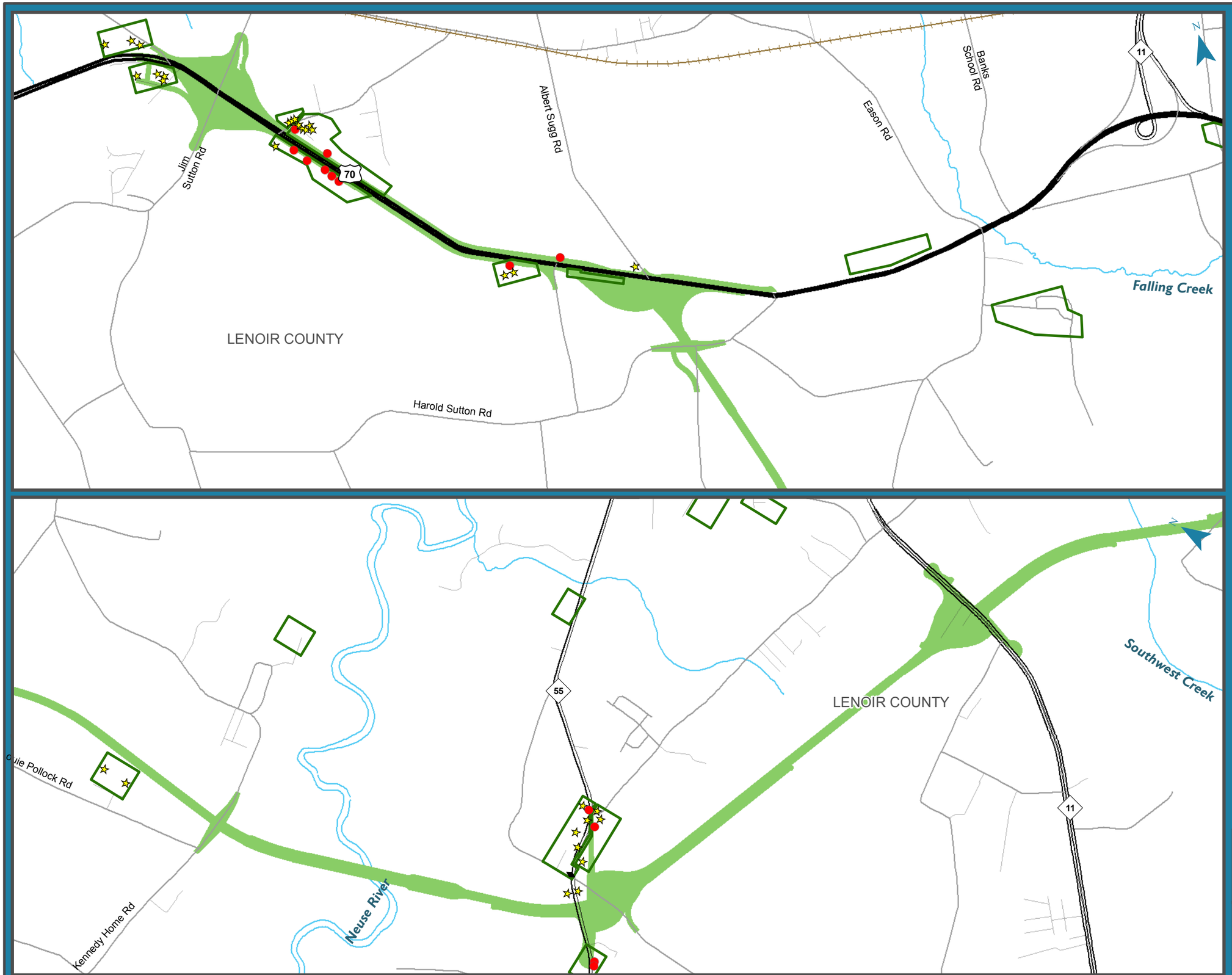


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Figure 4-96: Noise receptors and noise study areas - Alternative 35 - B

Legend

- Alt. 35 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

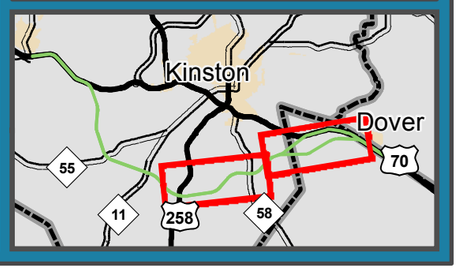

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Figure 4-97: Noise receptors and noise study areas - Alternative 36 - A

Legend

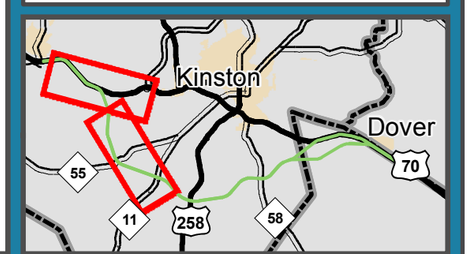
- Alt. 36 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



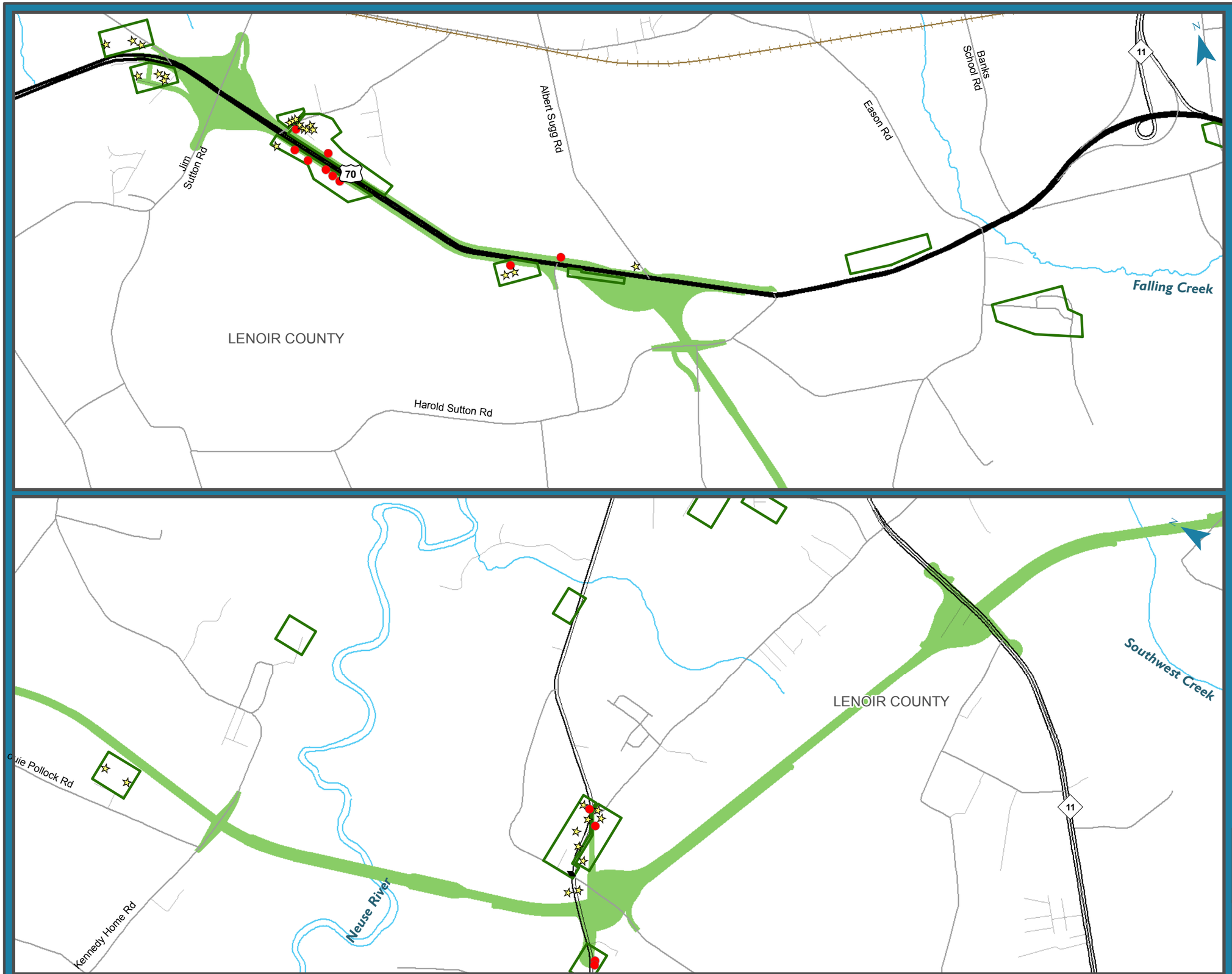


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Figure 4-98: Noise receptors and noise study areas - Alternative 36 - B

Legend

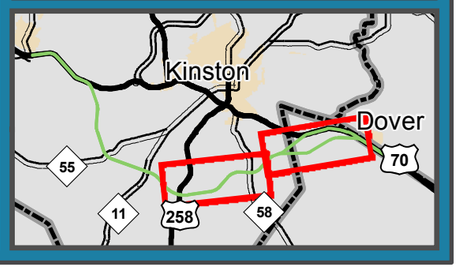
- Alt. 36 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



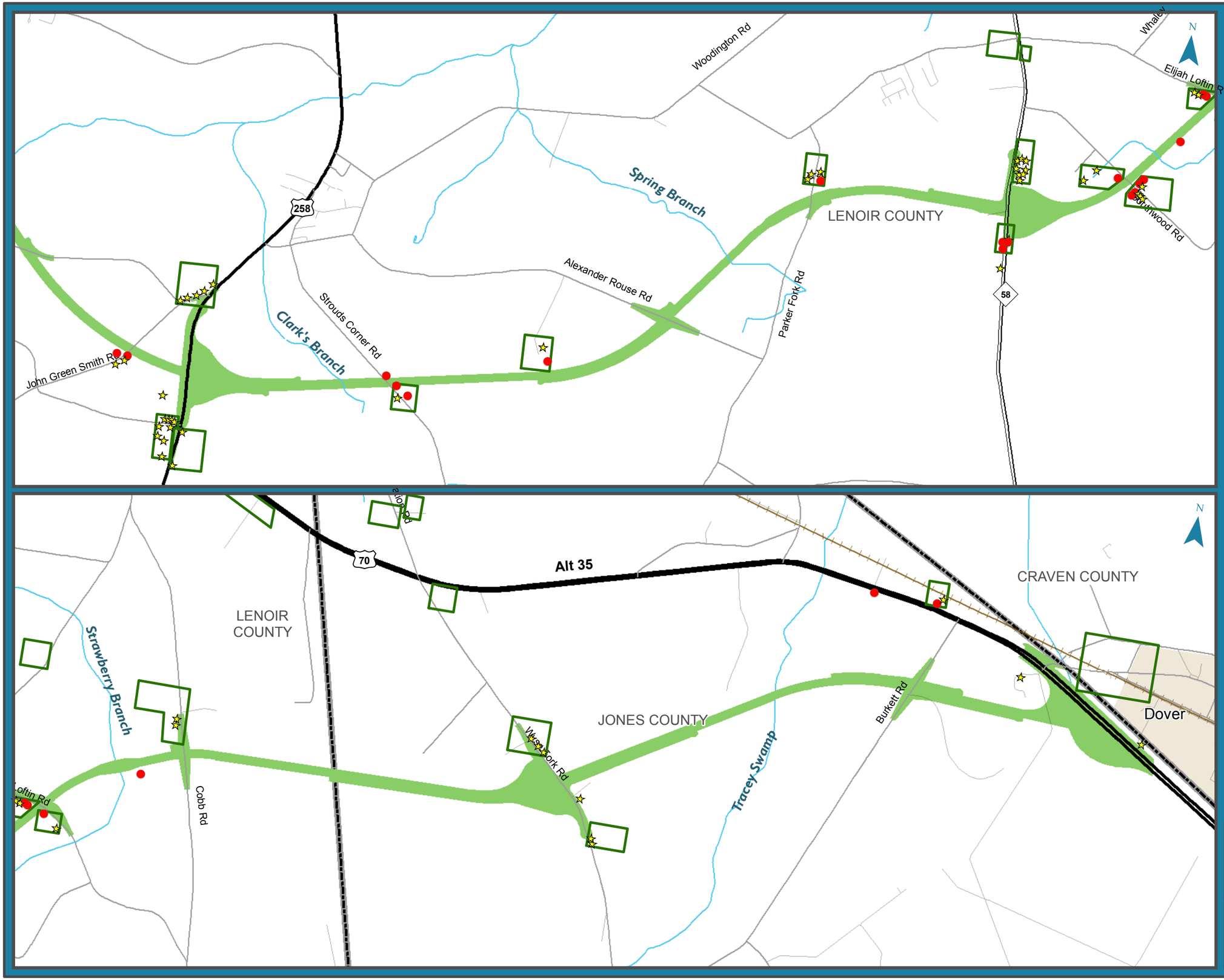


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Figure 4-99: Noise receptors and noise study areas - Alternative 51 - A

Legend

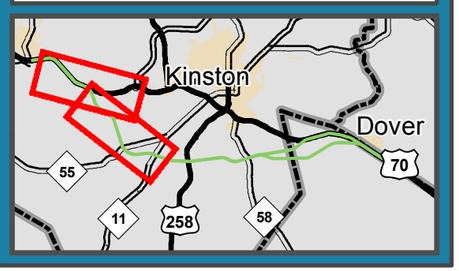
- Alt. 51 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

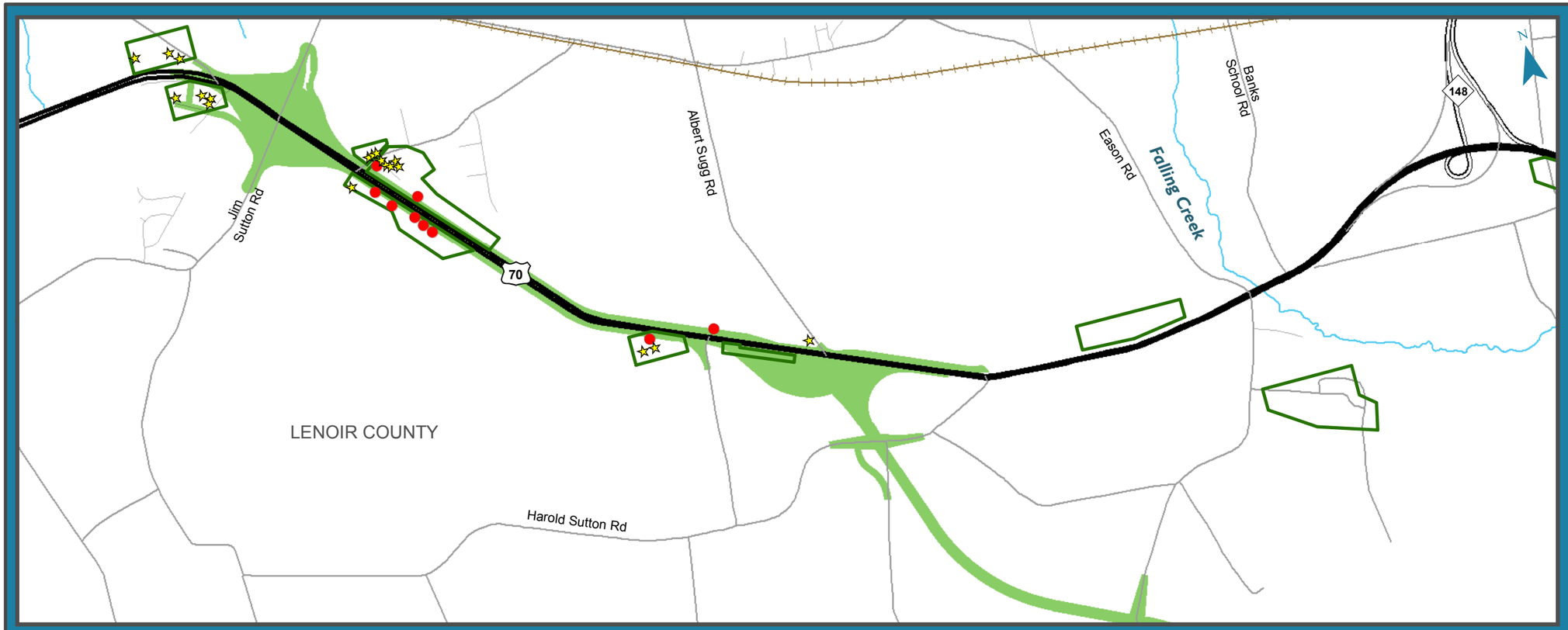
Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS





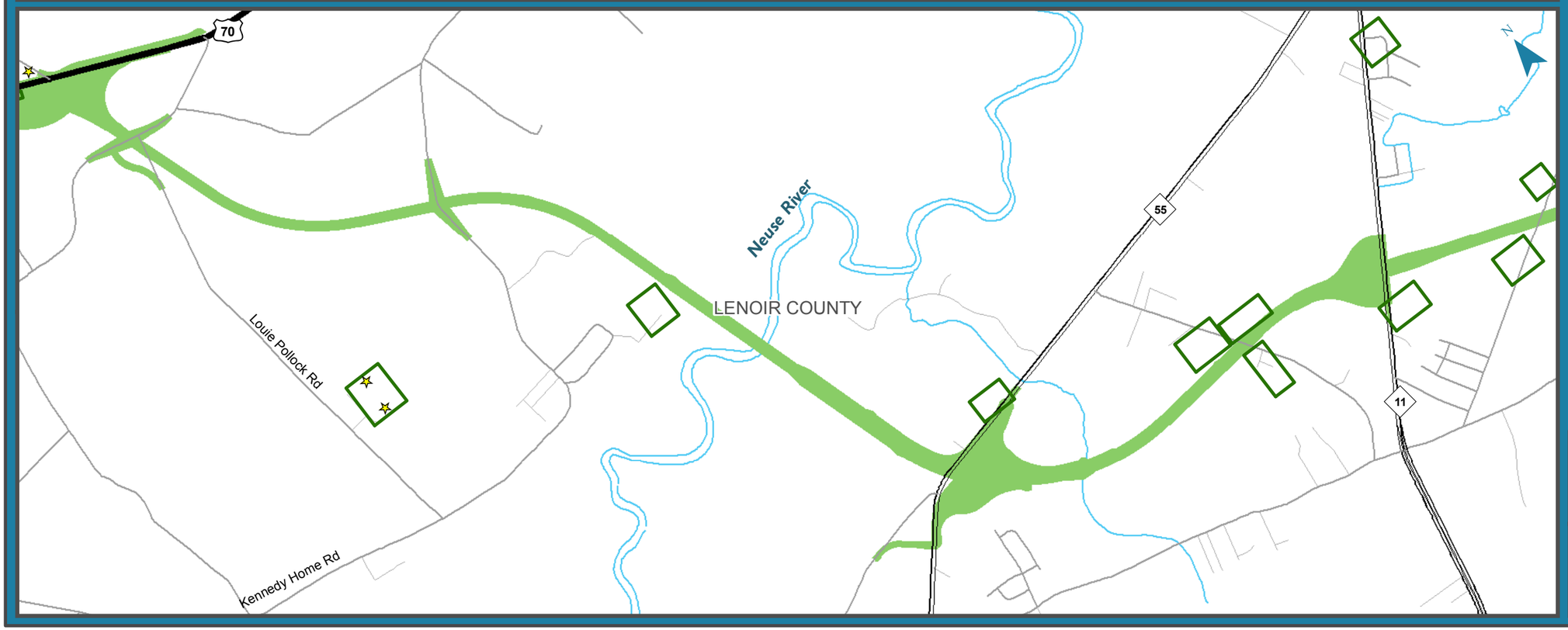


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Figure 4-100: Noise receptors and noise study areas - Alternative 51 - B

Legend

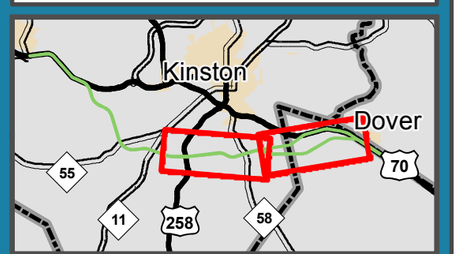
- Alt. 51 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



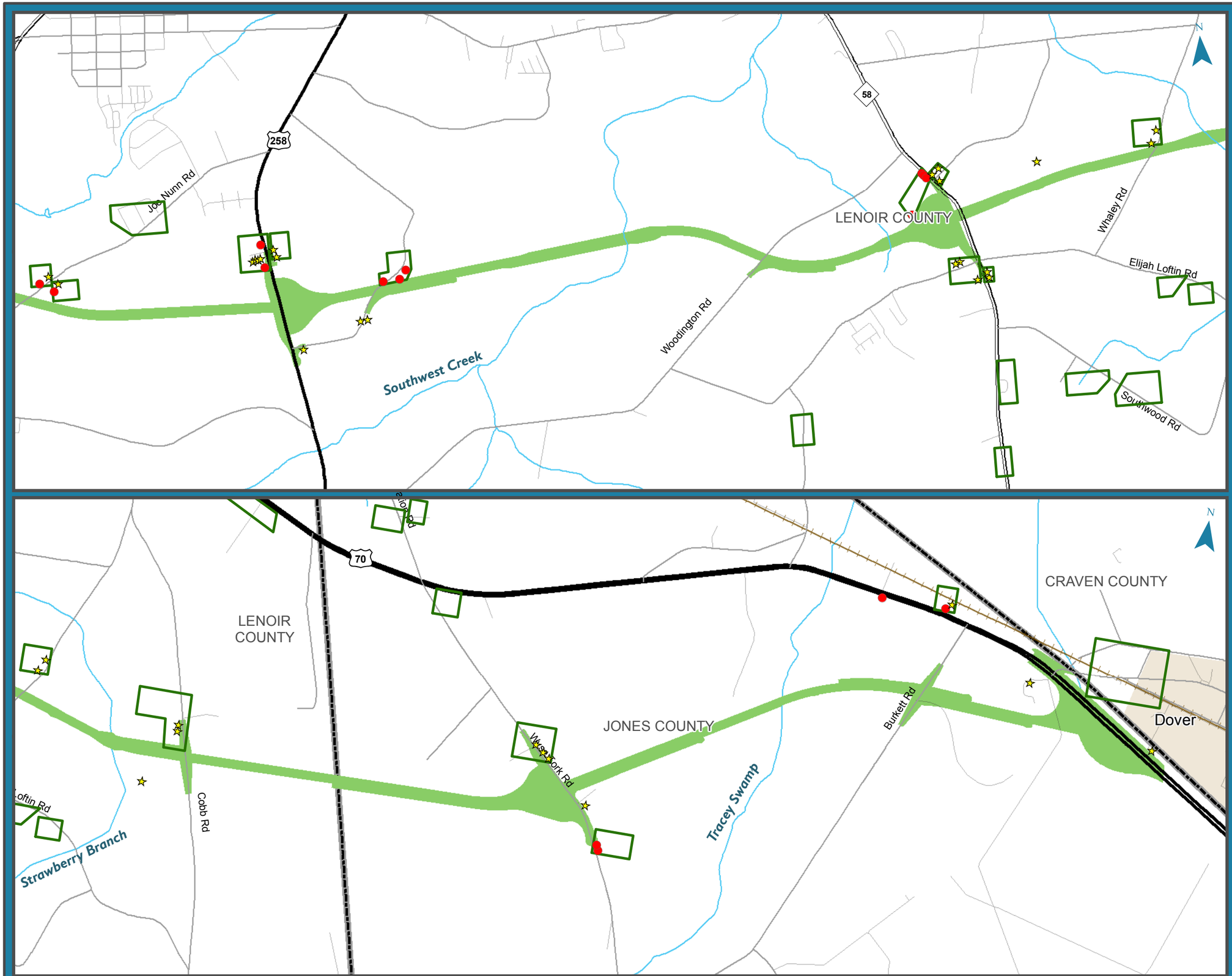


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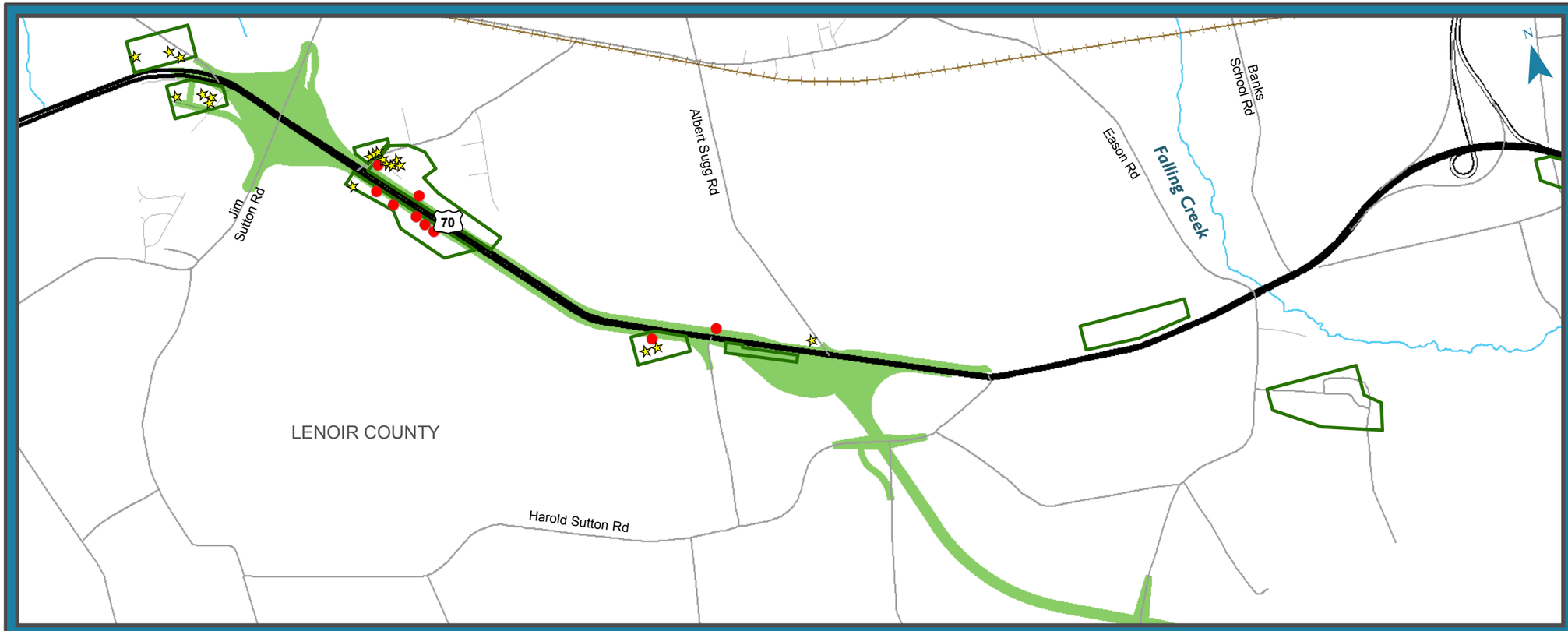
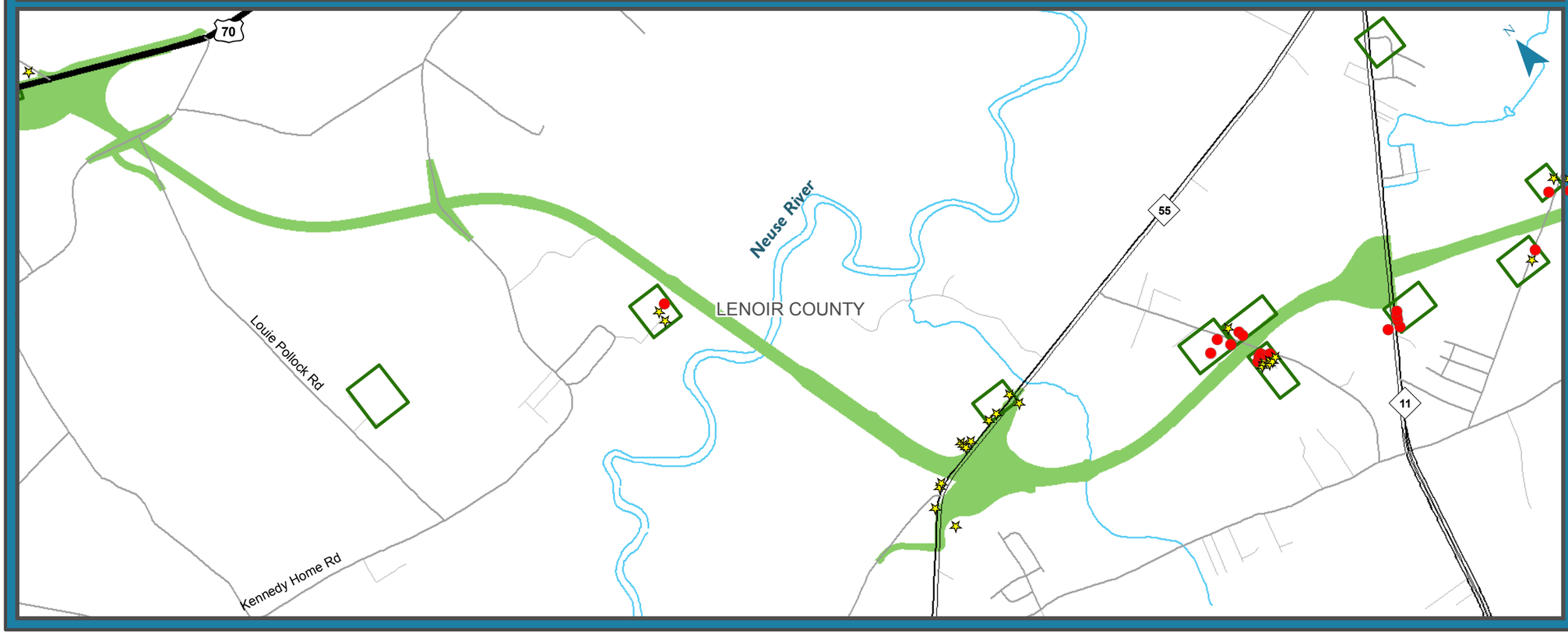
Figure 4-101: Noise receptors and noise study areas - Alternative 52 - A





Legend

- Alt. 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

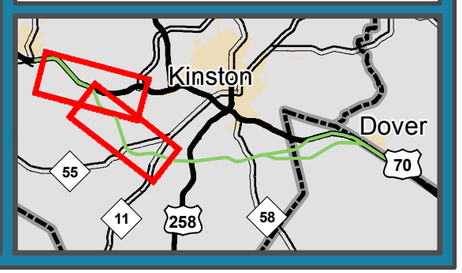


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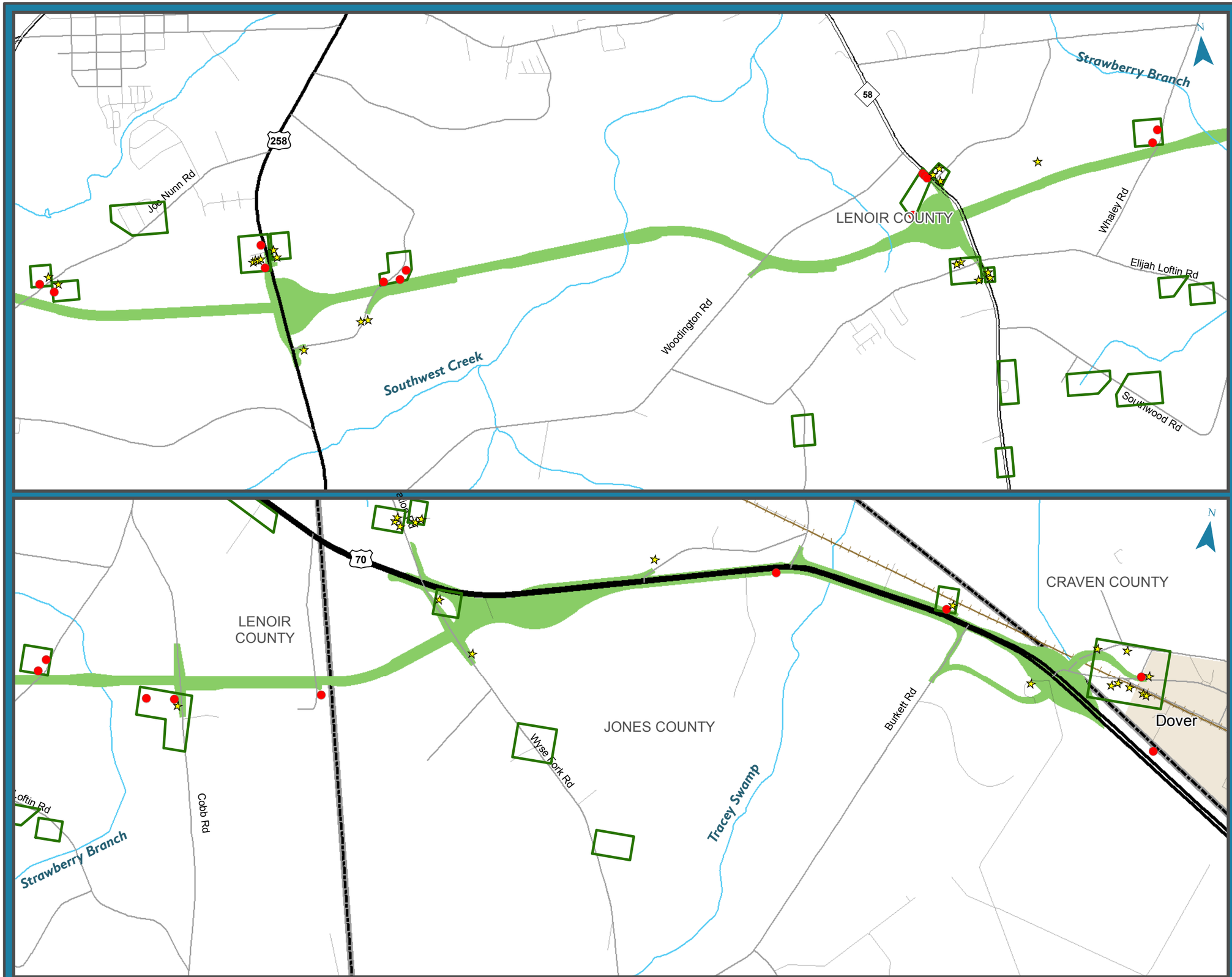
Figure 4-102: Noise receptors and noise study areas - Alternative 52 - B



Legend

- Alt. 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

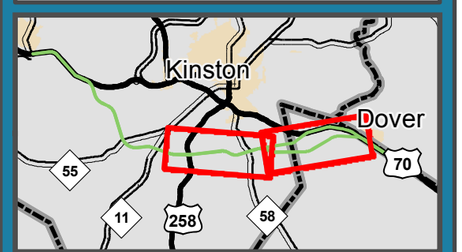


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Figure 4-103: Noise receptors and noise study areas - Alternative 63 - A

Legend

- Alt. 63 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

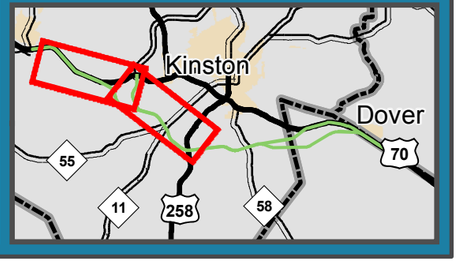

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Figure 4-104: Noise receptors and noise study areas - Alternative 63 - B

Legend

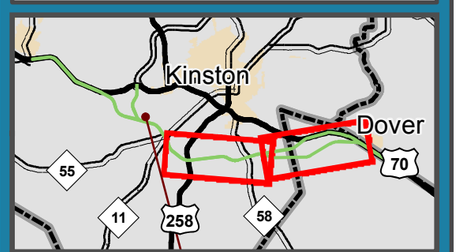
- Alt. 63 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



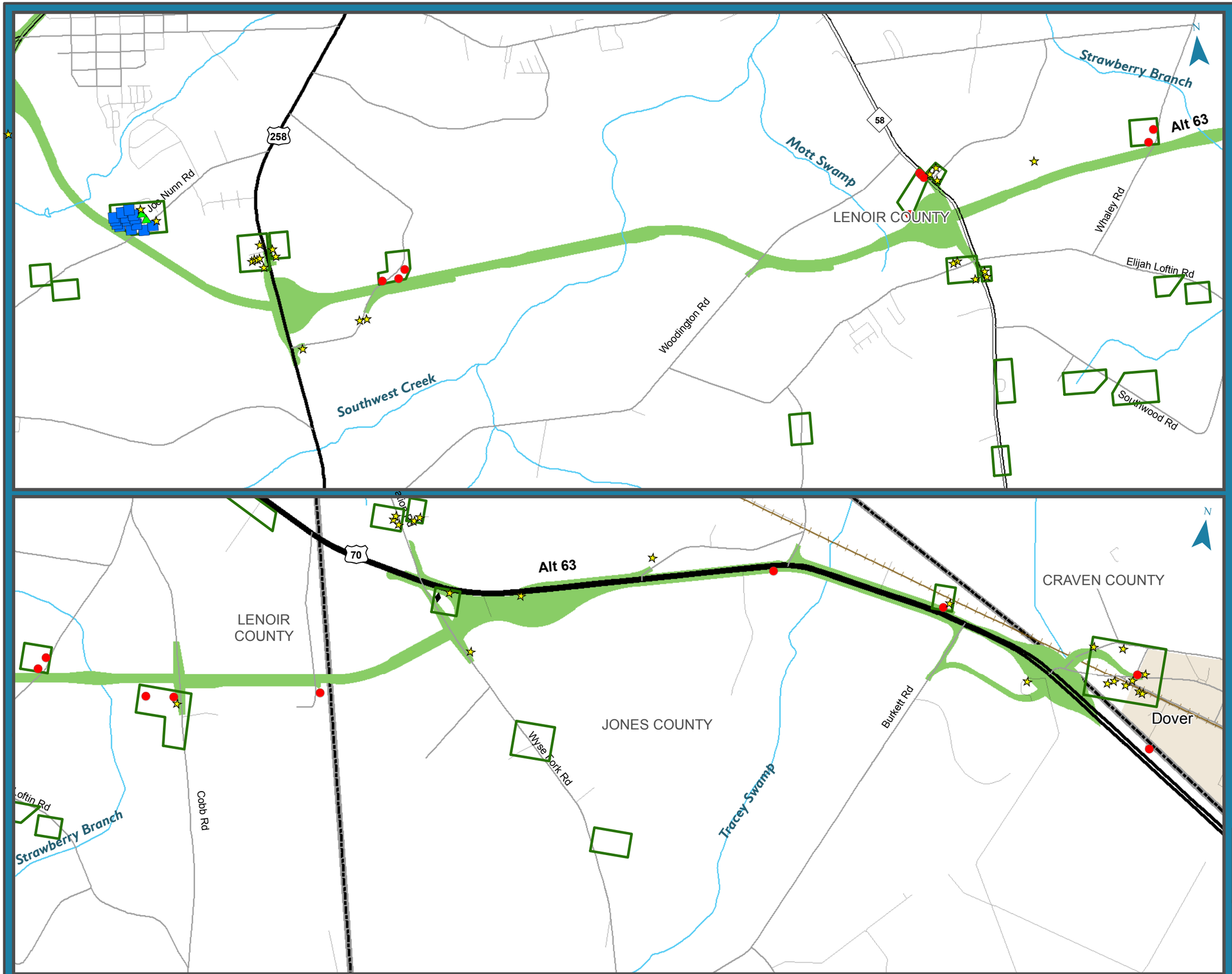


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Figure 4-105: Noise receptors and noise study areas - Alternative 65 - A

Legend

- Alt. 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

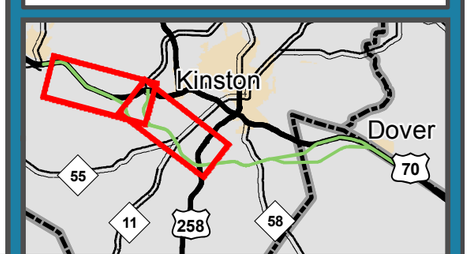

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Figure 4-106: Noise receptors and noise study areas - Alternative 65 - B

Legend

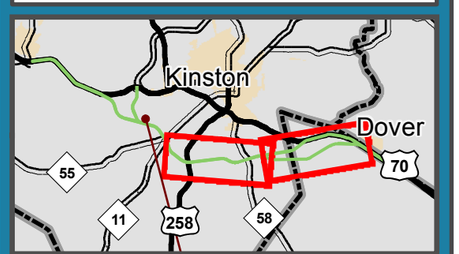
- Alt. 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Noise Receptors

- Impacted, Not Benefited
- Impacted and Benefited
- Benefited, Not Impacted
- Not Impacted, Not Benefited
- Not Noise Sensitive
- Noise Study Area

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



4.11 UTILITIES

All the DSAs would impact both public and private utilities. Impacts would include the relocation, adjustment, or modification of gas, water, electric, sewer, telephone, and fiber optic cable lines. The relocation of power poles would also be required as a result of the proposed action. Any disruption to utility service during construction would be minimized by close coordination with utility providers and property owners in affected areas, as well as phased adjustments to utilities.

Recycling Site 5, located at 3185 Willie Measley Road in La Grange, would be directly impacted from the implementation of any DSA. The Sanderson Farm Wastewater Treatment Plant would be directly impacted by Alternatives 11, 12, 31, 32, 63, and 65. The spray fields associated with the New Water Treatment Plant would be impacted by Alternatives 35, 36, 51, and 52. Figure 4-107 through Figure 4-118 show the potential impacts to utilities.

Several solar power farms will be directly impacted by multiple DSAs. Innovative Solar 54 would be directly impacted by Alternatives 35 and 36. The Hood Farm would be directly impacted by Alternatives 12, 32, 35, 52, and 63. The Crockett Farm would be directly impacted by Alternative 1SB.

4.12 ENERGY

A substantial amount of energy would be required to construct any of the DSAs. However, the energy use would be temporary and should ultimately result in energy use reductions upon project completion, due to the potential for increased efficiency of the region's roadway system.

Construction of any of the DSAs would require routine maintenance that would result in energy use. Traffic delays accompanying maintenance activities may also result in temporary increases in energy use when compared to normal conditions in the area, as vehicles may be on the road for longer than they would have been otherwise. The No-Build Alternative would also require energy use for maintenance of existing infrastructure.

70 KINSTON BYPASS
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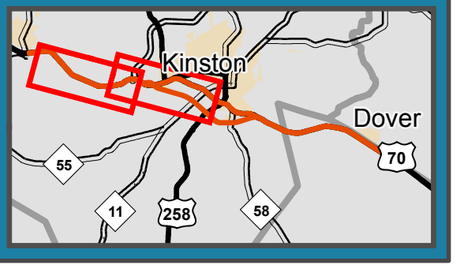
Figure 4-107: Utility impacts - Alternatives 1UE and 1SB - A

Legend

- Alts 1UE and 1SB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles



Jim Sutton Rd
70
Albert Sugg Rd
Eason Rd
Banks School Rd
148
LENOIR COUNTY
Alt 1UE & 1SB
Sanderson Farms Wastewater Treatment Plant
Harold Sutton Rd
NRWASA Water Treatment Plant
258
Hill Farm Rd
Kinston
70 BYP
Alt 1UE
Banks School Rd
Alt 1SB
Neuse River
LENOIR COUNTY
70
Falling Creek
Sanderson Farms Wastewater Treatment Plant
Site 2 Fairground
11
Cullick Dr
258

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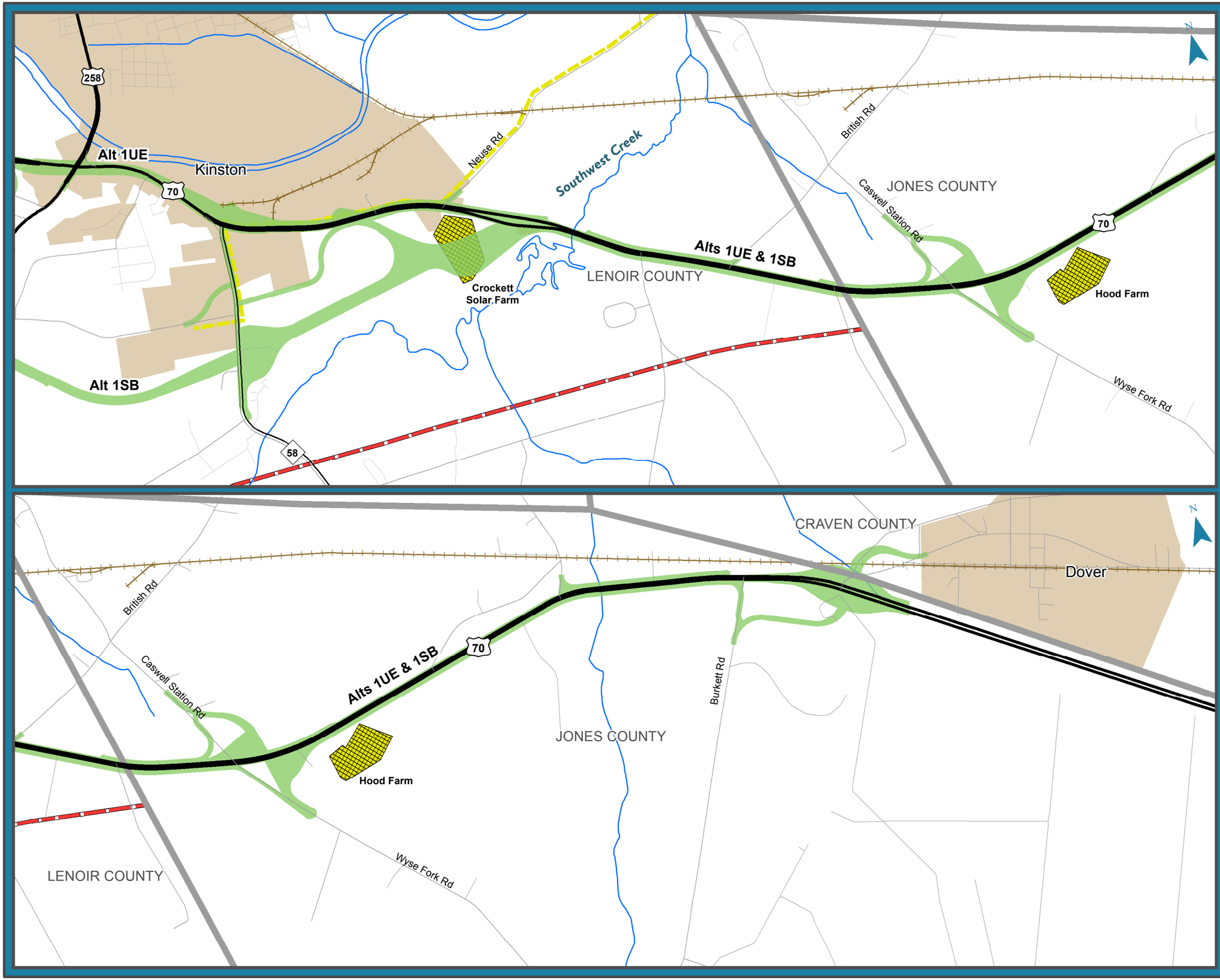
Figure 4-108: Utility impacts - Alternatives 1UE and 1SB - B



Legend

- Alts 1UE and 1SB ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

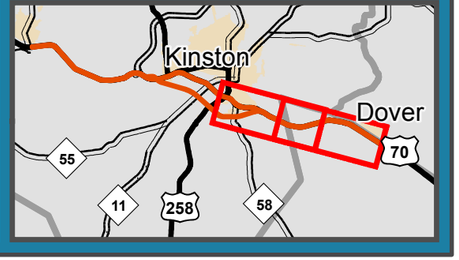


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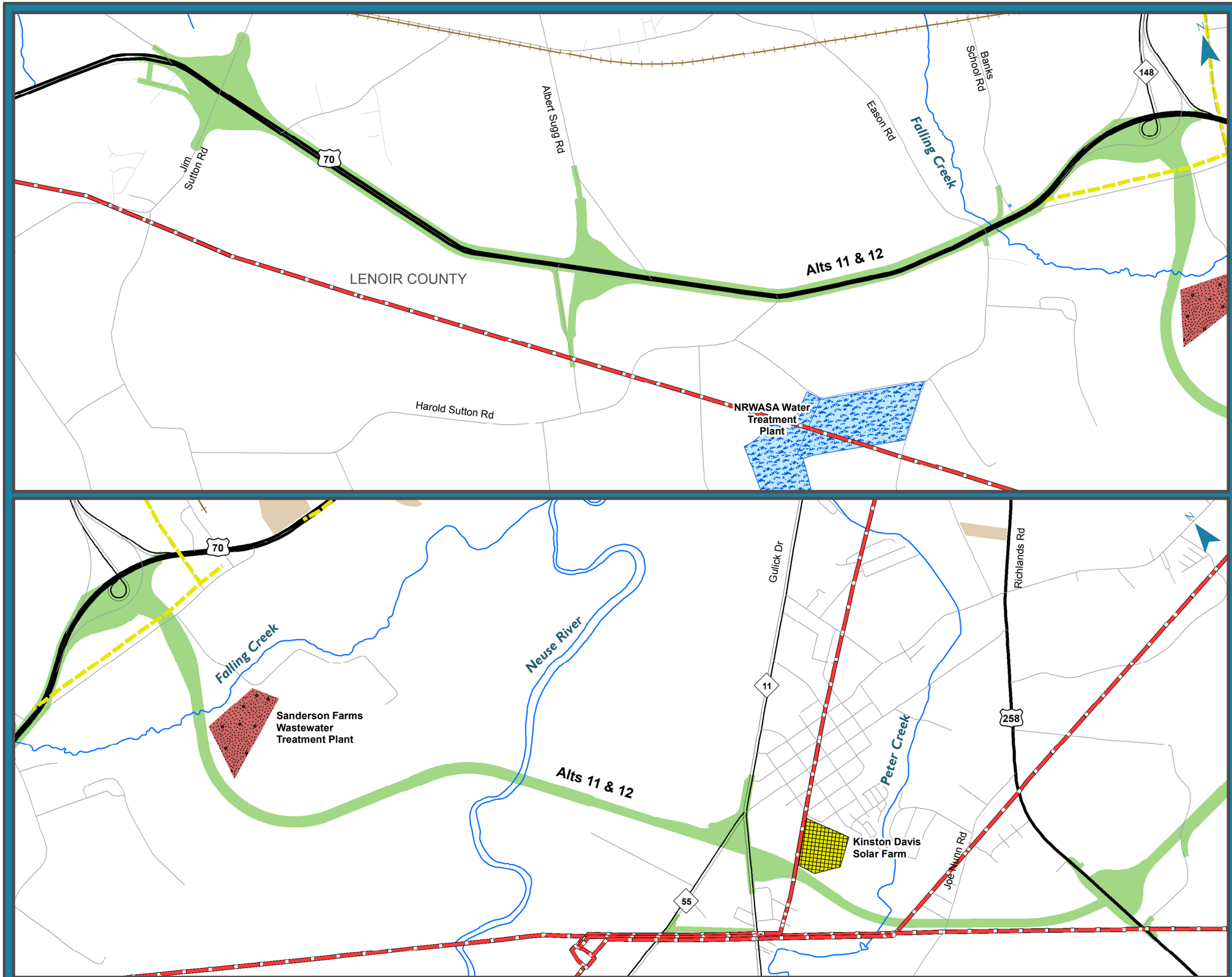
Figure 4-109: Utility impacts - Alternatives 11 and 12 - A

Legend

- Alts. 11 and 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



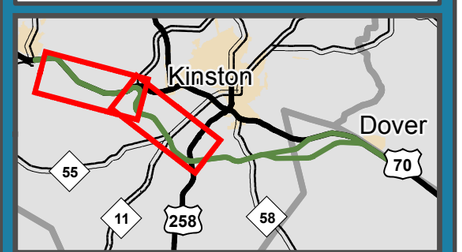


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Figure 4-110: Utility impacts - Alternatives 11 and 12 - B

Legend

- Alts. 11 and 12 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

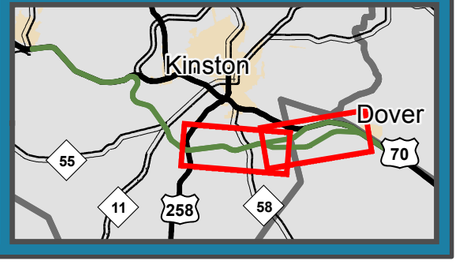

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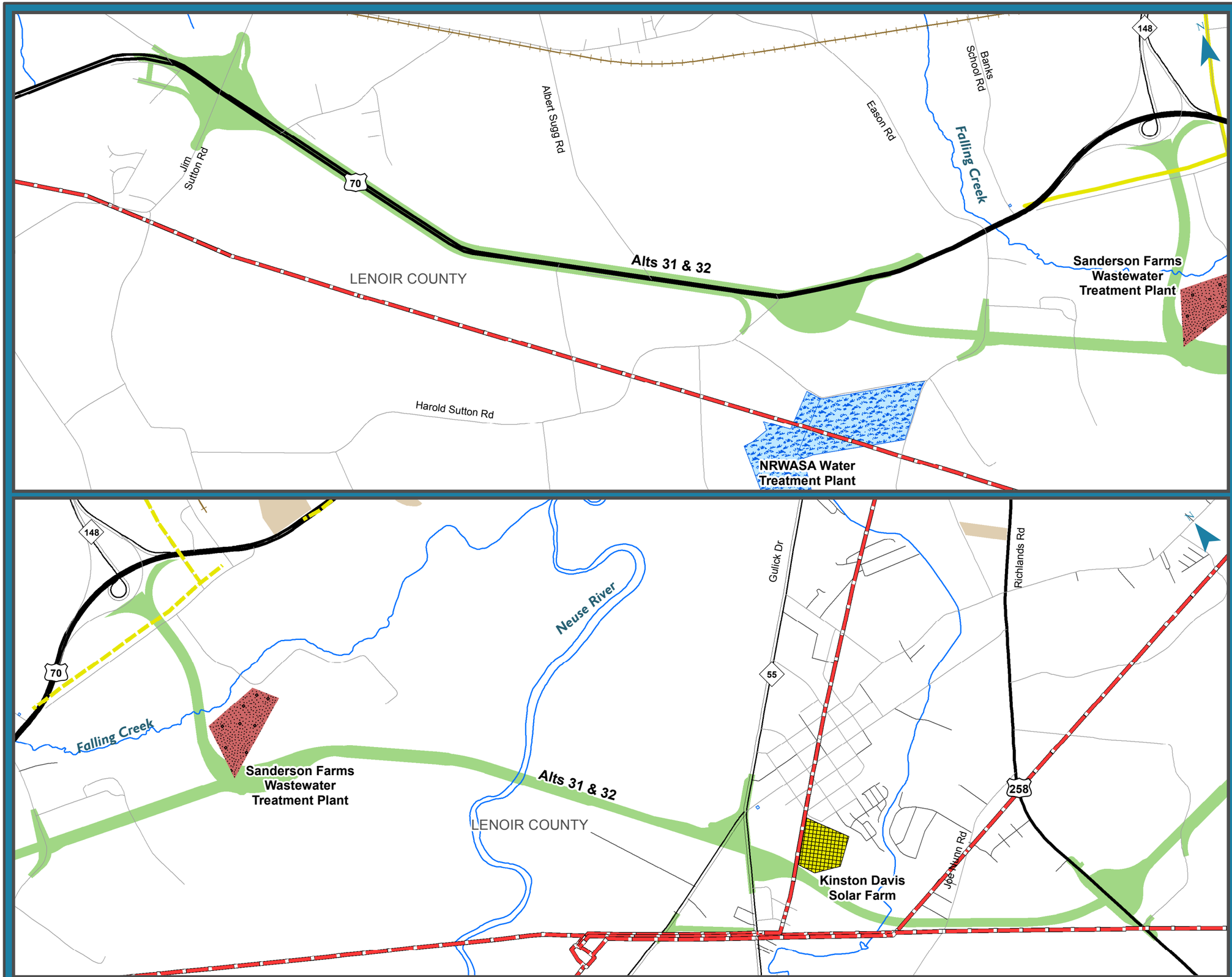
Figure 4-111: Utility impacts - Alternatives 31 and 32 - A



Legend

- Alt. 31 and 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

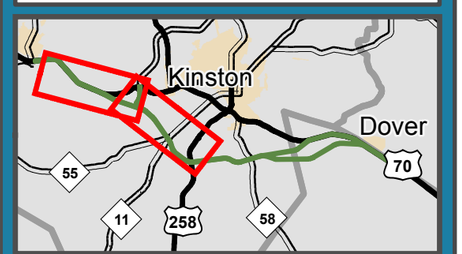


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Figure 4-112: Utility impacts - Alternatives 31 and 32 - B

Legend

- Alts. 31 and 32 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

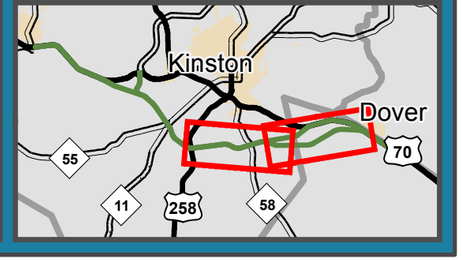

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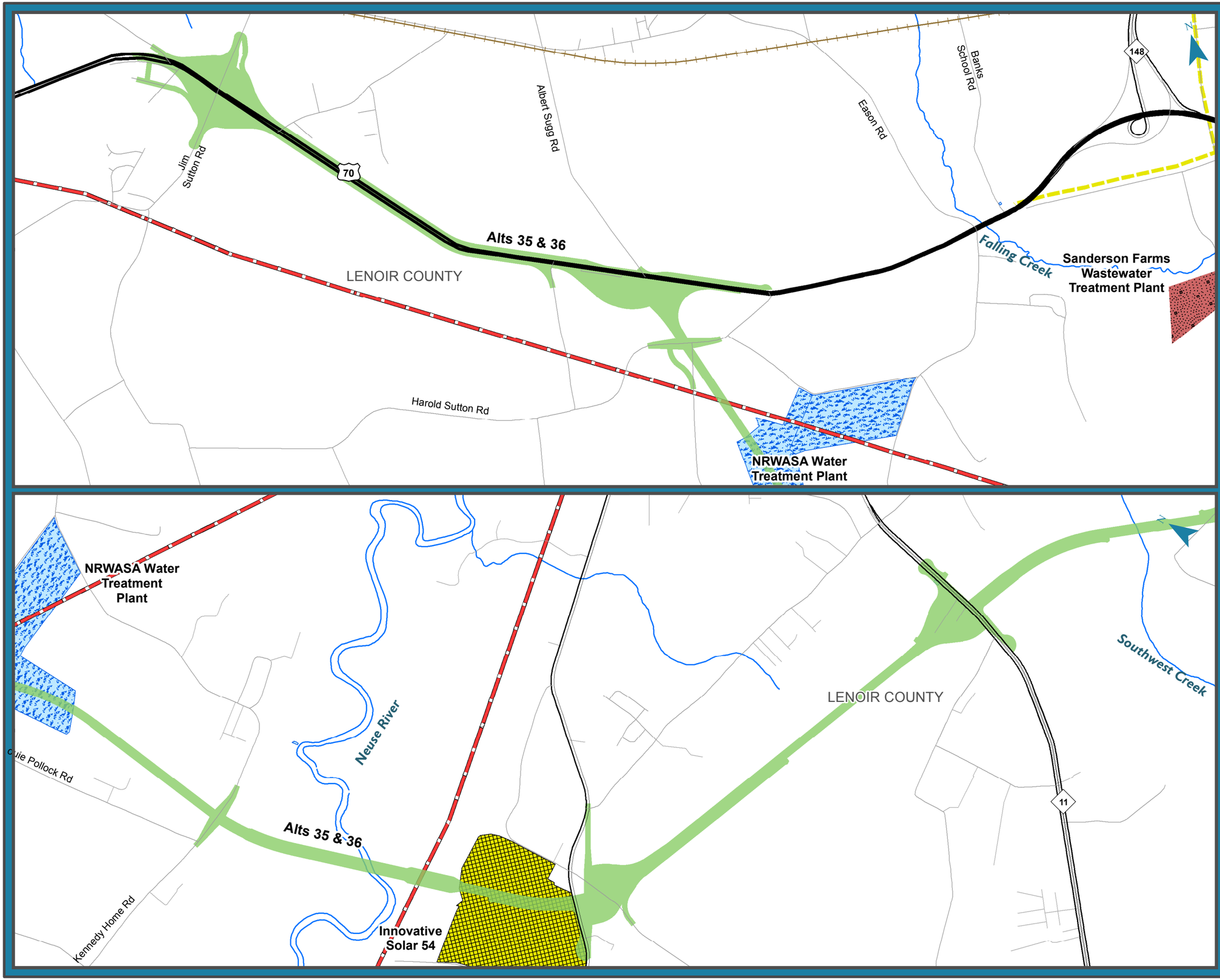
Figure 4-113: Utility iimpacts - Alternatives 35 and 36 - A



Legend

- Alts. 35 and 36 ROW
- Railroad
- US Highway
- NC Highway
- State Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

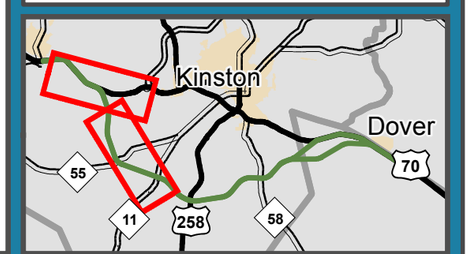


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Figure 4-114: Utility impacts - Alternatives 35 and 36 - B

Legend

- Alts. 35 and 36 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

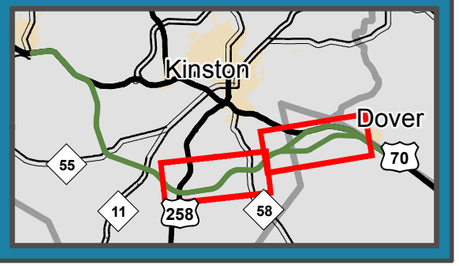

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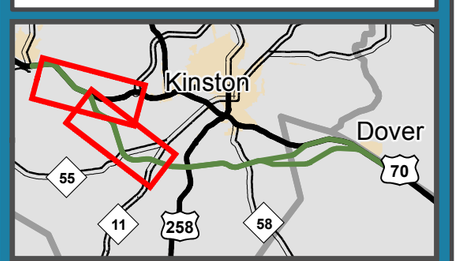
Figure 4-115: Utility impacts - Alternatives 51 and 52 - A

Legend

- Alts. 51 and 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS



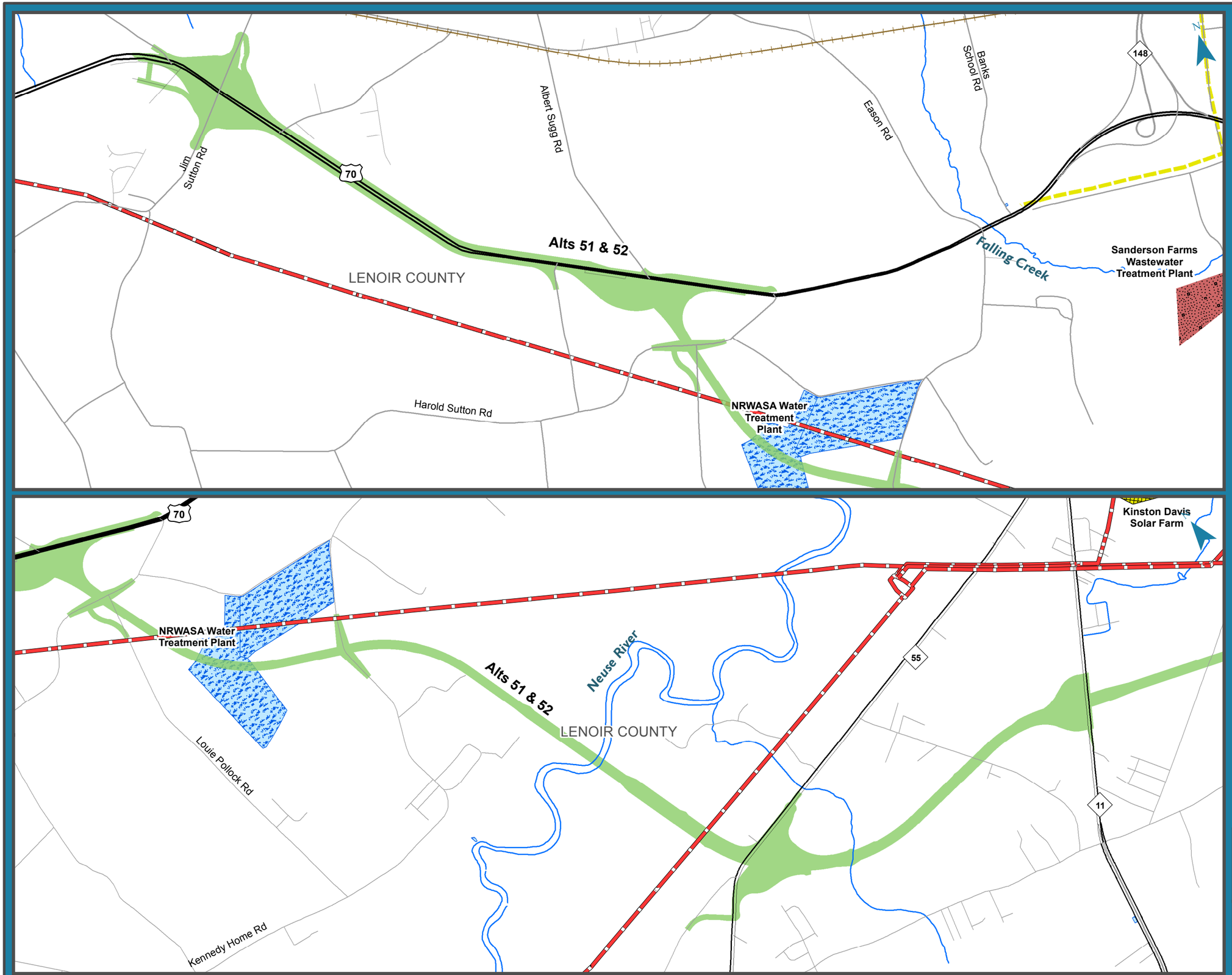


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Figure 4-116: Utility impacts - Alternatives 51 and 52 - B

Legend

- Alts. 51 and 52 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

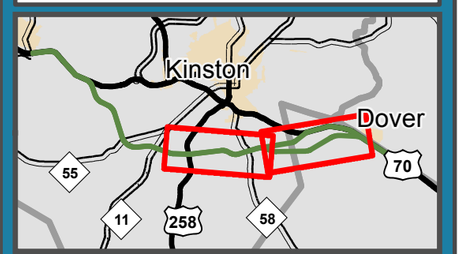

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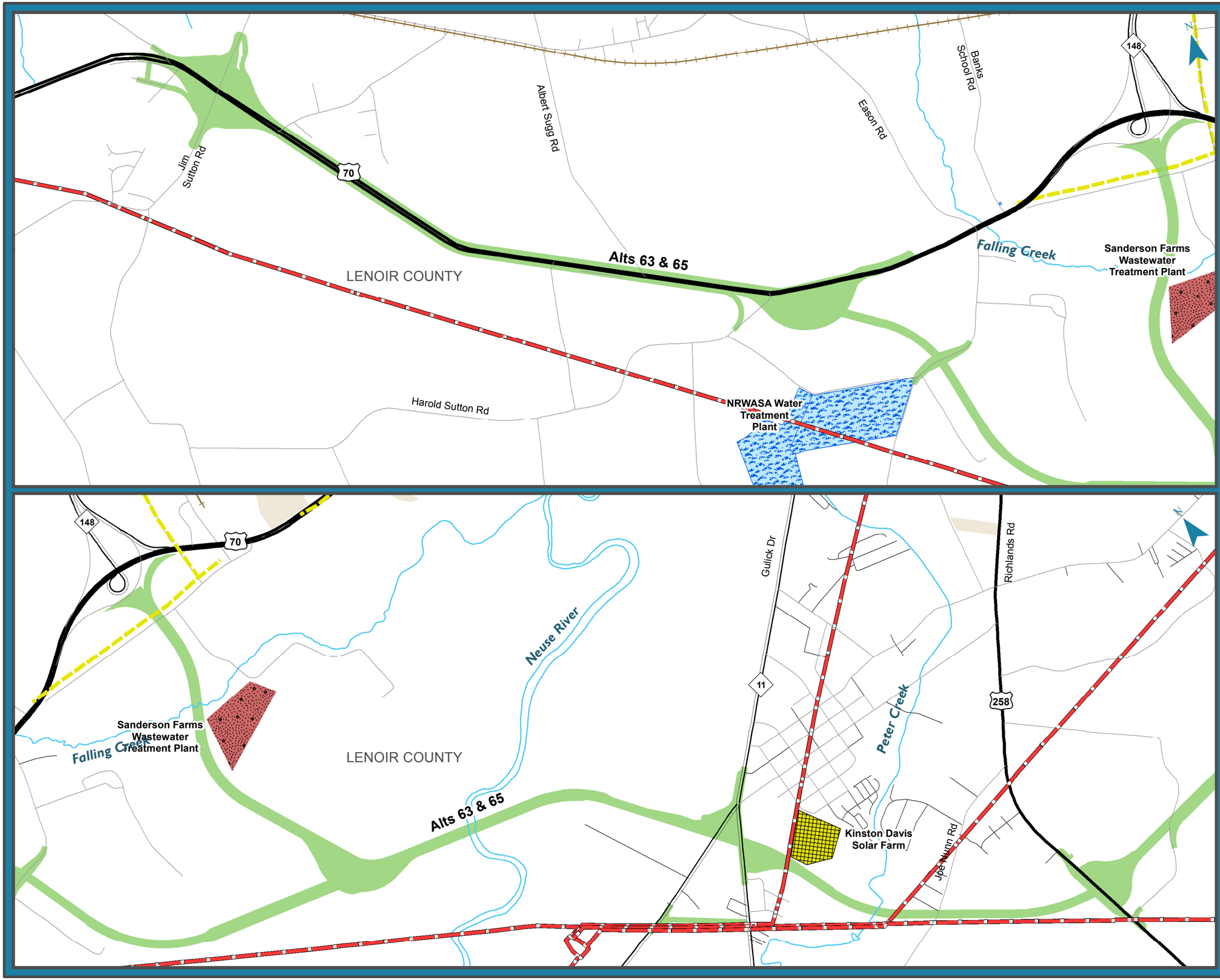
Figure 4-117: Utility impacts - Alternatives 63 and 65 - A



Legend

- Alts. 63 and 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

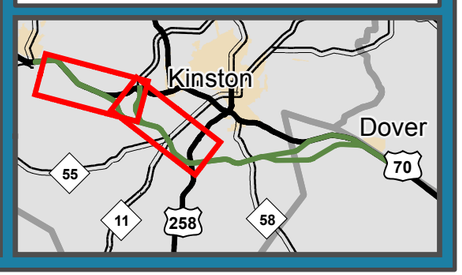


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Figure 4-118: Utility impacts - Alternatives 63 and 65 - B

Legend

- Alts. 63 and 65 ROW
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary
- Recycling Site
- Power Transmisstion Lines
- Natural Gas Lines
- Landfill
- Solar Farm
- Wastewater Treatment Plant
- Water Treatment Plant

0 0.25 0.5 Miles

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

4.13 HAZARDOUS MATERIAL SITES

The Preliminary GeoEnvironmental Alternatives Analysis identified 42 potentially hazardous sites within 500 feet of the project corridor (Box 2013). The report describes these sites as typical of those "found along preexisting roadways and characteristically present a low to moderate risk of additional expense" to a given project.

Twenty-one hazardous sites are located within the right-of-way of the DSAs. Table 4-20 summarizes the hazardous sites located within each DSA right-of-way. Additional testing will be completed after the applicant's preferred alternative is selected, and a work plan will be developed based on the final design to address any contaminated material that may be encountered during construction.

Table 4-20: Hazardous materials sites

Site Number	Type	Location	Property Name	DSA	Anticipated Impacts	Anticipated Risk
3	UST	7851 Highway 70 West	Hasty Mart 31	All alternatives	Low	Low
4	Auto Salvage	7514 Highway 70 West	Vacant site with billboard	All alternatives	Low	Low
5	Auto Salvage	7135 Highway 70 West	Foss Enterprises Inc.	All alternatives	Low	Low
7	UST	6844 Highway 70 West	Singleton's Grocery	All alternatives	Low	Low
8	UST	Highway 70 West	Farm Stand	1UE, 1SB, 11, 12, 31, 32, 63, 65	Low	Low
9	UST	6130 Highway 70 West	Mallard Food Shop No. 19	1UE, 1SB, 11, 12	Low	Low
10	UST	5744 Highway 70 West	Falling Creek Service Center	1UE, 1SB, 11, 12	Low	Low
12	UST	Vernon Avenue	Coca Cola Warehouse	1UE	Low	Low
13	UST	4050 West Vernon Avenue	Kinston Suzuki	1UE	Low	Low

Site Number	Type	Location	Property Name	DSA	Anticipated Impacts	Anticipated Risk
14	UST	3800 West Vernon Avenue	66 Mini-Mart/ Speedway 8229	1UE	Low	Low
16	UST	3601 West Vernon Avenue	C-Mart 9 Pure	1UE	Low	Low
17	UST	2697 Highway 258 North	Carolina Ice Company	1UE	Low	Low
18	Auto Salvage	Highway 70	Auto Salvage	1UE	Low	Low
20	UST	1100 West New Bern Road	Stroud's Exxon	1UE	Low	Low
22	UST	1020 East New Bern Road	Circle B 9	1UE	Low	Low
23	UST	1005 South New Bern Road	Kinston Quick Stop/ Scotchman #78	1UE	Low	Low
32	UST	700 East New Bern Road	The Pantry #3076	1UE	Low	Low
37	Auto Salvage	5763 Highway 70 East	Auto Salvage	12, 32, 35, 52, 63	Low	Low
38	UST	136 Dover Road	Auto Service Center	All alternatives	Low	Low
39	UST	2777 Highway 55 West	Lighthouse Food Mart #110	11, 12, 31, 32, 63, 65	Low	Low
42	UST	1559 Highway 11/55	Vacant lot	1SB	Low	Low

4.14 MINERAL RESOURCES

The Davis Pit and Clay Pit would not be impacted by any of the DSAs. Construction of the project may temporarily increase the demand for locally crushed stone and sand. However, such an increase in demand would not adversely impact natural resources.

4.15 ALTERNATIVE COMPARISON MATRIX

Estimated environmental impacts associated with the DSAs are provided in Table 4-21. Natural resource impact calculations for the DSAs and corresponding service roads were calculated using the construction slope stake limits plus a 40-foot buffer of the functional designs. All other impact calculations were calculated using the alternative right-of-way limits.

Table 4-21: DSA comparison matrix

	Alternative 1UE	Alternative 1SB	Alternative 11	Alternative 12	Alternative 31	Alternative 32	Alternative 35	Alternative 36	Alternative 51	Alternative 52	Alternative 63	Alternative 65
General												
Length (miles)	24.5	24.5	26.5	26.7	25.3	25.5	28.6	28.3	25.9	26.1	25.6	25.4
Intelligent transportation system cost ($)	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000	$450,000
Utility cost ($)	$12,830,000	$10,800,000	$9,130,000	$9,430,000	$7,840,000	$8,080,000	$8,620,000	$7,980,000	$7,930,000	$9,880,000	$7,880,000	$7,630,000
Right-of-way cost ($)	$183,070,000	$123,710,000	$78,330,000	$85,050,000	$63,340,000	$66,990,000	$65,490,000	$64,200,000	$54,560,000	$57,380,000	$64,010,000	$61,180,000
Construction cost ($)	$245,900,000	$292,800,000	$284,100,000	$299,000,000	$284,200,000	$288,900,000	$290,400,000	$297,800,000	$296,200,000	$275,800,000	$355,900,000	$358,900,000
Mitigation cost ($)	$12,940,000	$12,250,000	$12,130,000	$13,390,000	$12,290,000	$13,550,000	$13,940,000	$12,810,000	$11,720,000	$12,980,000	$13,440,000	$12,180,000
Total cost ($)	$455,190,000	$440,010,000	$384,140,000	$407,320,000	$368,120,000	$377,970,000	$378,900,000	$383,240,000	$370,860,000	$356,490,000	$441,680,000	$440,340,000
Socioeconomic Resources												
Residential (#)	125	162	95	101	76	92	130	113	97	113	98	80
Business (#)	137	67	35	40	30	37	32	27	26	32	36	30
Non-Profit (#)	0	0	0	0	0	0	0	0	0	0	0	0
Total (#)	**262**	**229**	**130**	**141**	**106**	**129**	**162**	**140**	**123**	**145**	**134**	**110**
Communities (#)	3	3	2	3	3	3	5	5	3	3	3	3
Environmental Justice residential areas (#)	4	6	2	3	2	3	5	4	4	5	4	3
Minority block groups (#)	2	0	0	0	0	0	0	0	0	0	0	0
Low Income block groups (#)	6	3	3	3	3	3	3	3	3	3	3	3
Schools (#)	1	1	0	0	0	0	0	0	0	0	0	0
Hospitals (#)	0	0	0	0	0	0	0	0	0	0	0	0
Churches (#)	9	6	1	1	1	1	1	1	0	0	1	1
Fire departments (#)	1	1	1	2	1	2	1	0	1	2	2	1
Emergency Medical Services stations (#)	0	0	0	0	0	0	0	0	0	0	0	0
Airports (#)	0	0	0	0	0	0	0	0	0	0	0	0
Parks and recreational areas (#)	1	0	0	0	0	0	0	0	0	0	0	0
Cemeteries (#)	2	1	1	0	1	0	2	2	1	0	0	1
VADs (#)	0	0	0	0	0	0	1	1	0	0	0	0
VADs (ac)	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.0	0.0	0.0
NCNHP managed areas (ac)	6.0	2.3	0.0	0.0	6.1	6.1	0.0	0.0	0.0	0.0	0.0	0.0
Prime farmland (ac)	282.2	302.3	392.5	422.4	404.3	434.0	432.4	415.2	410.3	440.1	420.5	390.6
Farmland of statewide importance (ac)	172.2	222.5	236.8	210.2	263.7	236.6	203.4	225.6	224.4	198.3	218.2	243.7
Farmland of unique importance (ac)	53.3	53.3	56.8	56.8	51.7	51.7	47.3	47.3	48.8	48.8	51.7	51.7
Economic Resources												
Annual total net benefits (quantified 2040)	$22.5 million	$23.4 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million	$4.9 million
Physical Resources												
Noise receptors impacted	38	56	34	37	41	44	23	21	24	27	41	38
Hazardous materials sites (#)	18	9	9	10	7	8	6	5	5	6	8	7
Cultural Resources												
Section 106 adverse effects	2	2	3	4	6	7	2	1	1	2	6	5
Archaeological sites - high probability (ac)	649.8	829.3	628.9	753.6	590.3	714.3	626.1	526.3	516.8	641.8	668.4	542.8
Archaeological sites - low probability (ac)	570.6	480.1	684.4	583.9	688.0	588.4	816.9	883.1	756.4	657.2	664.7	763.9
Natural Resources												

	Alternative 1UE	Alternative 1SB	Alternative 11	Alternative 12	Alternative 31	Alternative 32	Alternative 35	Alternative 36	Alternative 51	Alternative 52	Alternative 63	Alternative 65
Maintained/Disturbed (ac)	706.2	516.6	264.2	346.3	242.3	324.3	312.7	230.1	214.9	297.6	315.5	232.8
Agriculture (ac)	317.9	507.9	672.2	689.6	664.6	682.3	714.1	699.9	637.3	655.6	667.8	648.9
Pine Plantation (ac)	73	148.5	246.7	193	242.6	188.7	265.3	305.1	266.1	212.4	211.3	265.1
Forested Upland (ac)	21.5	25.3	28	19.9	27.9	19.7	29.7	38	34.2	26	19.4	27.6
Palustrine Wetland (ac)	98.3	97.4	98.2	86.6	97	85.4	117.3	130.7	115.1	103.5	114.8	126.3
Open Water (ac)	3.5	13.7	3.9	2.3	3.9	2.3	4	5.6	5.6	4	4.3	5.9
Total biotic resources (ac)	1220.4	1309.4	1313.2	1337.7	1278.3	1302.7	1443.1	1409.4	1273.2	1299.1	1333.1	1306.6
Stream crossings (#)	43	44	45	50	41	45	42	40	38	42	45	41
Stream length (ft)	32,057	33,112	26,771	33,864	26,620	33,699	31,295	24,888	23,638	30,717	31,368	24,289
100-year floodplain (ac)	358.6	147.7	95.2	83.9	109	97.7	52.1	62.3	73.4	62.1	139.1	150.4
500-year floodplain (ac)	75	130.8	23.9	23.9	21.7	21.7	40.2	40.2	46.2	46.2	29.2	29.2
Total floodplains (ac)	433.6	278.5	119.1	107.8	130.7	119.4	92.3	102.5	119.6	108.3	168.3	179.6
Floodway (ac)	35.6	0.6	1.8	1.9	1.1	1.1	0.1	0.1	1.1	1.1	1.2	1.2
Riparian wetland	74.1	41.2	68.5	55.1	66.5	53.2	41.6	55.4	60.4	47.1	74.5	87.9
Non-riparian wetland	11.8	24.2	49.4	37.4	60.1	48.1	107.4	116.4	81.8	69.8	37.7	49.7
Total wetland impacts (ac)	85.9	65.4	117.9	92.5	126.6	101.3	149	171.8	142.2	116.9	112.2	137.6

4.16 INDIRECT AND CUMULATIVE EFFECTS

The indirect and cumulative effects associated with the proposed action have been identified and assessed in several technical reports available under separate covers. These reports include the LUSA (NCDOT 2018g), CIA (NCDOT 2018d), and EIA (NCDOT 2018f), which are all available on the project website.

Technical Studies

The LUSA, CIA, and EIA for the Kinston Bypass can be found on the project website.

https://www.ncdot.gov/projects/kinston-bypass/Pages/default.aspx

Indirect and cumulative effects were assessed within the Future Land Use Study Area (FLUSA) by predicting changes in development types within defined probable development areas (PDA) as a result of the No-Build Alternative and DSAs. The development pressures and regulations, proposed future land use, infrastructure, and proximity to proposed economic centers were considered to determine the degree of impacts to notable features and waterways within each PDA with and without the proposed action. The locations of the PDAs are shown on Figure 4-119 and Figure 4-120.

The proposed action is included in local transportation planning documents; therefore, conflicts are not anticipated. Examination of the PDAs shows that the proposed action is expected to encourage growth targeted to highway users in certain areas; however, pressure for development is expected to be limited. The project is specifically aligned with the mobility goal of the North Carolina STC policy (previously the Strategic Highway Corridors policy) (NCDOT 2015c). Federal, state, and local policies and regulations that include zoning ordinances and land use plans provide protections from development for human and natural environmental features in the FLUSA that include historic and cultural resources, protected populations, wetlands, natural resources, farmland, and other important features.

In the LUSA, three land use scenarios were evaluated; one that applied to Alternative 1UE, one that applied to Alternative 1SB, and one that applied to the remaining 10 alternatives. The remaining 10 alternatives were grouped together because the indirect and cumulative effects from Alternatives 11, 12, 31, 32, 35, 36, 51, 52, 63, and 65 would be similar, as they would be located along paths with similar land use and population and availability of public utilities.

Direct Effects

Direct effects are caused by the action and occur at the same time and place. (40 CFR 1508.8)

Indirect Effects

Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems. (40 CFR 1508.8)

Cumulative Impact

Cumulative impact is the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (40 CFR 1508.7)

Categories were used to help determine the potential for land use change induced by the proposed action, and have been shown to have a direct relationship to future quality of life and resource impacts. These include the following:

- Pressure/demand for typically higher impact development
- Future shift of regional population growth to the project area
- Pressure for land development outside regulated areas
- Pressure for land development outside of planned areas
- Development patterns
- Planned/managed land use and impacts

The relative rating of potential indirect and cumulative effects for the three different land use scenarios are shown in Table 4-22 through Table 4-24. Potential impacts are also discussed in the following sections.

Safety

Potential positive impacts to community safety are expected to be moderate and are likely for each DSA, depending upon how accessibility is altered for each PDA. In comparison to the No-Build Alternative, response times of emergency response vehicles that utilize or pass through the existing US 70 corridor would likely be improved for all the DSAs. The changes or benefits among the individual DSAs would vary depending on the service area for emergency response providers and how accessibility is affected by change of access and/or potential road closures. The DSAs that are not Alternative 1UE would have the benefit of providing an alternative route for US 70 through much of the study area, which would be beneficial if either the existing US 70 or the new route were closed or blocked due to an incident.

Mobility

All the DSAs would provide a freeway with full control of access, which would result in travel time savings that will exceed 10 minutes for an individual highway user.

Property Access

The proposed action would alter property access for those properties that abut or are adjacent to the project. Properties bisected by or near the project would have a new barrier that may alter and/or limit access. Other properties may experience improved access to the highway system if they are located near interchanges.

Noise

The design year traffic projections through 2040 used for the *Traffic Noise Report* include the effects of planned and programmed projects. As a result, the reported noise impacts in section 4.10 include this growth and represent both direct and cumulative noise impacts.

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DEIS | R - 2553

Figure 4-119: Probable Development Areas (PDAs) - A

Legend

- Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

Community Features

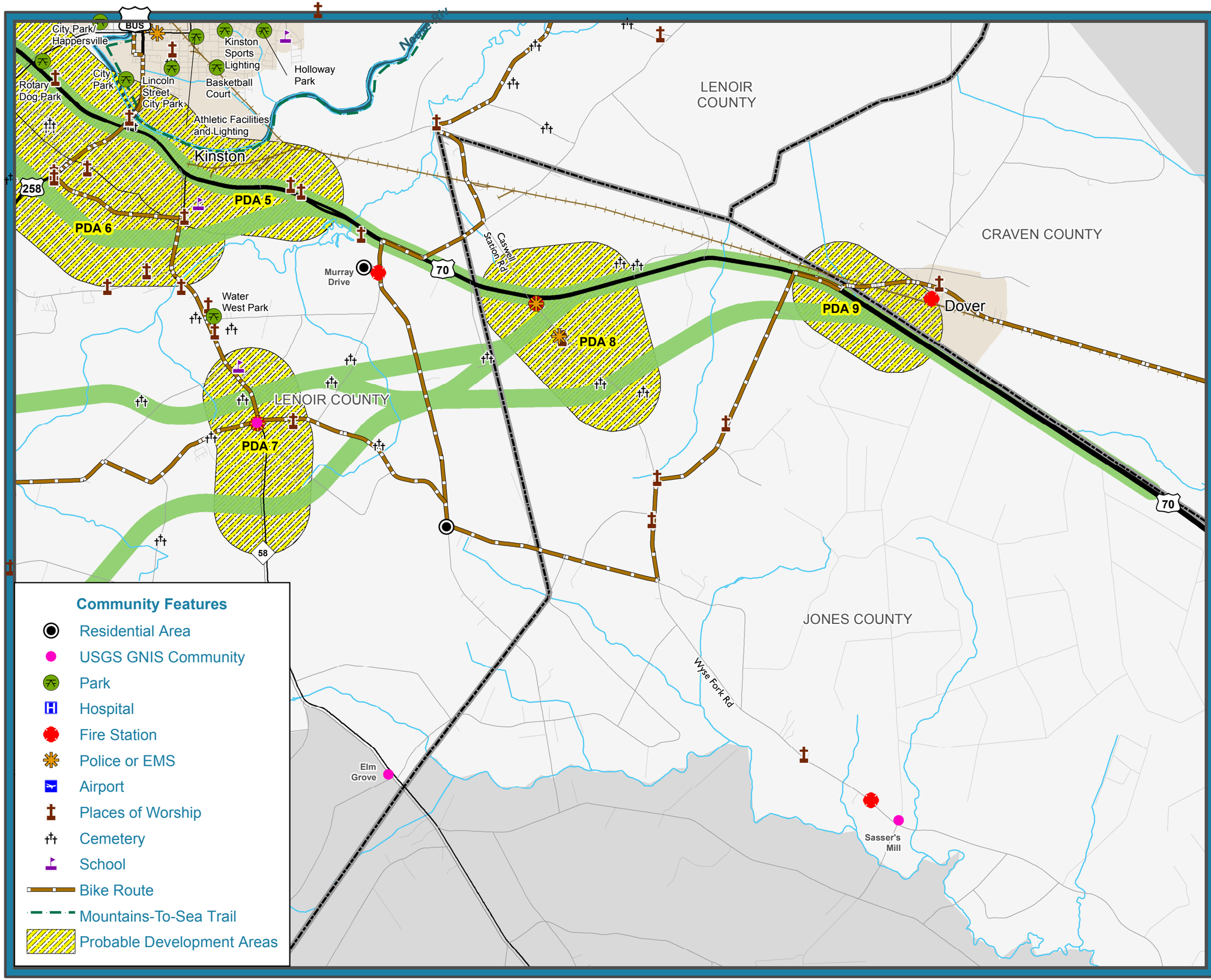
- Residential Area
- USGS GNIS Community
- Park
- Hospital
- Fire Station
- Police or EMS
- Airport
- Places of Worship
- Cemetery
- School
- Bike Route
- Mountains-To-Sea Trail
- Probable Development Areas

0 0.75 1.5 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

La Grange
Willie Measley Rd
Little Baltimore
Jim Sutton Rd
PDA 1
Albert Sues Rd
LENOIR COUNTY
Barwick Station Rd
70
Cedar Dell
Bucklesberry
PDA 2
City Park
Barnet Park
Kinston
Bill Faye Park
Parks and Recreation Office
Emma Webb Park
Grainger Stadium
Fairfield Park
Lions Water Adventure
Governor Richard Caswell Memorial Park
Neuseway Park
70 BUS
City Park/ Happersville
70 BYP
Rotary Dog Park
Lincoln Street City Park
City Park
PDA 5
Athletic Facilities and Lighting
PDA 6
11
55
258
Jackson Heights
NC 11/ NC 55
Water West Park
Sandy Bottom
PDA 3
Albrittons
Howard Place Drive
Southwest Creek
PDA 4
Woodington
11



70 KINSTON BYPASS
DEIS | R - 2553

Figure 4-120: Probable Development Areas (PDAs) - B

Legend

- Detailed Study Alternative
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Municipal Boundary
- County Boundary

0 0.75 1.5 Miles

N

This map is for reference only.
Sources: AECOM, CGIA, City of Kinston, Craven County, ESRI, HPO, Jones County Lenoir County, NCDCM, NCDEQ, NCDOT, NCEM, NCOnemap, NRCS, USFWS

Table 4-22: LUSA matrix – Alternative 1UE

Rating	Pressure / Demand for Typically Higher Impact Development	Future Shift of Regional Population Growth to the Growth Area	Pressure for Land Development Outside Regulated Areas	Pressure for Land Development Outside Planned Areas	Development Pattern	Planned / Managed Land Use Impact
	Commercial/ industrial development with large parking lots likely	Strong attraction of development in this area	Many acres in the probable development areas are outside a regulated area	Many acres in the probable development areas are outside a planned area	Strip or sprawling development likely	Land development and stormwater management goals not set
High Concern						
Medium-High Concern	Build Scenario				Build Scenario No-Build Scenario	
Medium Concern	No-Build Scenario					
Medium-Low Concern		Build Scenario No-Build Scenario				Build Scenario No-Build Scenario
Low Concern			Build Scenario No-Build Scenario	Build Scenario No-Build Scenario		
	Commercial development and / or large residential developments not likely	No population shirt likely	All probable development areas in a regulated area	All probable development areas in planned area	Likely to support clustered development	Probable development areas are consistent with land development and stormwater management goals

Table 4-23: LUSA matrix – Alternative 1SB

Rating	Pressure / Demand for Typically Higher Impact Development	Future Shift of Regional Population Growth to the Growth Area	Pressure for Land Development Outside Regulated Areas	Pressure for Land Development Outside Planned Areas	Development Pattern	Planned / Managed Land Use Impact
	Commercial/ industrial development with large parking lots likely	Strong attraction of development in this area	Many acres in the probable development areas are outside a regulated area	Many acres in the probable development areas are outside a planned area	Strip or sprawling development likely	Land development and stormwater management goals not set
High Concern						
Medium-High Concern	Build Scenario				Build Scenario No-Build Scenario	
Medium Concern	No-Build Scenario	Build Scenario				
Medium-Low Concern		No-Build Scenario				Build Scenario No-Build Scenario
Low Concern			Build Scenario No-Build Scenario	Build Scenario No-Build Scenario		
	Commercial development and / or large residential developments not likely	No population shirt likely	All probable development areas in a regulated area	All probable development areas in planned area	Likely to support clustered development	Probable development areas are consistent with land development and stormwater management goals

Table 4-24: LUSA matrix – representative southern bypass scenario

Rating	Pressure / Demand for Typically Higher Impact Development	Future Shift of Regional Population Growth to the Growth Area	Pressure for Land Development Outside Regulated Areas	Pressure for Land Development Outside Planned Areas	Development Pattern	Planned / Managed Land Use Impact
	Commercial/ industrial development with large parking lots likely	Strong attraction of development in this area	Many acres in the probable development areas are outside a regulated area	Many acres in the probable development areas are outside a planned area	Strip or sprawling development likely	Land development and stormwater management goals not set
High Concern						
Medium-High Concern	Build Scenario	Build Scenario			Build Scenario No-Build Scenario	
Medium Concern	No-Build Scenario					
Medium-Low Concern		No-Build Scenario		Build Scenario		Build Scenario No-Build Scenario
Low Concern			Build Scenario No-Build Scenario	No-Build Scenario		
	Commercial development and / or large residential developments not likely	No population shirt likely	All probable development areas in a regulated area	All probable development areas in planned area	Likely to support clustered development	Probable development areas are consistent with land development and storm water management goals

Induced Growth

- The project would result in a travel time savings in excess of 10 minutes for an individual highway user traveling on a new location alternative, which would be expected to increase the likelihood and/or density of development. Industrial development would be expected, especially in PDAs that include existing industrial land uses and development along existing US 70 and the C.F. Harvey Parkway interchange.
- In comparison to the No-Build Alternative, all the DSAs would create more pressure/demand for higher density and/or industrial development. While the overall growth projections for the FLUSA are relatively low, the construction of a new freeway and/or major improvements to the existing highway would likely encourage new commercial and industrial development.
- Alternative 1SB, 11, 12, 31, 32, 35, 36, 51, 52, 63, and 65 are more likely to shift future population growth areas than the No-Build Alternative and Alternative 1UE.
- Alternatives 11, 12, 31, 32, 35, 36, 51, 52, 63, and 65 would provide new access to land in Jones County, which does not implement zoning controls. However, these areas are not served by sewer service and are designated rural and agricultural, and low-density residential served by on-site septic systems and agricultural uses are planned.
- Alternatives 1UE and 1SB would be more likely to support some clustered development than the No-Build Alternative and the other DSAs, especially around proposed interchange areas where new access is provided.
- The areas that are projected for probable development are consistent with land development and stormwater management goals set in these respective areas; thus, there were no discernable differences between the No-Build Alternative and any of the DSAs.
- The potential for substantial project-induced, or project-focused, growth that would have visual impacts on the community would be limited to new interchange catchment areas. In these areas, rural viewsheds would likely be replaced by buildings and other structures. In urban settings, visual impacts are still possible, but the project context is more consistent with the existing urban land uses and would likely be in context to the surrounding areas.

Natural Habitat

- No induced growth is projected in areas adjacent or near the NCNHP natural areas as they are outside of the PDAs. Induced growth could create development pressure to develop NCNHP natural areas for active land uses and/or habitat fragmentation could take place, which would limit the integrity of the NCNHP natural areas.
- No indirect impacts to terrestrial communities related to fragmentation of forested landscapes and plant communities are anticipated. The landscape within the project study area is already fragmented due to the large amount of maintained/disturbed and agricultural community types.

Energy

- Increased energy efficiency on the new highway would be attributed to its controlled access features and would result in decreased vehicle delays, more efficient vehicle operating speeds, and diversion of traffic away from less convenient and less efficient roadways.

- Improved travel conditions would reduce vehicle fuel use, resulting in direct travel cost savings for highway users.

Water Quality Statement

Qualitative analyses of the probable development patterns in the FLUSA suggest that change in land use resulting from the project and subsequent private and public development actions could lead to an increase in impervious surface and could potentially have a negative effect on future stormwater runoff and water quality in the watersheds encompassed by the project.

However, there are adopted ordinances and regulations to help reduce potential water quality effects due to increased impervious surface coverage and increased water runoff. The Lenoir County *Watershed Protection Ordinance* applies to the southwestern portion of the FLUSA and establishes density and intensity standards for development in the Neuse River Water Supply Watershed WS-IV Critical and Protected areas (Lenoir County 2003b). In addition, the Neuse River buffer rules apply to the entire FLUSA and require a 50-foot riparian buffer area to be protected and maintained along waterways in the river basin. Other stormwater permitting programs exist in the FLUSA, including the City of Kinston under the Neuse River Stormwater Program; Craven County, the Town of Dover, and Cove City under the Coastal State Permitting Program; and Pitt County and the Town of Grifton under the NPDES Phase II Stormwater Permits.

Direct water quality impacts will be avoided and/or mitigated through compliance with regulations covering watershed protection, floodplain protection, stream and river buffers, and stormwater management.

Direct water quality impacts will be addressed by avoidance, minimization, and mitigation, consistent with programmatic agreements with environmental resource and regulatory agencies during the permitting processes (USACE 2018). Future development will be required to follow federal, state, and local regulations for the protection of water quality.

Table 4-25 provides a summary of notable environmental features that are within the FLUSA and highlights likely foreseeable cumulative impacts from the proposed action.

Direct environmental impacts by NCDOT projects are addressed by avoidance, minimization, or mitigation consistent with programmatic agreements with the natural resource agencies during the permitting processes (USACE 2018). All development will be required to follow local, state, and federal guidelines and permitting requirements.

Table 4-25: Summary of notable water quality, habitat, and community features and foreseeable impacts

Notable Feature	Description	Foreseeable Impacts
FEMA's HMGP buyout program	Contains over 700 acres that were purchased under the FEMA HMGP, which is a federal buyout grant program used to relocate businesses and residences from the floodplain. Restrictive covenants that prohibit construction of any permanent structures or impervious surfaces are in place. This program intends to mitigate future flood damage and property loss. Any impacts to HMGP properties from the project would require review and approval from FEMA.	**PDA 5 and PDA 6**: contain properties that were purchased under the FEMA HMGP. In PDA 5, Alternative 1UE would directly impact some of these parcels, totaling 21.4 acres. In PDA 6, Alternative 1SB would impact 20.2 acres. Otherwise no impacts are expected as regulations in place will continue to prohibit development or alterations to the HMGP properties. Overall beneficial effects include keeping floodplains and associated wetlands intact, helping innate functions for stormwater treatment, and preventing and mitigating flood damage.

Notable Feature	Description	Foreseeable Impacts
EJ populations	The CIA identified eleven EJ residential areas. **Norbert Hill Road**: located between US 70 and Gregg Drive; contains low-income populations. **Foss Farm Road:** located on US 70 between Barwick Station Road and Albert Sugg Road; contains concentrations of minority and low-income populations**.** **Crooms Drive**: located off NC 55; contains low-income populations **Jesse T. Bryan Road**: located near Barwick Road; contains low-income populations. **Carrie Hill Drive and Howard Place Drive**: located off of NC 11; contains low-income populations. **Lonesome Pine Drive**: located between Joe Nunn Road and Randy Road; contains low-income populations. **Albert Baker Road:** located off of NC 58; contains minority and low-income populations. **Fordham Lane:** located near US 258; contains a minority and low-income population. **Johnson Road/NC 58:** This residential area contains a minority population. **British Road and Caswell Station Road:** located on the north side of US 70; contains a minority population. **US 70/Tilghman Road:** located on the southern side of US 70 just west of Tilghman Road; contains minority and low-income populations.	**PDA 1:** The Norbert Hill Road residential area would be affected by all DSAs. The DSAs may displace some of these residences closest to US 70 and those that remain would experience a change in access to US 70. The Foss Farm Road residential area would be displaced by Alternatives 1UE, 1SB, 11, 12, 35, 36, 51, and 52. Access to this residential area would be affected by Alternatives 31, 32, 63, and 65 (from Willie Measley/Little Baltimore interchange), as these alternatives would provide a service road to this community. **PDA 3:** The Crooms Drive residential area would be impacted by Alternatives 51 and 52. Some of the residences would be displaced by the proposed interchange with NC 55 and those that remained would experience a change of access to NC 55. The Jesse T. Bryan Road residential area would experience change in access to the local road network from Alternatives 51 and 52. **PDA** 4: the Carrie Hill Drive and Howard Place Drive residential area would have approximately 35 homes displaced by Alternatives 35 and 36. The Lonesome Pine Drive residential area would experience several displacements from Alternatives 63 and 65. **PDA 5**: the Albert Baker Road residential area would be displaced by Alternatives 35 and 36.

Notable Feature	Description	Foreseeable Impacts
EJ populations (continued)		**PDA 7:** the Fordham Lane residential area and the Johnson Road/NC 58 residential area would be displaced by Alternative 1SB. The Johnson Road/NC 58 residential area would be displaced by Alternative 1SB due to the proposed interchange with NC 58. **PDA 6:** the British Road and Caswell Station Road residential area would be impacted by Alternatives 1UE and 1SB. A new service road would be required in this area, which would directly impact several homes along existing US 70 in this area due to the need for additional ROW. Homes that would not be directly impacted would experience change in access to the US 70 corridor. **Other:** The US 70/Tilghman **Road** residential area is also an EJ residential area but is located outside of all PDAs.
Wyse Fork Battlefield	Contains approximately 4,000 acres southeast of Kinston along US 70 and is listed on the NRHP.	Wyse Fork Battlefield would be crossed by Alternatives 1UE, 1SB, 12, 32, 35, 52, and 63; however, little development pressure was projected as almost all of the area is classified as flood hazard, and many properties are already included in the FEMA buyout program.

Notable Feature	Description	Foreseeable Impacts
VAD	All three counties in the FLUSA have VAD ordinances in place. Several farms in Lenoir County and Jones County that are in the FLUSA are protected as VADs. These properties have a conservation agreement between the landowner and the county that prohibits non-farm use or development for a period of at least 10 years.	There are two VAD properties within PDA 4. Parcel Identification Numbers 450200425447 and 450200523932 are located near Alternatives 35 and 36 along Black Harper Road. This VAD may be impacted by right-of-way acquisition, and land in the VAD may be temporarily converted to non-agricultural use as part of a temporary construction easement. Changes in access to agricultural fields could result in indirect effects.
Neuse River – NSW	The portion of the Neuse River in the FLUSA is classified as a NSW. The Neuse River Compliance Association has a watershed based permit from the NCDEQ and represents local governmental units to monitor water quality in the watershed.	While PDA 5 is the only PDA that contains portions of the Neuse River, the entire FLUSA is within the Neuse River Basin. Increased water runoff from induced growth could impact the water quality of the Neuse River.
Neuse River – AFSA	The portion of the Neuse River in the FLUSA is designated as an AFSA. Designated AFSAs have in-water work construction moratorium dates when construction cannot occur during spawning periods. In-water work is prohibited between February 15 and June 30.	New culverts built over small streams could interrupt migration patterns of anadromous fish, which can lead to a decline in anadromous fish population and impact the number of fish in salt water environments.

Notable Feature	Description	Foreseeable Impacts
Prime and unique farmland	Prime and unique farmland soils are present throughout the FLUSA and in all the DSA corridors.	All PDAs contain some prime and unique farmlands. Impacts to prime farmland are the lowest for Alternative 1UE (282 acres) and the highest for Alternative 32 (434 acres). Alternative 1SB had 302 acres of prime farmland. Unique farmland impacts were similar among all DSAs, ranging from 47 acres (Alternatives 35 and 36) to 57 acres (Alternatives 11 and 12). Potential induced development could impact prime and unique farmland and changes in access to farm fields could result in indirect effects.
Public parks and open space	The Governor Caswell Memorial Park, First Battle of Kinston Memorial Site, and the Rotary Dog Park are located within the FLUSA.	PDA 2 contains the Governor Caswell Memorial site. No direct impacts are expected, but Alternative 1UE may involve changes in access (temporary or permanent). PDA 5 contains the First Battle of Kinston Memorial site and the Rotary Dog Park. No direct impacts to the First Battle of Kinston Memorial site are anticipated. Direct impacts, as well as changes in access (temporary or permanent), are expected from Alternative 1SB to the Rotary Dog Park. No impacts from induced growth are anticipated to the First Battle of Kinston Memorial site or the Rotary Dog Park.

Notable Feature	Description	Foreseeable Impacts
Conservation easements	Several areas of land have been purchased as conservation easements in the FLUSA, which includes wetlands and croplands. These lands carry deed restrictions, which prohibit development activity.	No direct impacts are expected, as deed restrictions are in place that will prohibit changes in land use. Conservation easements limit or prohibit development, so little to no impacts from induced development or other reasonable foreseeable future projects are anticipated.
NCNHP natural areas	Two NCNHP natural areas exist in the FLUSA. NCNHP natural areas contain one or more high-quality or rare natural communities, rare species, and/or special animal habitats.	No induced growth is projected in areas adjacent or near the NCNHP natural areas as they are outside of the PDAs. Induced growth could create development pressure to develop NCNHP natural areas for active land uses and/or habitat fragmentation could take place, which would limit the integrity of the NCNHP.
Section 303(d) Streams	Three streams/rivers in the FLUSA are listed as impaired for severe or fair bio-classification.	The Section 303(d) streams in the FLUSA are outside of the PDAs. Increased surface water runoff from induced growth and reasonably foreseeable future projects could further contribute to the stream bio-classification.
Surface waters	A portion of the FLUSA includes a portion of a WS-IV water supply watershed, which has portions designated both as a protected area and a critical area. Residential and commercial densities are regulated in these areas.	The WS-IV portion of the water supply watershed is outside of the PDAs. Induced development and reasonably foreseeable future projects can affect water quality in the water supply watershed, but growth would be constrained by the density requirements of the watersheds.
Wetlands	Wetlands are located throughout the FLUSA and are protected under Section 404 of the Clean Water Act.	Wetlands exist in all PDAs. Induced development and reasonably foreseeable future projects, specifically around interchange areas, would be likely to eliminate small wetlands, which could lead to a cumulative aggregate loss of wetlands.

4.17 CONSTRUCTION IMPACTS

Impacts are to be expected during the construction phase of the proposed action. Most of the impacts during construction are expected to be temporary in nature and may include the following:

- Minor short-term business impacts as a result of changes in access during construction.
- Minor short-term community impacts as a result of changes in access during construction.
- Temporary impacts to soils during construction (erosion, compaction, and discharges).
- Temporary impacts to water quality during construction (erosion, runoff, discharges to surface waters).
- Temporary impacts to aquatic resources and water quality during bridge construction (pier placement, mobility of equipment) that could result in a temporary increase in turbidity and a potential decrease in dissolved oxygen levels associated with the re-suspension of sediment particles into the water column.
- Temporary impacts to floodplains and floodways during bridge construction over the Neuse River, Southwest Creek, Falling Creek, and Strawberry Branch.
- Temporary impacts during construction to HMGP properties along Alternatives 1UE and 1SB if either alternative is chosen as the applicant's preferred alternative.
- Temporary impacts during construction to NCNHP managed areas along Alternatives 1UE, 31, 32, 63, or 65 if chosen as the applicant's preferred alternative. Temporary impacts would also be possible to the Goodman Property Stream Restoration project if Alternative 11 or 12 was chosen as the applicant's preferred alternative.
- Alternatives 11 and 12 would have temporary impacts during construction to the Banks School Road Stream Restoration that is an NCDOT on-site mitigation project.
- Temporary impacts to terrestrial communities during project construction (erosion, minor clearing, discharges).
- Temporary impacts to wildlife species during project construction in the form of dislocation of species occupying adjacent habitats during construction due to noise and activity in the vicinity of their usual habitat. It is likely that species dislocated during construction activities would return once construction is complete.
- Temporary impacts to jurisdictional waters of the US and protected stream buffers during construction to include erosion, runoff, and discharges to floodplains, wetlands, and surface waters within and in the vicinity of the construction area. Construction of bridges along the Neuse River, Southwest Creek, Falling Creek, and Strawberry Branch could cause temporary impacts to their associated floodplains from general construction activity and pile placement.
- Temporary impacts to air quality during project construction (vehicle and equipment exhaust, dust, off-gassing of construction materials).
- Construction noise.

Detailed temporary impacts to all resources will be assessed and calculated once the applicant's preferred alternative is selected.

4.18 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible or irretrievable commitment of resources refers to losses or impacts that cannot be reversed or recovered (i.e., the losses are permanent). Examples include permanent conversion of wetlands and streams, or loss of cultural resources, soils, wildlife, agricultural, and socioeconomic conditions.

A commitment of resources is considered irreversible if impacts to a resource, either directly or indirectly, limit the future option for the resource. A commitment of irreversible impacts to resources typically applies primarily to the effects of use of nonrenewable resources such as minerals and cultural resources. Irretrievable impacts or commitment of resources refer to loss of production, harvest, or use of natural resources.

The consumption of resources is evaluated to ensure that it is justified as a result of the proposed action. The proposed action would require the irretrievable commitment of natural resources through direct consumption of construction materials such as wood, aggregate, and cement to construct roadways and bridges, and to fossil fuels such as gasoline and diesel to power construction equipment.

4.19 RELATIONSHIP BETWEEN LONG-TERM AND SHORT-TERM USES OF THE ENVIRONMENT AND ANTICIPATED BENEFITS

This section defines the balance, or trade-off, between short-term uses and long-term productivity needs in relation to the proposed action. The short-term effects on and uses of the environment in the vicinity of the DSAs are related to the long-term effects and maintenance and enhancement of long-term productivity. Short-term relates to the total duration of construction of the proposed action. Long-term refers to an indefinite period after construction of the project and includes the longer term mitigation measures that may be implemented, as well as the ongoing operation and maintenance of the newly constructed highway.

The most disruptive short-term impacts associated with the proposed action would occur during land acquisition and project construction, such as construction hauling, noise, lighting, and/or dust. However, these short-term uses of human, physical, economic, cultural, and natural resources would contribute to the long-term productivity of the study area.

Existing homes and businesses within the applicant's preferred alternative's right-of-way will be displaced. However, adequate replacement housing, land, and space are available for homeowners and business owners to relocate within the study area.

The project is consistent with the objectives of state and local transportation plans. It is anticipated that the proposed action will enhance long-term access and connectivity opportunities in Craven, Jones, and Lenoir counties and will support local, regional, and statewide commitments to transportation improvement and economic viability.

4.20 MITIGATION MEASURES

As discussed in chapter 2, during the development of the DSAs, efforts were made to avoid and minimize impacts to resources wherever practicable while meeting the purpose of and need for the project. The DSA selection process incorporated recommendations made by federal and state environmental regulatory and resource agencies and comments received from the public.

Once the applicant's preferred alternative is selected, project-specific avoidance, minimization, and mitigation measures will be determined as necessary. General mitigation measures that will be employed include the following:

- Relocation benefits under the Uniform Relocation Act will be available to anyone displaced from the project (NCDOT 2017f).
- Context sensitive designs will be used in areas along the applicant's preferred alternative where visual/aesthetic impacts or EJ impacts are likely.
- Best management practices and sediment and erosion control plans will be implemented to minimize soil compaction and erosion outside of the construction area as required and to the maximum extent practicable.
- During bridge construction, construction methods such as top-down construction will be implemented to reduce the amount of in-water work and disturbance. Any in-water work will be done in phases to reduce the amount of turbidity-causing activities occurring at one time.
- Impacts to HMGP properties will be avoided and minimized to the extent practicable during final project design. NCDOT's coordination with FHWA, FEMA, and NCDEM will ensure that any impacts are mitigated to the fullest extent.
- Best management practices will be used to minimize transport and distribution of non-native vegetation cuttings and seeds. Newly disturbed areas will be re-planted with desired species as required and as soon as practicable.
- Bridge construction could involve barges and other watercraft originating from other-than-local harbor waters. To ensure that watercraft do not introduce exotic or invasive species, NCDOT will require its contractors to pre-inspect and certify that all vessels are clean and devoid of exotic or invasive species.
- Jurisdictional streams in the project study area will be designated as warm water streams for the purposes of stream mitigation. Mitigation requirements will be coordinated with NCDWR and USACE.
- Avoidance, minimization, and mitigations measures will be taken in compliance with Section 106 for all cultural resources within the applicant's preferred alternative.
- Once the applicant's preferred alternative is selected, a design noise report will determine more specific details regarding the noise abatement measures.
- Access to farms will be maintained.

CHAPTER 5
AGENCY COORDINATION AND PUBLIC INVOLVEMENT

5. AGENCY COORDINATION AND PUBLIC INVOLVEMENT

This chapter summarizes regulatory agency coordination, public involvement activities, and environmental resource coordination required under regulatory programs administered by the federal lead agency (USACE) for the project development and the decision-making process. Detailed information on agency coordination and public involvement for the project can be found in the *Agency Coordination Plan* (NCDOT 2018b) and the *Public Involvement Plan* (NCDOT 2018h).

5.1 AGENCY COORDINATION

This project followed the NCDOT Clean Water Act Section 404/NEPA Interagency Merger Process (Merger Process) in order to integrate and streamline these two processes. NCDOT has assisted USACE with the administration of the merged process.

The Merger Process provides a forum for appropriate federal, state, and local agency representatives to discuss and reach consensus on major project milestones through a shared decision-making process, which results in agency representatives reaching compromised-based decisions throughout the development of the project.

Federal and state agencies with jurisdiction over the project were brought together through the Merger Process as the Interagency Merger Team. The Merger Process defines specific steps, or CPs, when the Interagency Merger Team meets to reach consensus on major project milestones through the life of a project.

The members of the Interagency Merger Team include the following:

- USACE
- NCDOT
- USCG
- USEPA
- USFWS
- NOAA – Fisheries Service
- National Marine Fisheries Service
- North Carolina Department of Natural and Cultural Resources
- NCWRC
- NCDEQ, DWR
- NCDCM
- Eastern Carolina Rural Planning Organization
- Down East Rural Planning Organization

5.1.1 Agency Coordination: Merger Process Team Meetings

The Interagency Merger Team reached concurrence on the following three predetermined CPs through a series of informational meetings held at various points during the project process:

- CP1: Project Purpose and Need
- CP2: Alternatives to be Carried Forward
- CP2A: Review of Bridges and Crossings

Since the initiation of the project, 17 Interagency Merger Team meetings have been held. Information on the study area and project were presented and key issues were discussed at these meetings. The meetings provided a forum for the agencies to provide feedback on the process and characteristics of the project, as well as note concerns related to the resources in the study area. In addition, seven local officials meetings have been held for the benefit of local elected bodies.

A summary of the Interagency Merger Team meetings and local official meetings is included in the *Agency Coordination Plan* (NCDOT 2018b).

5.1.2 Agency Coordination: Scoping Process

In addition to the Merger Team's input, the project staff maintained a record of input and correspondence from a full range of public agencies that was specifically obtained during the formal scoping process. The comments received during the scoping process related to the identification of resources under each agency's purview that were located in the study area.

Comments were received from 23 agencies. Some of the notable comments came from the USEPA and NCWRC regarding the wetlands and streams in the area, the NCDA&CS regarding permanent loss of productive farmland, and the North Carolina Department of Cultural Resources regarding the list of archaeological and historic resources in the area. A summary of the scoping input is included in the *Agency Coordination Plan* (NCDOT 2018b).

5.2 PUBLIC INVOLVEMENT

The public involvement program included public notices, project postcards and newsletters, public meetings, and information distribution in various formats.

The Notice of Intent for the project was published in the Federal Register by the USACE on September 11, 2014. A copy of the Notice of Intent is in Appendix H.

Four public meetings were held, each of which included two separate meetings covering the same materials, resulting in eight public meetings in total. In addition, four small group meetings was also held; two of the meetings focused on community impacts while the other two focused on business impacts.

The public involvement program has included multiple opportunities for stakeholders to learn about the purpose of and need for the project, project alternatives, and potential project issues and impacts. Stakeholders participated in various forums, submitted comments, asked questions, and stayed informed. The project's *Public Involvement Plan* outlines strategies, dates, and efforts

undertaken to reach the general public and traditionally underrepresented populations (minorities, low income community members, and people with LEP) (NCDOT 2018h).

5.2.1 Public Meetings

Eight public meetings, which were formerly called "Citizens Informational Workshops," were offered in two locations in Kinston (two each in 2010, 2011, 2012, and 2014). Citizens were notified about the workshops by direct mail, flyers, and local media announcements. The purposes of the workshops were to review and receive comments on the project's purpose and need, the project alternatives, and the project study process. Dates, quantities, and the content of the postcards, newsletters, and flyers, as well as participation rates for the workshops, are presented in the project's *Public Involvement Plan* (NCDOT 2018h).

A total of 879 attendees signed in at the eight workshops between 2010 and 2014. On average, each workshop was attended by 110 people. Citizens frequently pointed out congestion at key US 70 intersections (US 258, NC 11, and the existing US 70 bypass connections). Citizens were evenly split on whether the existing US 70 and existing US 70 bypass could accommodate future regional and local demand. Many citizens attributed the congestion on US 70 to travelers from North Carolina's Piedmont and Mountain regions traveling to the beaches and to holiday and weekend traffic. Concerns about a "build" solution revolved around impacts to personal property, farmland, and neighborhoods, followed by impacts to businesses along existing US 70.

5.2.2 Small Group Meetings

As part of the CIA, the project team offered four small group meetings in 2013 to meet with representatives of organizations, civic groups, churches, and community services (e.g., fire protection). Following a formal presentation of the project status, attendees were split into groups no larger than 10 people to discuss travel patterns, impacts of alternatives on personal property and community services, and understanding of the project. When the project was re-started, the project team held two additional small group meetings in 2017. The purpose of these later meetings was to update and verify information previously collected on the project in relation to impacts to personal property and community services. All the individuals who participated in previous small group meetings, as well as potentially impacted property owners and tenants living within the project area, were invited to attend. The small group meeting details, including summarized comments, are presented in the appendix of the *Public Involvement Plan* (NCDOT 2018h).

As part of the EIA, the project team offered two small group meetings in 2014. The two meetings targeted the major employers and the small business community to identify their concerns and interests in the project, as well as to gage their perspective on how the different alternatives may impact their businesses and the larger regional economy. When the project was restarted in 2017, the project team held two additional small group meetings that focused on potential impacts to businesses on existing US 70. The purpose of these meetings was to update information previously collected on the project in relation to impacts to businesses, as well as to reach new business owners. Invitations were sent to participants in the previous small group meetings, and all potentially impacted property owners and tenants with businesses along US 70. The small group meeting details, including summarized comments, are presented in the appendix of the *Public Involvement Plan* (NCDOT 2018h).

5.2.3 Other Public Outreach

A project website and a toll-free bilingual hotline were established in 2010 to give the public consistent means to learn more about the project and to contact project staff. Direct mail was sent to the public near the project describing current events and upcoming public involvement opportunities such as workshops, meetings, and community event appearances. The mailing list included landowners not residing in the study area and all those who have requested to be added to the mailing list.

Additional methods to disseminate project information included the following:

- Direct mail postcards
- Direct mail newsletters
- Flyers
- Press releases
- Factsheets

Each item was clearly labeled and branded in relation to the project. The outreach materials are presented in the *Public Involvement Plan* (NCDOT 2018h). Many of the materials were offered in both English and Spanish. Project staff used a variety of outreach methods to target potentially affected citizens at different project planning phases.

The interactive nature of the following tools has also helped inform, engage, and capture public sentiment about the project:

- Surveys (MetroQuest)
- Videos

The videos provided a project introduction and details about the project alternatives and potential impacts.

5.2.4 Limited English Proficiency and Environmental Justice Outreach

Specific outreach efforts have been taken to include and encourage participation from LEP and EJ (minority and/or low income) populations. Flyers regarding small group meetings were hand delivered to several manufactured home neighborhoods in the project area, many of which include LEP and EJ populations. Postcards were also hand delivered to public service centers in the study area such as the La Grange and Kinston public libraries, the Kinston Community Health Center, and Lenoir County Social Services. Other LEP and EJ outreach is planned and outlined further in a supplemental document to the *Public Involvement Plan* (NCDOT 2018h).

5.3 USACE PUBLIC INTEREST REVIEW

The proposed action will be reviewed in accordance with 33 CFR 320-332, the Regulatory Programs of the USACE, and other pertinent laws, regulations, and Executive Orders. The decision whether to authorize this proposed action will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed action on the public interest. That decision will reflect the national concern for both protection and utilization of important

resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposed action will be considered. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, and in general, the needs and welfare of the people.

All public interest factors have been reviewed. The following public interest factors are considered relevant to this proposed action. Both indirect and cumulative impacts on the public were considered.

- **Conservation**: Conservation areas are discussed in section 3.6.5. Section 4.3 provides information on compatibility with local land use plans. Indirect and cumulative effects related to development can be found in section 4.16.
- **Economics**: In accordance with 33 CFR 320.4(q), section 4.1.3 describes the economic effect of the proposed action. Indirect and cumulative effects are described in section 4.16.
- **Aesthetics**: Section 3.5 describes the visual quality and aesthetics of the proposed action and section 4.5 describes the impacts.
- **Environmental Benefits**: In accordance with 33 CFR 320.4(p), beneficial effects to the quality of the environment resulting from the project are discussed throughout Chapter 4, where applicable.
- **Wetlands**: Wetland impacts have been evaluated in accordance with 33 CFR 320.4(b). Sections 3.6.7, 4.6.7.1, and 4.16 provide additional specific information, including indirect and cumulative effects, regarding wetland impacts in the project study area.
- **Historic and Cultural Resources**: In accordance with 33 CFR 320.4(e), potential impacts to historic and cultural resources have been coordinated with the North Carolina HPO as a part of the project. Sections 3.4 and 4.4 provide information on the resources and potential impacts. Impacts to cultural resources and measures to minimize impacts to cultural resource will be discussed in greater detail in the FEIS.
- **Fish and Wildlife Values**: In accordance with 33 CFR 320.4(c), NCDOT has coordinated with the USFWS and the NCWRD, as detailed in section 5.1. Fish and wildlife resources are detailed in sections 3.6.3, 3.6.4, and 3.6.6. Potential impacts to fish and wildlife resources are identified in sections 4.6.3, 4.6.4, and 4.6.6.
- **Flood Hazards**: Sections 3.7 and 4.7 address flood hazards and potential impacts. In addition, NCDOT has coordinated with local planners to ensure the proposed action is compatible with local plans, including hazard mitigation.
- **Floodplain Values**: Information regarding floodplains is located in section 3.7, and potential impacts are addressed in section 4.7.
- **Land Use**: Land use information and impacts are detailed in sections 3.3 and 4.3, respectively.
- **Navigation**: In accordance with 33 CFR 322.2, information regarding navigable waters is addressed in sections 3.6.7.4 and 4.6.7.5.

- **Recreation**: In accordance with 33 CFR 320.4(e), impacts to recreation have been evaluated as part of this project. Sections 3.2 and 4.2 discuss recreation in the project area and the potential impacts of the project.
- **Water Supply and Conservation**: In accordance with 33 CFR 320.4(m), impacts to the project area water supply are detailed in sections 3.6.2 and 4.6.2.
- **Water Quality**: In accordance with 33 CFR 320.4(d), impacts to water quality have been evaluated. Detailed information related to water quality compliance and coordination can be found in sections 3.6.2, 4.6.2, 4.16, and 4.17.
- **Energy Needs**: In accordance with 33 CFR 320.4(n), section 4.12 describes the impact of the project on energy needs.
- **Safety**: Safety benefits from the project are discussed in sections 4.1.5 and 4.16.
- **Food and Fiber Production**: Farmland is described in section 0. Section 4.7.2 describes impacts to prime farmland and section 4.1.3 identifies impacts to active farms in the project study area.
- **Mineral Needs**: Mineral resources are addressed in sections 3.13 and 4.14.
- **Consideration of Landowners**: Considerations of property ownership have been made during evaluation of the proposed action. Information related to considerations of property ownership can be found in sections 3.1 and 4.1.
- **Needs and Welfare of the People:** The needs and welfare of the people are addressed in sections 3.1 and 4.1.

CHAPTER 6
LIST OF PREPARERS AND DEIS DISTRIBUTION

6. LIST OF PREPARERS AND DEIS DISTRIBUTION

6.1 PREPARERS

This DEIS was prepared by AECOM Technical Services of North Carolina, in cooperation with the USACE, and NCDOT. The following personnel were instrumental in the preparation of this document.

6.1.1 US Army Corps of Engineers

Name	Position	Qualifications
Tom Steffens	Division 2 & 4, Washington Regulatory Field Office	BS, Biology; 19 years of experience with environmental regulations and compliance

6.1.2 NCDOT

Name	Position	Qualifications
Preston Hunter, PE	NCDOT Division Engineer, Highway Division 2	BS, Civil Engineering; 27 years of experience in transportation engineering
Bill Kincannon, PE	NCDOT Division Project Development Engineer, Division 2	BS, Civil Engineering; 15 years of experience in transportation engineering and construction management
Morgan Weatherford	NCDOT Environmental Program Supervisor II, Natural Environment Section; preparer of wetland predictive model	Master of Forestry, BS, Forest Management; 15 years of experience in environmental programing and GIS
Leilani Paugh	NCDOT On-Site Mitigation Group Leader, Natural Environment Section; reviewer of wetland predictive model	Master of Natural Resource Management; 19 years of experience in natural resource management
Heather Lane, PE	NCDOT Assistant Division Construction Engineer, Division 2	BS, Civil Engineering; 8 years of experience in engineering and program management
Maria Rogerson, PE (Former NCDOT Division 2)	NCDOT Project Engineer, Division 2	Master in Public Administration, BS, Biological and Agricultural Engineering; 20 years of experience in engineering and program management

Name	Position	Qualifications
Dean Hatfield, PE, E.L. Robinson	Representative for NCDOT Division 2; independent technical reviewer	MS, Civil Engineering; BS, Civil Engineering; 32 years of professional experience in the transportation industry
Douglas Parker, E.L. Robinson	Representative for NCDOT Division 2; document review support	MS, Forestry, BS, Botany, Horticultural Science; 19 years of experience in environmental site development and remediation
Ginny Snead (former Louis Berger)	Representative for NCDOT Division 2; document review support	MS, Environmental Engineering and Policy, BA, Environmental Science; 18 years of experience in storm water management and environmental quality
Kerri Snyder, AICP, Louis Berger	Principal Planner, Independent Technical Reviewer	MS, Zoology, BS, Science Education; 14 years professional experience
Leigh Lane, E.L. Robinson	Representative for NCDOT Division 2; lead reviewer for the DEIS document	BS, Civil Engineering; 30 years of experience in transportation and environmental planning and engineering
Paul Graham, Louis Berger	Representative for NCDOT Division 2; Senior Program Manager, Heritage Resource Management	BA, Anthropology/Archaeology; Non-degree graduate program Public Service Archaeology; 39 years of experience
Robin Maycock, LSS, CPM (former Louis Berger)	Representative for NCDOT Division 2; document review support	BS, Soil Science and Agronomy; 27 years of experience in environmental compliance and problem solving
Roland Robinson, E.L. Robinson	Representative for NCDOT Division 2; reviewer of ROW, construction costs	AS, Civil Engineering; 49 years of experience in transportation design and engineering
Roger Worthington, Louis Berger	Representative for NCDOT Division 2; reviewer of utilities estimations	BS, Mechanical Engineering; 34 years of experience in utility engineering
R.D. Odell, Louis Berger	Representative for NCDOT Division 2; roadway design approver	BS, Civil Engineering; 37 years of experience in design engineering

6.1.3 AECOM/Subconsultants

Name	Position	Qualifications
Taylor Alligood	Entry-level Transportation Planner; document content preparer	BA, Public Policy; 1 year of experience in transportation planning
Andrew Bell, PE, PTOE (former AECOM)	Transportation Engineer/Traffic Noise and Air Quality Analyst; technical reviewer for traffic, air, and noise documents	BS, Civil and Environmental Engineering; 11 years of experience in traffic analysis and noise analysis, certified PE and PTOE
Marvin Brown	Senior Architectural Historian; technical reviewer for historic architecture documents	MA, American Civilization, JD Stanford Law; 33 years of historic and architectural studies experience
Paul Burge, INCE Bd. Certified	Principal Noise Control Engineer; independent technical reviewer	MS, Mechanical Engineering; BS, Mechanical Engineering; 30 years of professional experience
Meme Buscemi, PE	Water Resources Engineer; document preparer and technical reviewer for hydraulics	MCE, Civil Engineering; 12 years of experience in drainage design and flood modeling, certified PE
Ashley Bush	Transportation Planner; document preparer	Master of City and Regional Planning, BS, Building Construction; 2 years of experience in transportation planning
Cindy Camacho, AICP	Senior Project Manager; CIA preparer and technical reviewer for community studies	MA, Planning; 29 years of land use and environmental planning experience
Nik Carlson	Senior Economist; EIA document preparer	Master of Public Policy; MA, Hon. Philosophy, Politics, and Economics; 27 years in economic analysis
Daniel Cassedy, PhD	Principal Archaeologist; technical reviewer	PhD, Anthropology, BA, Anthropology; 38 years of supervisory archaeology and cultural resource management
Ed Edens, PE	Civil Engineer; technical reviewer for roadway design	BS, Civil Engineering, PE; 30 years of experience in civil engineering
Celia Miars	Environmental Planner; DEIS document preparer	MA, Environmental Studies; 6 years of experience in environmental assessments

Name	Position	Qualifications
Paul Gerlach	Environmental Scientist, GIS Specialist; NRTR document preparer, impact calculations preparer	Masters of Environment Management, BS, Biology; 3 years of experience in NEPA documentation, GIS Analysis
Dennis Hoyle, PE	Vice President – Manager, Civil Engineer; technical reviewer	BS, Civil Engineering, PE; 39 years of experience as a project manager and project engineer
JD Hutchinson, GISP	Senior GIS Analyst; right-of-way impacts preparer	Masters of Urban and Regional Planning, BA, History, GISP; 14 years of experience in GIS Analysis and Cartography
Ron Johnson	Senior Biologist; technical reviewer	MS, Biological Sciences; 31 years of experience in biology, wetland/stream restoration, and NEPA
Matt Jorgenson	Archaeologist; technical reviewer	MA, Anthropology; 17 years of experience in all levels of archaeological background/studies
Drew Joyner, PE	Transportation Planner Department Manager; technical reviewer	BS, Civil Engineering, PE; 23 years of experience in NEPA studies
Brian Kennedy, AICP	Planner, Transportation Planning; technical reviewer of community studies	BA, Environmental Planning and Design; 35 years of interdisciplinary environmental impact documentation, public involvement
Kevin Lapp	Biologist; GIS Specialist, GIS figure preparer	MS, Biology, BS, Science, Conservation; 19 years of experience in natural resource investigations and GIS mapping/analysis
Robin Marshall	Senior Technical Editor/Writer	BA, English; 28 years of experience
Todd McAulliffe, AICP	Planner/GIS; lead GIS reviewer	MA, Geography, AICP; 15 years of experience in GIS analysis, transportation and urban planning
Adam Migliore Meyer, AICP	Transportation Planner; document preparer	BS, Environmental Science; 7 years of experience in transit development and comprehensive pedestrian planning

Name	Position	Qualifications
Suraiya Motsinger	Transportation Planner Project Manager; document preparer and technical reviewer	BA, Urban and Regional Planning; 10 years of experience in transportation planning
Paul Peninger	Director of Economics; technical reviewer for Economic Impact Assessment	Masters of City/Urban, Community and Regional Planning; 22 years of experience in economic analysis and policy
Joanna Rocco, AICP	Environmental Planner; document preparer and technical reviewer	MS, Environmental Studies; 16 years of experience
Christy Shumate, AICP	Transportation Planner Project Manager; technical reviewer	Masters of Environmental Management, BS, Natural Sciences, AICP; 16 years of experience in NEPA documentation
Eric Spalding, PE	Transportation Engineer; roadway designer	BS, Civil Engineering, PE; 5 years of experience in roadway design
Karen Taylor, PE (former AECOM)	Senior Transportation Planner/Engineer; document preparer and technical reviewer	BS, Civil Engineering, BS, Environmental Engineering; PE; 19 years of experience in project planning and management, NEPA analysis/documentation
Liz Twiss	Senior Editor/Writer	BS, Business Administration; 30 years of experience in editing, developing, and producing documentation materials
Jeff Weisner, AICP (former AECOM)	Senior Environmental Planner/Planning Department Manager; technical reviewer	BS, Biology; 24 years of experience as Environmental Planner and Project Manager for transportation and facilities projects
Chris Werner, PE (former AECOM)	Former Project Manager/Transportation Engineer; document preparer and technical reviewer	BS, Civil Engineering, PE; 12 years of experience in planning projects, transportation design, environmental impact assessments
Susan Westberry, AICP	Senior Environmental Scientist; document preparer and technical reviewer	MS, Botany, PWS, AICP, CPESC; 19 years of experience in stream and wetland assessments and NEPA documentation

Name	Position	Qualifications
Kory Wilmot, AICP	Project Manager/Urban Planner; document reviewer	Masters of Public Administration, BA, Urban and Regional Planning, AICP; 16 years of experience in NEPA documentation
Cyndy Yu-Robinson	Public Involvement Specialist; document preparer	Master of Pacific International Affairs; 24 years of experience in corporate communication and public affairs

6.2 DEIS DISTRIBUTION

In order to facilitate review and comment, the following agencies, local officials, and public libraries were provided copies of this document.

6.2.1 Federal Agencies

- Advisory Council on Historic Preservation
- FEMA
- FHWA
- USACE
- USCG
- USDA NRCS
- US Department of Commerce – NOAA – National Marine Fisheries Service
- US Department of Health and Human Services
- US Department of Housing and Urban Development
- US Department of the Interior
  - Office of the Secretary
  - Fish and Wildlife Service: Raleigh Field Office
  - National Park Service
  - USGS
- US Department of Transportation
- USEPA Region IV (Environmental Review Branch)

6.2.2 State Agencies

- North Carolina Department of Administration, State Clearinghouse
- North Carolina Department of Cultural and Natural Resources
- NCDEQ

- Division of Air Quality
- Division of Coastal Management
- Division of Energy, Mineral, and Land Resources
- Division of Environmental Assistance and Customer Service
- Division of Environmental Education and Public Affairs
- Division of Marine Fisheries
- Division of Mitigation Services
- Division of Waste Management
- Division of Water Infrastructure
- Division of Water Resources

- NCNHP
- NCWRC
- NCDOT Division 2

6.2.3 Local Government and Agencies

- Lenoir County
  - Chair, Lenoir County Commissioners
  - County Manager
  - Emergency Management Agency
- Craven County
  - Chair, Craven County Commissioners
  - County Manager
  - Emergency Management Agency
- Jones County
  - Chair, Jones County Commissioners
  - County Manager
  - Emergency Management Agency
- Eastern Carolina Rural Planning Organization
- Mayor of Kinston
- Mayor of La Grange
- Mayor of Dover
- Lenoir County Civil War Battlefields Commission

- Neuse Regional Library
- Cove City-Craven Library
- La Grange Public Library

6.2.4 Interest Groups

Historical Preservation Group, Inc.

American Battlefield Trust, https://www.civilwar.org/

CHAPTER 7
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APPENDICES

APPENDIX A: TRAFFIC ANALYSIS & FIGURES

Contents
A-1 2015 and 2040 traffic volumes for existing conditions
A-2 Traffic volumes for No-Build 2015 and 2040

A-1 2015 and 2040 traffic volumes for existing conditions

Table A-1: 2015 and 2040 traffic volumes for existing conditions

Section Along US 70 and Existing US 70 Bypass	2015 AADT	2040 AADT	Percent Change
From western terminus to NC 148 (CF Harvey Parkway)			
US 70 – West of NC 903	16,600	35,400	113%
US 70 – Between NC 903 and SR 1603 (East Washington Street)	16,800	35,600	112%
US 70 – SR 1603 (East Washington Street) and SR 1323 (Jim Sutton Road)	20,200	39,200	94%
US 70 – SR 1323 (Jim Sutton Road) and SR 1520 (Norbert Hill Road)	19,700	38,200	94%
US 70 – SR 1520 (Norbert Hill Road) and SR 1334 (Barwick Station Road)	19,900	38,400	93%
US 70 – SR 1334 (Barwick Station Road) and SR 1522 (Albert Sugg Road)	19,900	38,500	93%
US 70 – SR 1522 (Albert Sugg Road) and Harold Sutton Road	20,100	38,600	92%
US 70 – Harold Sutton Road and SR 1324 (Kennedy Home Road)	20,300	39,000	92%
US 70 – SR 1324 (Kennedy Home Road) and SR 1546 (Banks School Road)	22,300	41,000	84%
US 70 – SR 1546 (Banks School Road) and NC 148 (CF Harvey Parkway)	21,200	39,000	84%
From NC 148 (CF Harvey Parkway) to NC 58 (Trenton Highway)			
US 70 – NC 148 (CF Harvey Parkway) and SR 2003 (Industrial Drive)	19,800	31,000	57%
US 70 – SR 2003 (Industrial Drive) and SR 2032 (Sanderson Way)	21,200	32,400	53%
US 70 – SR 2032 (Sanderson Way) and Pinelawn Cemetery Drive	20,300	33,600	66%
US 70 – Pinelawn Cemetery Drive and SR 1548 (Hill Farm Road)	25,400	36,200	43%
US 70 – SR 1548 (Hill Farm Road) and Walmart Drive	30,000	40,000	33%
US 70 – Walmart Drive and US 258	32,600	43,000	32%
US 70 – US 258 and Ruby Tuesday	39,600	49,000	24%
US 70 – Ruby Tuesday and Mt. Vernon Park Drive	39,700	49,000	23%
US 70 – Mt. Vernon Park Drive and US 70 Business	40,000	49,400	24%

Section Along US 70 and Existing US 70 Bypass	2015 AADT	2040 AADT	Percent Change
Existing US 70 Bypass – US 70 Business and NC 11/NC 55	29,000	40,200	39%
Existing US 70 Bypass – Between NC 11 / NC 55 and US 258/NC 58	19,000	30,400	60%
From NC 58 (Trenton Highway) to the eastern project terminus			
US 70 – Between US 258/NC 58 and Meadowbrook Drive	26,600	37,200	40%
US 70 – Meadowbrook Drive and NC 58	25,600	36,200	41%
US 70 – Between NC 58 and Lenoir Community College	16,400	29,400	79%
US 70 – Lenoir Community College and SR 1804 (Neuse Road)	16,200	27,600	70%
US 70 – SR1804 (Neuse Road) and Whaley Road	14,800	26,800	81%
US 70 – Whaley Road and SR 1821 (British Road)	14,000	26,400	89%
US 70 – SR 1821 (British Road) and SR 1309 (Caswell Station Road.) / SR 1002 (Wyse Fork Road)	13,600	25,400	87%
US 70 – SR 1309 (Caswell Station Road) / SR 1002 (Wyse Fork Road) and SR 1312 (Tilghman Road)	12,800	24,800	94%
US 70 –SR 1312 (Tilghman Road) and SR 1313 (Burkett Road)	12,600	24,800	97%
US 70 –SR 1313 (Burkett Road) and SR 1005 (Old US 70)	12,200	24,400	100%
US 70 – East of SR 1005 (Old US 70)	11,100	24,000	116%

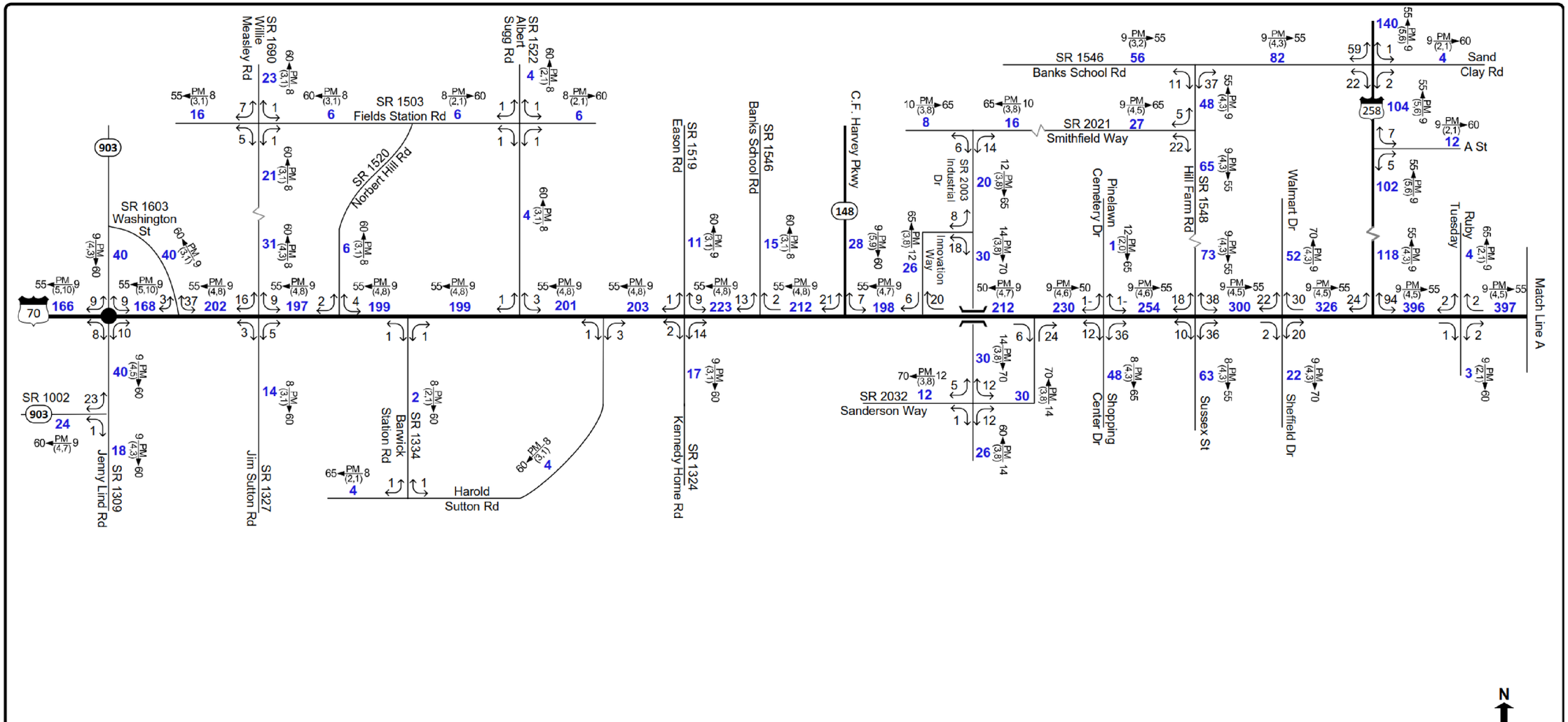
Source: NCDOT 2016b

A2 Traffic volumes for No-Build 2015 and 2040

Source: NCDOT 2016b, Parsons Brinckerhoff

Figure A-1:
2015 No-Build traffic volumes

70 KINSTON BYPASS DEIS | R-2553



2015 AVERAGE ANNUAL DAILY TRAFFIC

Scenario 1 Base Year

L E G E N D

###	Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
	Roadway
	Future Interchange
	Existing Interchange

PM
K → D
(d, t)

K	Design Hour Volume Percentage
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

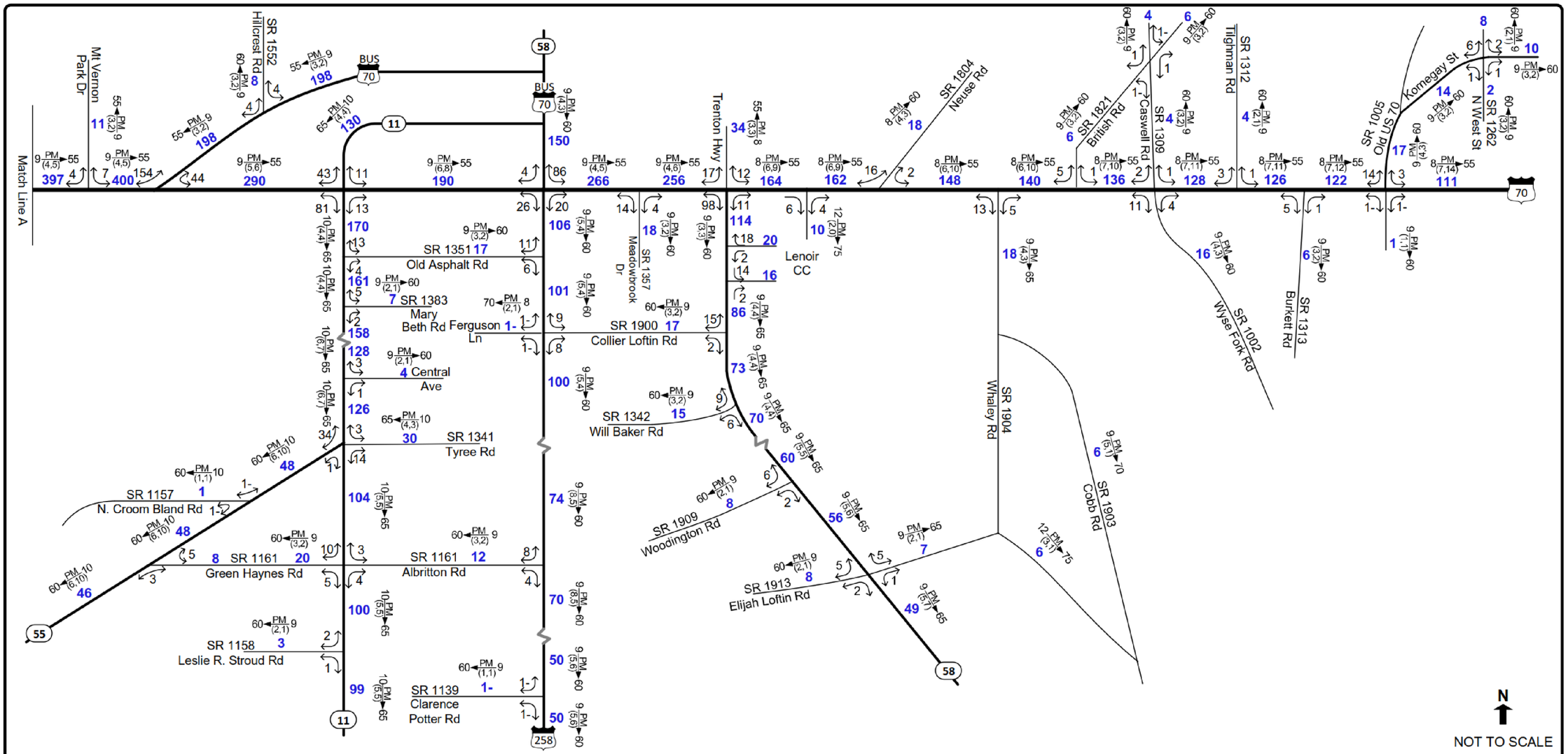
EXISTING CONDITIONS
SHEET 1 OF 2

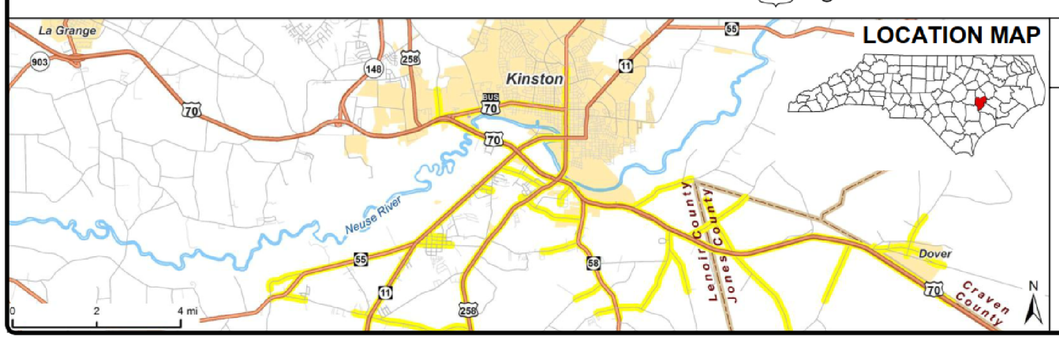
TIP: R-2553	**WBS:** 34460
COUNTY: Lenoir	**DIVISION:** 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	

Source: NCDOT 2016b, Parsons Brinckerhoff

Figure A-1:
2015 No-Build traffic volumes

KINSTON BYPASS DEIS | R-2553





2015 AVERAGE ANNUAL DAILY TRAFFIC

Scenario 1 Base Year

EXISTING CONDITIONS
SHEET 2 OF 2

L E G E N D

###	Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
——	Roadway
●	Future Interchange
●	Existing Interchange

K PM → D (d, t)

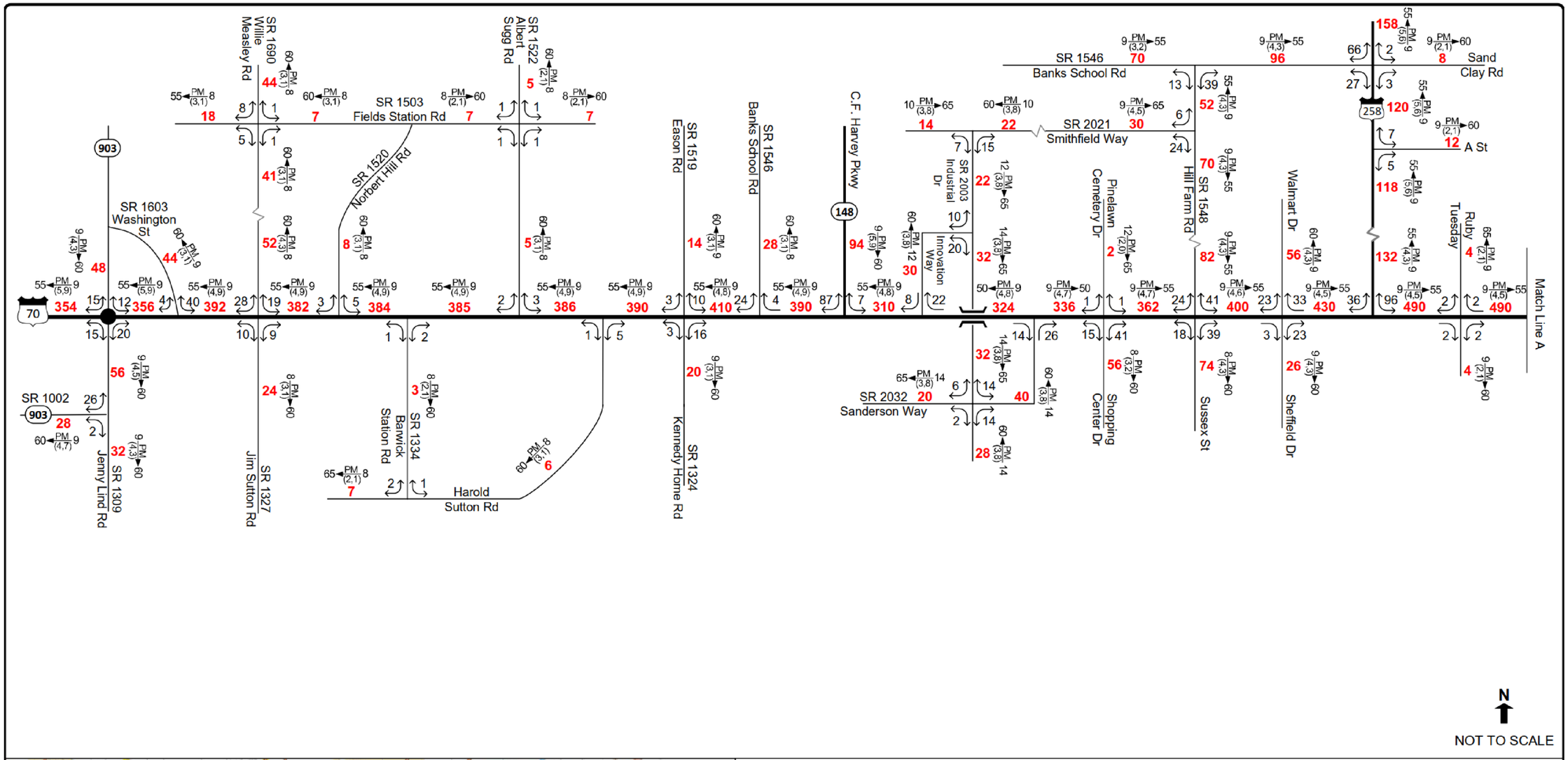
K	Design Hour Volume Percentage
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

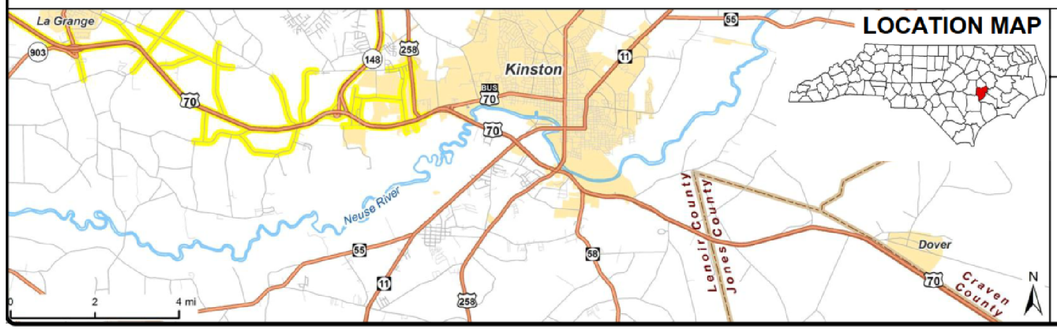
TIP: R-2553	**WBS:** 34460
COUNTY: Lenoir	**DIVISION:** 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	

Source: NCDOT 2016b, Parsons Brinckerhoff

Figure A-2:
2040 No-Build traffic volumes

70 KINSTON BYPASS DEIS | R-2553





2040 AVERAGE ANNUAL DAILY TRAFFIC

Scenario 14 Horizon Year

NO BUILD ALTERNATIVE
SHEET 1 OF 2

L E G E N D

###	Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
——	Roadway
●	Future Interchange
●	Existing Interchange

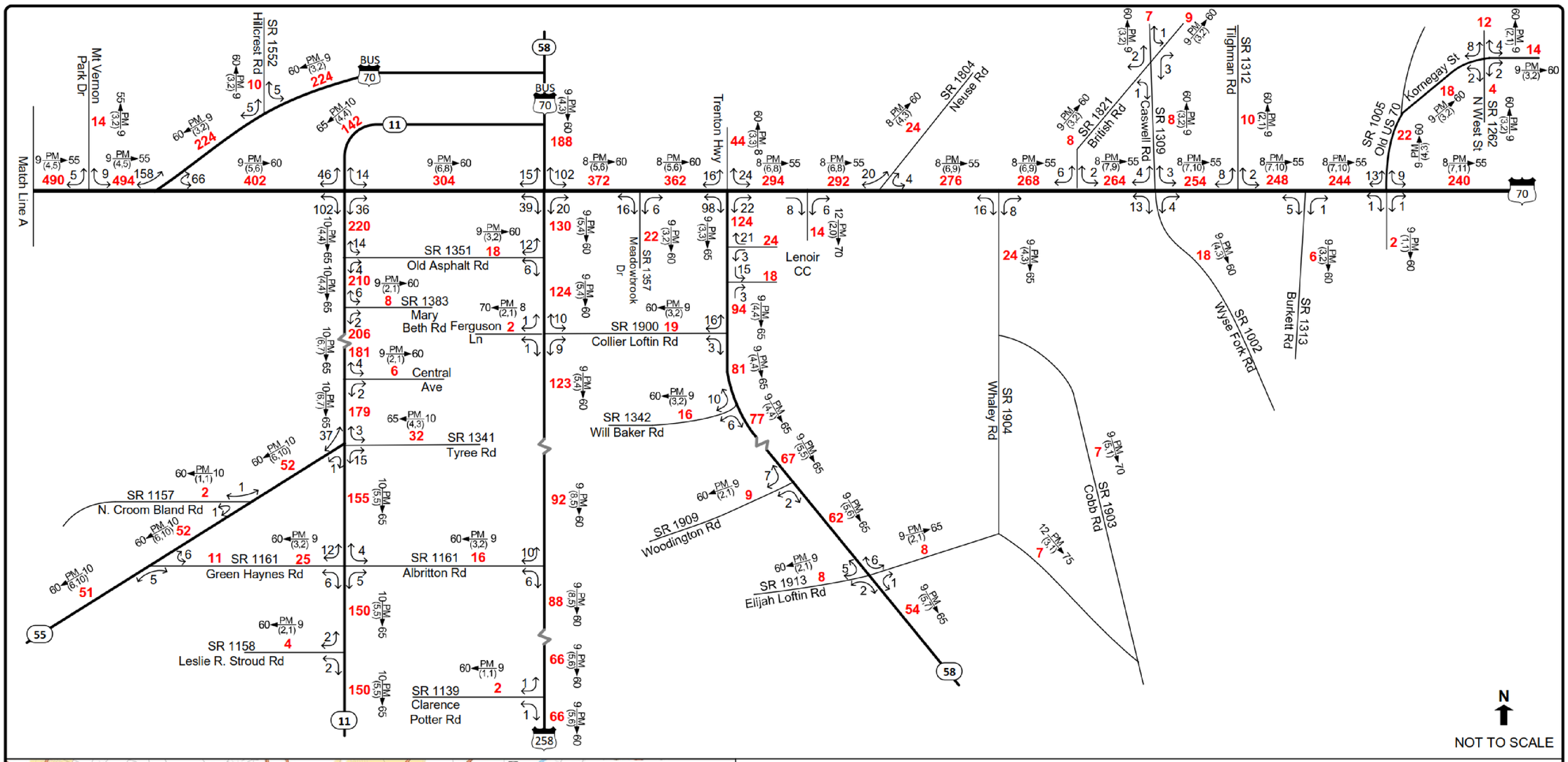
K	Design Hour Volume Percentage
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

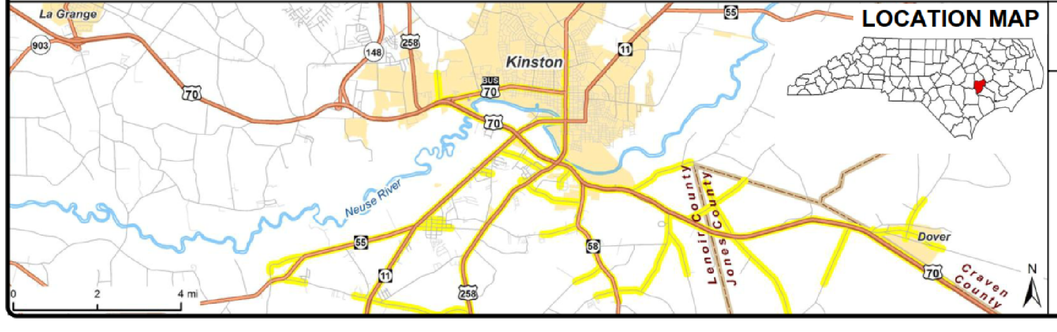
TIP: R-2553	**WBS:** 34460
COUNTY: Lenoir	**DIVISION: 2**
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	

Source: NCDOT 2016b, Parsons Brinckerhoff

Figure A-2:
2040 No-Build traffic volumes

70 KINSTON BYPASS DEIS | R-2553





2040 AVERAGE ANNUAL DAILY TRAFFIC

Scenario 14
Horizon Year

NO BUILD ALTERNATIVE
SHEET 2 OF 2

L E G E N D

###	Vehicles Per Day (VPD) in 100s	K	Design Hour Volume Percentage
1-	Less than 50 VPD	PM	PM Peak Period
X	Movement Prohibited	D	Peak Hour Directional Split
——	Roadway	→	Indicates Direction of D
●	Future Interchange	(d,t)	Duals, TT-STs (%)
●	Existing Interchange		

K PM (d, t) D

TIP: R-2553	**WBS:** 34460
COUNTY: Lenoir	**DIVISION:** 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	

APPENDIX B: GIS DATA DICTIONARY

TABLE OF CONTENTS

1.0 PURPOSE

The data dictionary has been created to keep track of the GIS datasets that are used to calculate impacts for each alternative. During project development, impacts were calculated on resources during the preliminary analysis of alternatives, and then again during the development of the Draft Environmental Impact Statement (DEIS). For each feature class, the data dictionary lists the name of the layer, abstract, name located on AECOM's Kinston file geodatabase, geometry, coverage, and sources. The dictionary also includes whether each feature class was modified by AECOM, notes, modification dates, and modification descriptions. The data dictionary is intended for use as an ongoing document that will be updated if a revised layer is delivered to AECOM and/or if AECOM makes any type of modifications to the dataset. Only layers that were used in the screening of alternatives and in the DEIS have been included in this data dictionary.

2.0 ABBREVIATION/ACRONYM LIST

ABBREVIATION/ACRONYM	MEANING
ACS	American Community Survey
C-CAP	Coastal Change Analysis Program
CCR	Community Characteristics Report
CF	Carolina flatwoods
CGIA	Center for Geographic Information and Analysis
CREWS	Coastal Region Evaluation of Wetland Significance
DEIS	Draft Environmental Impact Statement
DEM	Digital elevation model
DOE	Determination of eligibility
DMF	Division of Marine Fisheries
EPA	Environmental Protection Agency
ESRI	Environmental Systems Research Institute
EJ	Environmental justice
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood insurance rate map
FLO	Federal land ownership
FMP	Floodplain Mapping Program
HMGP	Hazard Mitigation Grant Program
LIDAR	Light detection and ranging
LMCOS	Lands managed for conservation and open space
LTCP	Land Trust Conservation Properties
LWCF	Land Water Conservation Fund
MAREA	Natural Heritage Managed Areas
NCDCM	North Carolina Division of Coastal Management
NCDEQ	North Carolina Department of Environmental Quality
NCDOT	North Carolina Department of Transportation
NCDWR	North Carolina Division of Water Resources
NCNHP	North Carolina Natural Heritage Program
NCOSA	North Carolina Office of State Archaeology
NCWRC	North Carolina Wildlife Resources Commission

ABBREVIATION/ACRONYM	MEANING
NHD	National hydrography dataset
NHEO	Natural Heritage element occurrence
NHNA	Natural Heritage natural area
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
NRCS	Natural Resources Conservation Service
NRWASA	Neuse Regional Water and Sewer Authority
RCP	Rolling coastal plain
SEFT	Southeastern floodplains and terraces
SFHA	Special flood hazard area
SHPO	State Historic Preservation Office
SL	Study list
SOL	State-owned lands
SSURGO	Soil survey geographic database
USGS	United States Geological Survey
VAD	Voluntary agricultural district
VBA	Visual basic for applications
WTP	Water treatment plant
WWTP	Wastewater treatment plant

3.0 DATA LAYERS

AIRPORTS

Abstract	Point locations for airports located in North Carolina.		
Name	Airport_NC_2015	**Coverage**	North Carolina
Geometry	Point	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: 2015 Date Received: 2015 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

ANIMAL OPERATIONS

Abstract	Farming operations which have animal operation permits.		
Name	AnimalOperations	**Coverage**	North Carolina
Geometry	Point	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: December 2003 Date Received: February 2010 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives		

ANADROMOUS FISH SPAWNING AREAS

Abstract	Depicts the extent of anadromous fish spawning areas. Anadromous fish are fish that live mostly in the ocean but breed in freshwater.		
Name	Anad_Fish_Spawn_poly_SA	**Coverage**	Project Study Area
Geometry	Line/Polygon	**Modified by AECOM**	Yes
Sources	CGIA, NCDEQ – DMF, AECOM	**Notes**	N/A
Dates	Origination Date: N/A Date Received: October 2010 Modification Dates: May 26, 2011		
Modification Description	Two layers were initially provided by CGIA, one line layer and one polygon layer. A one-foot buffer was applied to features in the line layer (six inches on either side). Next, these features were merged with features in the polygon layer. The resulting merged polygon layer was used in the analysis.		
Data Usage	Preliminary screening of alternatives		

ARCHAEOLOGICAL SITES

Abstract	The extent of archaeological sites that have been identified in the project study area.		
Names	TArchSites_SurveyedPoly and TArchSites_SurveyedPts	**Coverage**	Lenoir County,and portions of Jones and Craven Counties within the project study area
Geometry	Point/Polygon	**Modified by AECOM**	Yes
Sources	NCOSA, AECOM	**Notes**	2 files
Dates	Origination Date: April 2011 Date Received: May 10, 2011 Modification Dates: May 26, 2011		
Modification Description	Original data was hand written on 1:24,000 paper USGS quads. These quad sheets were scanned and georeferenced. Then, archaeological site points and polygons were digitized.		
Data Usage	Preliminary screening of alternatives		

BUILDING FOOTPRINTS

Abstract	Building footprints in the project study area.		
Name	Building_Footprint_StudyArea	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	No
Sources	NC Office of Geospatial and Technology Management, Division of Emergency Management	**Notes**	N/A
Dates	Origination Date: 2010 Date Received: June 2011 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives		

CEMETERIES

Abstract	Cemeteries in the project study area.		
Names	Cemeteries_NC Cemeteries_SA	**Coverage**	Project Study Area
Geometry	Point Polygon	**Modified by AECOM**	Yes
Sources	ESRI, AECOM	**Notes**	2 files.
Dates	Origination Date: 2000 Date Received: N/A Modification Dates: 1) May 20, 2011 2) January 20, 2012 3) March 2013 4) January 2015 5) October, 2017.		
Modification Description	1. Cemeteries_NC includes cemetery locations from ESRI that were spot-checked during field work. Additional cemeteries noted during field work and at public workshops and small group meetings were added to the dataset. An additional cemetery layer from previous field work was merged after verification to prevent duplicate cemeteries. 2. Verified accuracy of points and check for missing cemeteries. 3. Verified and/or added points from fieldwork. 4. The Cemeteries_SA polygon file was created from cemeteries that are coincident to parcels and are within the project study area 5. Additional points were added based on input from small group meetings held in September, 2017.		
Data Usage	Preliminary screening of alternatives; DEIS		

CHURCHES

Abstract	Points representing churches in the project study area, and parcels that contain the churches.		
Name	Churches_26Aug2011 Churches_Parcels_StudyArea	**Coverage**	Project Study Area
Geometry	Point Polygon	**Modified by AECOM**	Yes
Sources	ESRI, AECOM	**Notes**	2 files
Dates	Origination Date: 2000 Date Received: N/A Modification Dates: 1) May 20, 2011 2) August 26, 2011 3) January 20, 2012 4) March 2013		
Modification Description	1. Church locations from ESRI were spot-checked during field work. Additional churches noted during field work and at public meetings were added to the dataset. Additional church layer from previous field work was merged after verification to prevent duplicate churches. 2. Removed two churches that did not exist. 3. Verified accuracy or points and check for missing churches. 4. Verified and/or added points from fieldwork. The Churches_Parcels_StudyArea dataset was created by selecting and exporting parcels that were coincident to the points.		
Data Usage	Preliminary screening of alternatives; DEIS		

CENSUS DATA – BLOCK GROUPS

Abstract	Used to calculate the low income and minority populations in the project study area used in the EJ analysis.		
Names	DSA_2017 BGs_High_Minority_Population_2017 BGs_High_Poverty_Minority_2017 BGs_High_Poverty_Rate_2017	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	U.S. Census, AECOM	**Notes**	4 Files
Dates	Origination Date: October, 2015 Date Received: N/A Modification Dates: October, 2017		
Modification Description	The DSA_2017 contains updated 2011-2015 ACS data which was pulled from the Census and joined to the block group file. For the purposes of determining impacts to EJ populations for the DEIS, a subset of the block groups that touched any one of the 12 alternatives was pulled from the statewide layer to represent a demographic study area. 1. The BGs_High_Minority_Population_2017 dataset was created by extracting block groups with minority rates that surpassed a threshold of 50 percent. Fifty percent was used as the threshold as the county-wide minority rate in Lenoir County was 49.5 percent. According to FHWA guidelines, the minority threshold rate is to be the lesser of either 10 percent greater than the county minority rate or 50 percent. 2. The BGs_High_Poverty_Rate_2017 dataset was created by extracting block groups with poverty rates that surpassed a threshold of 25 percent, which is the NCDOT standard threshold for determining high poverty rates within an area. Also included are block groups classified as very poor that were greater than 5 percent of the county rate in the DSA, and block groups that had populations classified as near poor that were greater than 5 percent of the county rate. 3. The BGs_High_Poverty_Rate_2017 dataset was created by extracting block groups with both poverty rates and minority rates that had surpassed their respective thresholds described above.		
Data Usage	Preliminary screening of alternatives; DEIS		

CENSUS DATA - BLOCKS (2010)

Abstract	Used to calculate the minority populations in the project study area for the EJ analysis for the Community Impact Assessment.		
Names	Census_blocks_2000_DSA Census_Blocks_2010_SA Census_Blocks_high_minor_2010	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	U.S. Census, AECOM	**Notes**	3 Files
Dates	Origination Date: October 5, 2011 Date Received: N/A Modification Dates: N/A		
Modification Description	The Census_blocks_2010_SA contains Census block data that are located within the project study area. For the purposes of corridor screening, it was determined that given the variation in size of census blocks it would make the most sense to compare EJ impacts to the amount of acres of each corridor that fell within an impacted minority census block. The EJ analysis was completed using 2010 census data due to limitations in census data from more recent data releases. For minority populations, the calculations were completed at the census block level based on a threshold of 50 percent. 50 percent was used as the three counties within the project study area had respective county-wide minority rates of less than 50 percent. According to FHWA guidelines, the minority threshold rate is to be the lesser of either 10 percent greater than the county minority rate or 50 percent.		
Data Usage	Preliminary screening of alternatives		

CENSUS DATA - BLOCKS (2000)

Abstract	Used to more precisely identify the location of potential EJ populations for the Community Characteristics Report.		
Name	Census_blocks_2000_DSA	**Coverage**	Study Area
Geometry	Polygon	**Modified by AECOM**	No
Sources	U.S. Census, AECOM	**Notes**	N/A
Dates	Origination Date: 2001 Date Received: August, 2009 Modification Dates: N/A		
Modification Description	The Census_blocks_2000_DSA contains Census block data that are located within the project study area. The data was used in field visits to help identify more precisely the location of potential EJ populations in the study area. For minority populations, the calculations were completed at the census block level based on a threshold of 50 percent. 50 percent was used as the three counties within the project study area had respective county-wide minority rates of less than 50 percent. According to FHWA guidelines, the minority threshold rate is to be the lesser of either 10 percent greater than the county minority rate or 50 percent.		
Data Usage	Preliminary screening of alternatives		

EASEMENTS

Abstract	Points and boundaries represent conservation easements that require land to be maintained in its natural state. Easements relate to state, local, and nonprofit funding resources. Through the course of the project, the data was consolidated by the NCNHP into the managed area layer available from NCNHP and NC CGIA		
Name	Conservation_Easement_pts Conservation_Easement marea_170731	**Coverage**	Statewide
Geometry	Polygon	**Modified by AECOM**	No
Sources	NC CGIA,NCNHP	**Notes**	Files
Dates	(Conservation_Easement_pts): • Origination Date: August, 2006 • Date Received: Between 2006 and 2011 • Modification Dates: June 6, 2011 marea_171031 • Origination Date: October, 2017 • Date Received: October, 2017 • Modification Dates: N/A		
Modification Description	The conservation easements point layer was provided by NC CGIA as off-site mitigation sites. The conservation easements polygon layer was created by AECOM in 2011 and represents the known locations of properties for conservation easements within the three-county region surrounding the Kinston Bypass project. It is comprised of features from the following layers available from NC CGIA: Natural Heritage Managed Areas (MAREA where OWNER_TYPE = 'Easement'), Land Trust Conservation Properties (LTCP where TYPEACQ = 'EASEMENT' or TYPEACQ = 'PRESERVE'), and State-Owned Lands (SOL where ComplexNam contains the word 'EASEMENT' or 'EASEMENTS'). In addition, three parcels from Lenoir County GIS parcel data were included because their attributes indicated them as environmental conservation easements.		
Data Usage	Preliminary screening of alternatives; DEIS		

FARMLAND SOILS

Abstract	Prime and other important farmland soils.		
Name	Farmland_Prime_Unique_StudyArea_Clip	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	No
Sources	USDA and NRCS	**Notes**	N/A
Dates	Origination Date: June, 2009 Date Received: June, 2009 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

FEDERAL LAND OWNERSHIP

Abstract	A record of federal land ownership in the project study area. There are no federal lands in the project study area.		
Name	Federal_Lands_NC_171031	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: 1993 with periodic updates through 2017 Date Received: October, 2017 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

FIRE STATIONS

Abstract	Fire station locations.		
Name	Fire_Stations_SA	**Coverage**	North Carolina
Geometry	Point	**Modified by AECOM**	Yes
Sources	NC OneMap	**Notes**	N/A
Dates	Origination Date: 2005 with periodic updates through August 2008 Date Received: February 2011 Modification Dates: 1) May 5, 2011 2) April 16, 2011		
Modification Description	1. Added fire stations that were located during field work and noted by public officials. Verified stations using aerial imagery. 2. Added new Sandy Bottom Volunteer Fire Department at Hwy 55 and S. Croom Bland Road.		
Data Usage	Preliminary screening of alternatives; DEIS		

HAZARD MITIGATION GRANT PROGRAM (HMGP) (FEMA BUYOUT PROPERTIES)

Abstract	FEMA buyout properties through the HMGP from hurricanes Floyd and Fran.		
Name	FEMA_Buyouts_2017	**Coverage**	Lenoir County
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	CGIA, AECOM	**Notes**	N/A
Dates	Origination Date: May 2010 Date Received: November 2010 Modification Dates: 1) May 2011, 2) August 2014, 3) October, 2017		
Modification Description	1. Initial data from CGIA originated in three files: Kinston buyouts, Lenoir County buyouts from Hurricane Floyd, and Lenoir County buyouts from Hurricane Fran. These three files were combined into a single polygon layer and duplicate features were removed. This data includes parcels that were bought with funds from the FEMA and the HMGP. 2. In August of 2014 the FEMA buyouts which were located south of the Neuse River were removed and were replaced with an updated FEMA Buyout layer provided by Lenoir County. Parcels located north of the Neuse River remained the same. 3. In October of 2017, a new updated layer was provided to AECOM by Lenoir County.		
Data Usage	Preliminary screening of alternatives; DEIS		

FLOODPLAINS

Abstract	Represents the area within the flood mapping boundaries defined by the engineering models for the 100-year floodplain, 500-year floodplain, and floodway. Contains information about the flood hazard within the project study area. These zones are used by FEMA to designate the Special Flood Hazard Area (SFHA), identify areas of coastal high hazard flooding, and for insurance rating purposes. These data are the flood hazard areas that are depicted on the FIRM (floodplains A and AE).		
Name	Floodplain_StudyArea	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	FMP, AECOM	**Notes**	N/A
Dates	Origination Date: N/A Date Received: December 2017 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

GAMELANDS

Abstract	Gamelands are lands that are regulated for the purpose of hunting, trapping and fishing. This data layer identifies publicly-owned gamelands managed by the NCWRC.		
Name	Gamelands_NC_20100701	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: Most recent update 2010 Date Received: February 2011 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

GLOBAL TRANSPARK (GTP)

Abstract	Global Transpark's airport boundary, Kinston Regional Jetport.		
Name	Global_Transpark_Main	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: August 2009 Date Received: November 2010 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives		

GTP COMPLEX BOUNDARY

Abstract	Global Transpark's multi-modal industrial park boundary.		
Name	GLOBAL_TRANSPARK_LIMITS_090807	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: August 2009 Date Received: November 2010 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives		

HAZARDOUS MATERIALS SITES

Abstract	The NC Department of Transportation Geotechnical Engineering Unit, GeoEnvironental Section provided the GIS data set, GeoEnvironmental Sites of Concern, to enhance planning, siting, and impact analysis in areas directly affected by GeoEnvironmental Sites of Concern. The point data identifies locations of sites of concern such as underground storage tanks, landfills, and auto salvage yards within the project corridors.		
Name	Hazardous_Material_Sites_17_12_19	**Coverage**	Project Study Corridors
Geometry	Point	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: June, 2017 Date Received: December, 2017 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

HISTORIC RESOURCES

Abstract	Historic property and district designations in North Carolina (not including archaeological sites): National Register of Historic Places (NRHP) listings, Study list (SL) entries for potential nomination to the NRHP, and Determinations of Eligibility (DOE) under Section 106 of the National Historic Preservation Act of 1966, as amended.		
Name	Historic_Resources Historic_Property_Boundary	**Coverage**	Project Study Area
Geometry	Point/Polygon	**Modified by AECOM**	Yes
Sources	SHPO, AECOM	**Notes**	2 files
Dates	Origination Date: November 2010 Date Received: May 10, 2011 Modification Dates: 1) May 1, 2011 2) February 16, 2012 3) November, 2017		
Modification Description	1. Historic resource points that lie within the modified historic resource polygons were removed to prevent duplication in the datasets. This includes NRHP listings, SL, and Determined Eligible properties. Several other features were added from GIS data generated for the NCDOT Crescent Road (TIP R-2719-A) project. A polygon was also added for the Wyse Fork property from GIS data provided by the NCOSA. 2. Added contributing elements to the Wyse Fork Battlefield District. The contributing elements came from a figure attached to a memo from NCDOT June 4, 2009. 3. Based on consultations with USACE, NCDOT and SHPO in November 2017, a number of surveyed resources within the APE were found to be not NRHP-eligible, so are not included in the DEIS. Boundaries of NRHP-eligible properties were modified as needed for accuracy.		
Data Usage	Preliminary screening of alternatives; DEIS		

HOUSING AUTHORITY

Abstract	Housing authority properties in Kinston, NC.		
Name	Housing_Authority_KI_20090825	**Coverage**	Kinston
Geometry	Polygon	**Modified by AECOM**	No
Sources	City of Kinston, Planning Department	**Notes**	N/A
Dates	Origination Date: August 2009 Date Received: November 2010 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives		

HOSPITAL

Abstract	Hospital locations.		
Name	Hospital_NC_20080920	**Coverage**	Statewide
Geometry	Point	**Modified by AECOM**	No
Sources	NC OneMap	**Notes**	N/A
Dates	Origination Date: September 2008 Date Received: March 2011 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

INLAND PRIMARY NURSERY AREAS

Abstract	Primary nursery areas in inland waters are described in the North Carolina Administrative Code as "those areas inhabited by the embryonic, larval or juvenile life stages of marine or estuarine fish or crustacean species due to favorable physical, chemical, or biological factors."		
Name	Inland_Primary_Nursery_Areas	**Coverage**	Statewide
Geometry	Polygon	**Modified by AECOM**	No
Sources	NCWRC	**Notes**	N/A
Dates	Origination Date: 2008 Obtained May 2010		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

MANAGED AREAS

Abstract	The NCNHP's Managed Areas shapefile is primarily a collection of fee simple properties and easements where conservation is one of the management goals. It does include a number of properties and easements that are not primarily managed for conservation, but that are of conservation interest.		
Name	marea_170731	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	No
Sources	NCNHP	**Notes**	N/A
Dates	Origination Date: October, 2017 Date Received: October, 2017		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

MOUNTAINS TO SEA TRAIL

Abstract	The Mountains-to-Sea Trail stretches from Clingmans Dome in the Great Smoky Mountains to Jockey's Ridge on the Outer Banks.		
Name	Mountains_to_Sea_Trail	**Coverage**	Project Study Area
Geometry	Line	**Modified by AECOM**	Yes
Sources	NC Division of Parks and Recreation, AECOM	**Notes**	N/A
Dates	Origination Date: 2008 (line feature class), June 2011 (polygon feature class) Date Received: December 2010 (line feature class), Modification Dates: March 2013		
Modification Description	In March of 2013, the Mountains-to-Sea Trail line file was updated to follow the street centerline, and adjusted near NC 1313, US-70, and Old US-70 in Dover, as shown on the Friends of the Mountains-to-Sea Trails website.		
Data Usage	Preliminary screening of alternatives; DEIS		

MUNICIPAL AREA

Abstract	Statewide municipal boundaries service - Based on the Powell Bill Program maps for the 2015-2016 fiscal year.		
Name	Municipal_Boundary_20171212	**Coverage**	North Carolina
Geometry	Point	**Modified by AECOM**	No
Sources	NC OneMap (Powell Bill Administration)	**Notes**	N/A
Dates	Origination Date: 2016 Date Received: November 2017 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

NATURAL HERITAGE ELEMENT OCCURRENCES

Abstract	The NCNHP's Element Occurrences identify occurrences of rare plants and animals, exemplary or unique natural communities, and important animal assemblages. Collectively, these plants, animals, natural communities, and animal assemblages are referred to as "elements of natural diversity" or simply as "elements". This data includes threatened and endangered species that are federally protected.		
Name	NCNHP_NHEO_2017	**Coverage**	Beaufort, Craven, Greene, Jones, Lenoir, Pamlico, and Pitt counties
Geometry	Polygon	**Modified by AECOM**	No
Sources	NCNHP	**Notes**	N/A
Dates	Origination Date: October, 2017 Date Received: October, 2017 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

NATURAL GAS LINE

Abstract	Natural gas lines of Lenoir County.		
Name	Utility_Natural_Gas_LC_20090807	**Coverage**	Lenoir County
Geometry	Line	**Modified by AECOM**	Yes
Sources	Lenoir County Planning Dept., AECOM	**Notes**	N/A
Dates	Origination Date: 2009 Date Received: August 2009 Modification Dates: N/A		
Modification Description			
Data Usage	Preliminary screening of alternatives		

NOTABLE FEATURES

Abstract	Points located within the project study area that will reference the user to locations of community features and resources, identified through public involvement events and field visits.		
Name	Notable_Features_SA	**Coverage**	Project Study Area
Geometry	Point	**Modified by AECOM**	Yes
Sources	AECOM	**Notes**	N/A
Dates	Origination Date: N/A Date Received: N/A Modification Dates: 1) February 2012 2) updated March 2013 3) updated August 2014.		
Modification Description	1. February 2012 before the CIW #3 meeting in Kinston. 2. As of June 20, 2012 there are 52 Notable Features. 3. In March of 2013 there were 46 Notable Features. 4. As of the last update in August 2014, there are 31 Notable Features. Examples are Battle of Kinston sites, National Guard Armory, Lenoir County Landfill, Lenoir County Fairgrounds, etc.		
Data Usage	Preliminary screening of alternatives; DEIS		

ON-SITE MITIGATION

Abstract	Represents the approximate location of NCDOT mitigation sites within the project study area. The area includes portions of Lenoir, Craven, and Jones counties. This file is a subset of a geodatabase.		
Name	MitigationSites_LC_2015_01	**Coverage**	Portions of Lenoir, Craven, and Jones counties
Geometry	Polygon	**Modified by AECOM**	No
Sources	NCDOT	**Notes**	N/A
Dates	Origination Date: January 2015 Date Received: January 2015 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

OTHER STATE OWNED LANDS

Abstract	The North Carolina Department of Administration, State Property Office, in cooperation with CGIA, developed the GIS dataset, state-owned complexes, to define the exterior boundaries of state-owned complexes in North Carolina; (e.g., NCDOT maintenance yards, state parks, universities, etc.)		
Name	OtherStateOwnedLand_170201	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	CGIA, AECOMAECOM	**Notes**	N/A
Dates	Origination Date: December, 2016 Date Received: February 2017 Modification Dates: N/A		
Modification Description	AECOM		
Data Usage	Preliminary screening of alternatives; DEIS		

PARCELS

Abstract	Tax parcels for Lenoir, Craven, Pitt and Jones counties. This file is a subset of a geodatabase.		
Names	nc_craven_parcels_poly_2017_04_20 nc_jones_parcels_poly_2017_03_27 nc_lenoir_parcels_poly_2017_04_13 Parcels_PC_20110321,	**Coverage**	Lenoir, Craven, Pitt and Jones counties
Geometry	Polygon	**Modified by AECOM**	No
Sources	Lenoir, Craven, Pitt and Jones counties	**Notes**	4 Files
Dates	Origination Date: March/April, 2017 Date Received: June, 2017 Modification Dates: N/A		
Modification Description	Previous versions of tax parcels are saved in an archived feature dataset.		
Data Usage	Preliminary screening of alternatives; DEIS		

PARKS

Abstract	Locations of known parks within the project study area.		
Name	Park_StudyArea	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	Craven County GIS, Lenoir County GIS, CGIA, AECOM	**Notes**	N/A
Dates	Origination Date: 2007 Date Received: November 2010 Modification Dates: May 5, 2011		
Modification Description	There are no federal or state parks within the project study area; therefore, the parks included in this layer are county or city parks. Using the parcel data, properties within the project study area which are owned by the county and municipalities were queried. For Lenoir County, the queried data was searched, record by record, for the words “park,” “recreation,” “field,” “basketball,” etc. These parcels were copied to a new layer. For Craven County, the Craven County GIS website was used to determine the locations of parks within the county. Parcels identified as parks were selected and copied to a new layer. According to Jones County GIS staff and a search of the parcels, there are no parks within the portion of Jones County in the project study area. Parcels from Lenoir and Craven counties were combined to produce this layer. The LMCOS layer from CGIA was also used to help identify parks.		
Data Usage	Preliminary screening of alternatives; DEIS		

POLICE OR EMS

Abstract	Police station and EMS locations.		
Name	EMS_NC_20171207 EMS_NC_20171207_Poly	**Coverage**	North Carolina Project Study Area
Geometry	Point Polygon	**Modified by AECOM**	Yes
Sources	NC OneMap	**Notes**	2 files
Dates	Origination Date: August 2008 Date Received: February 2011 Modification Dates: 1) February 2012 2) November 2017		
Modification Description	1. Verified accuracy of points. 2. Verified the accuracy of points The EMS_NC_20171207_Poly dataset was created by selecting and exporting parcels that were coincident to the points		
Data Usage	Preliminary screening of alternatives; DEIS		

RAILROAD

Abstract	Railroad network for the state of North Carolina		
Name	Railroads_New	**Coverage**	Statewide
Geometry	Line	**Modified by AECOM**	No
Sources	NCDOT	**Notes**	N/A
Dates	Origination Date: 2014 Date Received: 2014 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

ROADS

Abstract	GIS road layers located in the project study area.		
Name	Roads_ISRN_LC_200708 Roads_DOT_NC_2013_4thQuarter	**Coverage**	Statewide and Lenoir County
Geometry	Line	**Modified by AECOM**	No
Sources	NCDOT	**Notes**	3 files
Dates	Origination Date: September 2008 for Roads_DOT_NC_200509, August 2007 for Roads_ISRN_LC_200708, October, 2013 for 4th Quarter NC DOT Road Data Date Received: N/A Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

SCHOOLS

Abstract	Parcels of public and non-public schools in the project study area.		
Name	Schools_pt Schools_poly	**Coverage**	Statewide
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	CGIA, AECOM	**Notes**	2 files
Dates	Origination Date: December 2007 for school points, September 2012 for school parcels Date Received: February 2011 school points Modification Dates: 1) September 28, 2012 2) December 2017		
Modification Description	1. Public and non-public school layers were combined and then verified using Google Earth. The dataset was updated based on the findings. The school parcels were created from school points that are coincident with the school points. 2. The files were updated in December 2017 to remove two schools that had closed. The two schools were within the project study area, but outside of the project alternative footprints.		
Data Usage	Preliminary screening of alternatives; DEIS		

SECTION 6(F) PROPERTIES

Abstract	Represents known locations of section 6(f) properties.		
Name	Section_6F_Properties	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	AECOM, CGIA, LWCF	**Notes**	N/A
Dates	Origination Date: May 2011 Date Received: N/A Modification Dates: N/A		
Modification Description	The Section 6(f) layer was created by AECOM in May 2011 and represents known locations which are classified as 6(f). A property is classified as 6(f) if funds used to purchase it were derived from the Land Water Conservation Fund (LWCF). Tabular data about LWCF-purchased properties was downloaded from the LWCF website (http:\\waso-lwcf.ncrc.nps.gov\public\index.cfm, on 09 May 2011) and was used as a basis for determining which areas are classified as 6(f). Records in the tabular data were identified using features from the following layer available from CGIA: LMCOS. Several tax parcels from Lenoir County tax parcel GIS were also included because they are adjacent to properties listed in the LWCF data and have similar parcel attribute information to parcels included in the LWCF table.		
Data Usage	Preliminary screening of alternatives; DEIS		

NHP NATURAL AREAS

Abstract	Depicts areas containing ecologically significant natural communities or rare species.		
Name	Significant_Natural_Heritage_Area_StudyArea	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: October 2017 Date Received: December, 2017 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives; DEIS		

STREAMS

Abstract	A jurisdictional stream model was created by the North Carolina Division of Water Resources (NCDWR) for use in place of stream delineations for the project. The data generated for the project consisted of stream lines within the three (EPA) Level IV ecoregions that were present in the larger project study area for the entire project. The ecoregions present were Rolling Coastal Plain (RCP), Carolina Flatwoods (CF) and Southeastern Floodplains and Terraces (SEFT). Jurisdictional stream models were developed for the RCP and CF ecoregions and were created by utilizing 20-foot grid cell digital elevation models (DEM) generated from bare-earth Light Detection and Ranging (LIDAR) data and subsequent terrain derivatives and other ancillary data as variables. The models were developed in SAS 9.2 as binary logistic regression models. The National Hydrography Dataset (NHD) flowlines were used for SEFT in lieu of a model due to this ecoregion being heavily manipulated and impractical to model accurately. NHD is similar to USGS 24k hydrolines, but does not include 'double line' streams and polygons that appear in USGS 24k line.		
Name	Streams_DWQ_20130129FINAL	**Coverage**	Project Study Area
Geometry	Line	**Modified by AECOM**	Yes
Sources	NCDWR, AECOM	**Notes**	2 Layers
Dates	Origination Date: January 29, 2013 line feature class (previous version has been moved to the archive folder) Date Received: February 4, 2013 Modification Dates: N/A		
Modification Description	The line dataset has not been edited and is used for mapping and analysis purposes.		
Data Usage	Preliminary screening of alternatives; DEIS		

SWINE LAGOONS

Abstract	Locations of swine lagoons within North Carolina (used in conjunction with animal operations).		
Name	Swine_Lagoon_NC_20031006	**Coverage**	Statewide
Geometry	Point	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: October 2003 Date Received: February 2011 Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives		

TERRESTRIAL COMMUNITIES

Abstract	North Carolina's Coastal Change Analysis Program Regional Land Cover Data (C-CAP) were used to identify terrestrial communities in the NRTR study area. These community types were verified with aerial photography and USGS topographic mapping.		
Name	CCAP_TerrestrialCommunities_SA	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	NOAA	**Notes**	N/A
Dates	Origination Date: 2011 Modification Dates: October, 2017		
Modification Description	C-CAP classifications were combined to produce the natural communities. In order to remain consistent with the number and types of terrestrial communities typically presented, the C-CAP classes were initially grouped into larger terrestrial community types based on similarities between C-CAP classes.		
Data Usage	Preliminary screening of alternatives; DEIS		

TRANSMISSION LINE

Abstract	The USGS National Mapping Division created the 1:24,000-scale pipe and transmission data for their published maps. CGIA developed the NC statewide transportation-miscellaneous (1:24,000) digital data as a base layer showing pipe and transmission lines. This data was compiled directly from the digital line graphs.		
Name	Utility_PowTransLn090807	**Coverage**	Statewide
Geometry	Polygon	**Modified by AECOM**	No
Sources	CGIA	**Notes**	N/A
Dates	Origination Date: December 1998 Date Received: N/A Modification Dates: N/A		
Modification Description	N/A		
Data Usage	Preliminary screening of alternatives		

VOLUNTARY AGRICULTURAL DISTRICTS (VAD)

Abstract	Farm districts preserved against non-farm development. Designation as a VAD offers landowners a voluntary, non-binding means of preserving farmland against non-farm development. The designation enables landowners to increase visibility of farm and forestlands and encourages preservation and protection of farmland.		
Name	VADs_2018	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	Craven County GIS, Jones County GIS, Lenoir County GIS, AECOM	**Notes**	N/A
Dates	Origination Date: May 2011 Date Received: N/A Modification Dates: 1) December 12, 2011 2) December 2017		
Modification Description	According to the Lenoir County Extension office on May 23, 2011 and again in the spring of 2013, there were no VADs in Lenoir County. Only VAD's in Jones and Craven County were included in the initial layer. 1. VAD's in Jones County identified, and the layer was created. 2. County websites were consulted in December 2017 and additional VAD's were added to the layer, including VAD's in Lenoir County.		
Data Usage	Preliminary screening of alternatives; DEIS		

WATER TREATMENT PLANTS

Abstract	WTP in project study area.		
Name	WTP_StudyArea WTP_Parcels_SA	**Coverage**	Project Study Area
Geometry	Point, Polygon	**Modified by AECOM**	Yes
Sources	CGIA, NRWASA, AECOM	**Notes**	2 files
Dates	Origination Date: February 2010 for WTP_StudyArea, December 2011 for WTP_Parcels_SA Date Received: November 2010 (points) Modification Dates: May 10, 2011		
Modification Description	1. In data from CGIA, wastewater and water treatment plants were included in a single layer. AECOM broke these features out into two different layers (wastewater treatment plants and water treatment plants) for this project. Next, features included in the data from NRWASA were added. Then, features were field verified during the CCR portion of the Kinston Bypass project. 2. The WTP parcels were created from WTP points that are coincident.		
Data Usage	Preliminary screening of alternatives		

WASTEWATER TREATMENT PLANTS

Abstract	WWTP in project study area.		
Name	WWTP_StudyArea WWTP_Parcels	**Coverage**	Project Study Area
Geometry	Point, Polygon	**Modified by AECOM**	Yes
Sources	CGIA, NRWASA, AECOM	**Notes**	2 files
Dates	Origination Date: February 2010 for WWTP_StudyArea, December 2011 for WWTP_Parcels Date Received: November 2010 (points) Modification Dates: May 10, 2011		
Modification Description	In data from CGIA, wastewater and water treatment plants were included in a single layer. AECOM broke these features out into two different layers (wastewater treatment plants and water treatment plants) for this project. Next, features included in the data from NRWASA were added. Then, features were field verified during the CCR portion of the Kinston Bypass project. The WWTP parcels were created from WWTP points that are coincident.		
Data Usage	Preliminary screening of alternatives		

WATER TANKS

Abstract	Water Tanks in Lenoir County.		
Name	Water_Tanks_LC_20100219	**Coverage**	Lenoir County
Geometry	Point	**Modified by AECOM**	Yes
Sources	Lenoir County Planning Department	**Notes**	N/A
Dates	Origination Date: February 2010 Date Received: November 2010 Modification Dates: March 2013		
Modification Description	Additional water tanks noted during field work, at public workshops, or small group meetings were added to the dataset.		
Data Usage	Preliminary screening of alternatives		

WETLANDS

Abstract	A jurisdictional wetland model was created by NCDOT for the project. The resulting model includes the following wetland types: Non-Riparian Rolling Coastal Plain Wetland, Riparian Rolling Coastal Plain Wetland, Non-Riparian Flatwood Wetland, Riparian Flatwood Wetland, and Floodplain Wetland. The model utilizes 20' grid cell digital elevation models generated from bare-earth LiDAR data and subsequent terrain derivatives as variables. The model is developed in SAS 9.2 as a binary logistic regression model.		
Name	Wetlands_SA_Merged	**Coverage**	Project Study Area
Geometry	Polygon	**Modified by AECOM**	Yes
Sources	NCDOT, AECOM	**Notes**	N/A
Dates	Origination Date: May 2011 Date Received: May 2011 Modification Dates: 1) May 2011 2) October, 2017		
Modification Description	1. The original raster file was converted to a polygon layer. First, the raster file was converted to an integer file so that geoprocessing could occur. Next, the Raster to Polygon tool was used to convert the integer raster to a single polygon layer. 2. An updated set of models was developed using the next generation LiDAR data that was in the process of being acquired statewide. The purpose of these models, referred to as the 2017 QL2 models, were requested by the resource agencies to study the effects of using the next generation LiDAR in the models as compared to the legacy LiDAR data in the original 2011 models.		
Data Usage	Preliminary screening of alternatives; DEIS		

4.0 IMPACT CALCULATION

Impact calculations for the Kinston Bypass project were performed using the Clip tool, but in different formats and environments for various stages of the study. Early on in the study, calculations were done using a Visual Basic for Applications (VBA) script which clipped resources within the boundary of alternatives (see Figure 1). This script did not allow the user to control the name of the output files, which created data management challenges. In addition, newer versions of ArcGIS do not support VBA scripting. Newer versions of ArcGIS use Python for scripting.

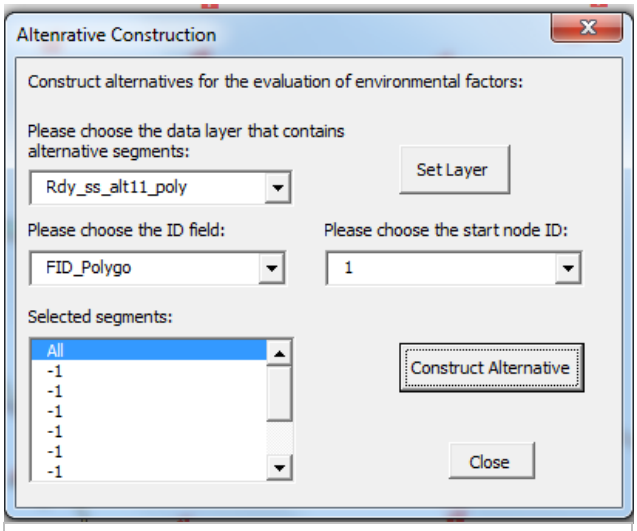


Figure 1: VBA Dialogue box

For this reason, later versions of impact calculation were done using the batch clip tool, which allowed using more descriptive names in the outputs (e.g., ”Floodplains_36”). While this method is effective, using batch clip is a repetitive, labor intensive process that requires careful entry of output names and that also required the GIS operator to individually calculate area and length for each resource being impacted.

For the DEIS, an impact calculation geoprocessing tool was built using Python scripting. Python scripting allows for the creation of a tool that can string together sequences of geoprocessing tools, feeding the output of one tool into another tool as input. The benefits of building a geoprocessing tool for calculating impacts are that it allows repetitive geoprocessing to be conducted in an automated environment. An additional benefit for impact calculation is that, through the use of a variable naming convention, output files can be logically named based on the environmental feature and associated alternative (e.g., Cemeteries_Alt32_ROW).

The geoprocessing tool acts as a batch clip, clipping resources to a designated boundary, which for the DEIS was either the slope stakes of the individual alternatives plus 40 feet or the right-of-way for the alternative. After the files have been clipped, a second step in the process adds a column in the output table, and calculates the area (acres) or length (linear feet) of the feature (see Figure 2).

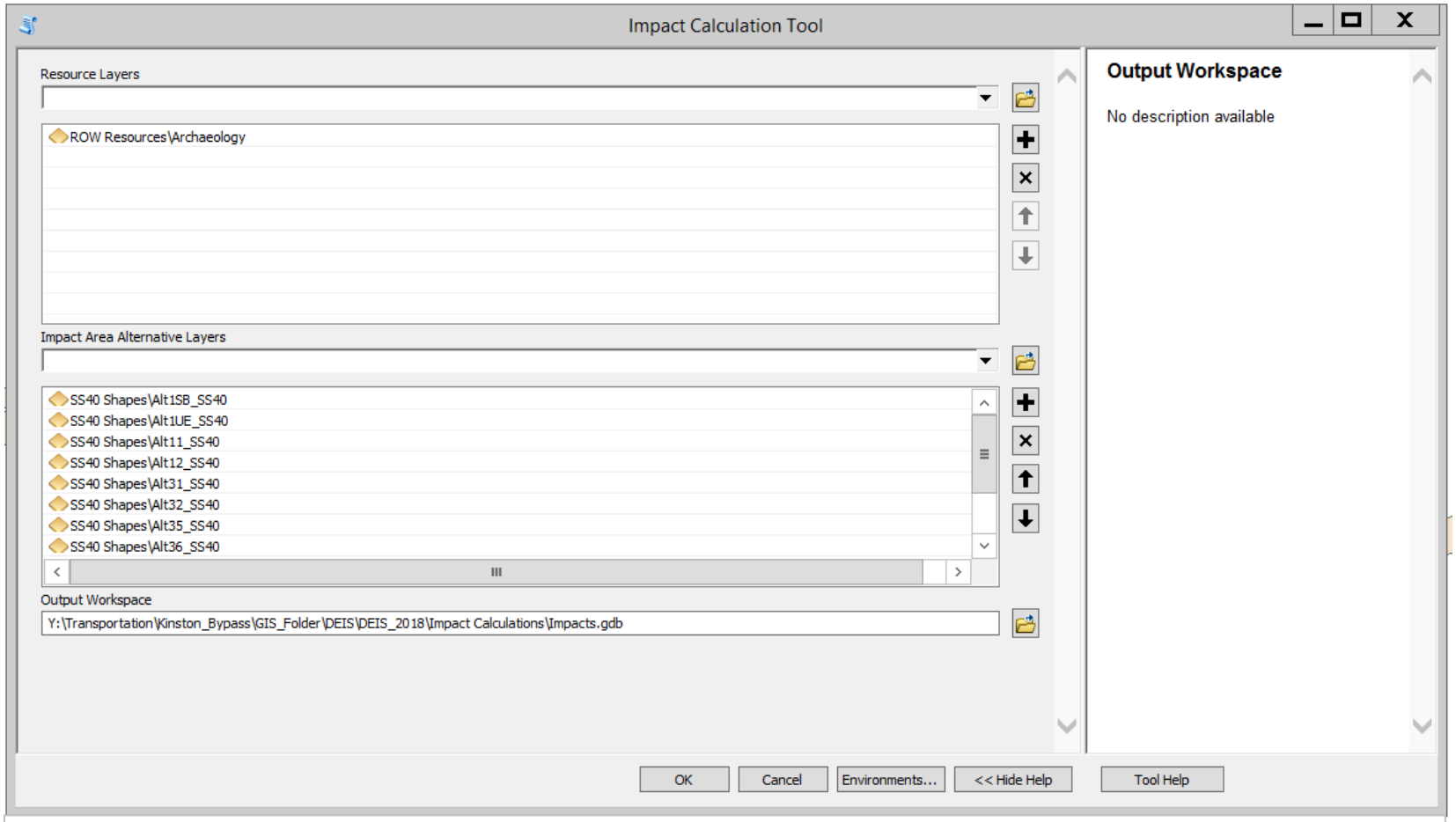


Figure 2 – Impact Calculation Tool

APPENDIX C: ALTERNATIVES ANALYSIS

Contents
C-1 Preliminary alternative segment combinations
C-2 Preliminary alternative segment summary of impacts (500-foot corridor width)
C-3 Preliminary alternative summary of impacts (500-foot corridor width)
C-4-Major hydraulic crossings and proposed structures

C-1 Preliminary alternative segment combinations

Table C-1: Preliminary alternative segment combinations

Corridor (N=Northern Bypass, S=Southern Bypass)	Segment																																																										
	1A	2A	2B	3A	3B	4A	4B	5A	5B	5C	6A	6B	7A	7B	8A	8B	9A	10A	11A	12A	12B	12C	13A	14A	14B	15A	15B	16A	16B	17A	18A	18B	19A	20A	20B	21A	22A	23A	23B	24A	24B	25A	25B	26A	26B	27A	27B	28A	29A	29B	30A	31A	32A	33A	34A	35A	39A	39B	40A	41A
1	1A		2B	3A							6A										12B																														30A		32A	33A	34A	35A				
2(N)	1A		2B	3A							6A									12A			13A						16B	17A					20B																		32A	33A	34A	35A				
3(N)	1A		2B	3A							6A									12A			13A						16B	17A				20A		21A																		33A	34A	35A				
4(N)	1A		2B	3A							6A									12A			13A					16A			18A		19A			21A																		33A	34A	35A				41A
5(N)	1A		2B	3A							6A									12A			13A					16A				18B				21A																		33A	34A	35A			40A	41A
6(S)	1A		2B	3A							6A								11A			12C															22A		23B				25B					28A		29B					34A	35A				
7(S)	1A		2B	3A							6A								11A			12C															22A		23B				25B					28A	29A			31A			34A	35A				
8(S)	1A		2B	3A							6A								11A			12C															22A		23B			25A					27B				30A		32A	33A	34A	35A				
9(S)	1A		2B	3A							6A								11A			12C																	23B			25A				27A						31A			34A	35A				
10(S)	1A		2B	3A							6A								11A			12C															22A	23A							26B		27B				30A		32A	33A	34A	35A				
11(S)	1A		2B	3A							6A								11A			12C															22A	23A							26B	27A						31A			34A	35A				
12(S)	1A		2B	3A							6A								11A			12C															22A	23A						26A							30A		32A	33A	34A	35A				
13(S)	1A		2B	3A								6B		7B		8B		10A																						24A			25B					28A		29B						35A				
14(S)	1A		2B	3A								6B		7B		8B		10A																						24A			25B					28A	29A			31A			34A	35A				
15(S)	1A		2B	3A								6B		7B		8B		10A																						24A		25A					27B				30A		32A	33A	34A	35A				
16(S)	1A		2B	3A								6B		7B		8B		10A																						24A		25A				27A						31A			34A	35A				
17(S)	1A		2B	3A								6B		7B		8B		10A																							24B							28A		29B						35A				
18(S)	1A		2B	3A								6B		7B		8B		10A																							24B							28A	29A			31A			34A	35A				
19(S)	1A		2B	3A								6B		7B		8B	9A																				22A		23B				25B					28A		29B						35A				
20(S)	1A		2B	3A								6B		7B		8B	9A																				22A		23B				25B					28A	29A			31A			34A	35A				
21(S)	1A		2B	3A								6B		7B		8B	9A																				22A		23B			25A					27B				30A		32A	33A	34A	35A				
22(S)	1A		2B	3A								6B		7B		8B	9A																				22A		23B			25A				27A						31A			34A	35A				
23(S)	1A		2B	3A								6B		7B		8B	9A																				22A	23A							26B		27B				30A		32A	33A	34A	35A				
24(S)	1A		2B	3A								6B		7B		8B	9A																				22A	23A							26B	27A						31A			34A	35A				
25(S)	1A		2B	3A								6B		7B		8B	9A																				22A	23A						26A							30A		32A	33A	34A	35A				
26(S)	1A		2B	3A								6B	7A						11A																		22A		23B				25B					28A		29B						35A				
27(S)	1A		2B	3A								6B	7A						11A																		22A		23B				25B					28A	29A			31A			34A	35A				
28(S)	1A		2B	3A								6B	7A						11A																		22A		23B			25A					27B				30A		32A	33A	34A	35A				
29(S)	1A		2B	3A								6B	7A						11A																		22A		23B			25A				27A						31A			34A	35A				
30(S)	1A		2B	3A								6B	7A						11A																		22A	23A							26B		27B				30A		32A	33A	34A	35A				
31(S)	1A		2B	3A								6B	7A						11A																		22A	23A							26B	27A						31A			34A	35A				
32(S)	1A		2B	3A								6B	7A						11A																		22A	23A							26B	27A					30A		32A	33A	34A	35A				
33(S)	1A		2B		3B				5B									10A																						24A			25B					28A		29B						35A				
34(S)	1A		2B		3B				5B									10A																						24A			25B					28A	29A			31A			34A	35A				
35(S)	1A		2B		3B				5B									10A																						24A		25A					27B				30A		32A	33A	34A	35A				
36(S)	1A		2B		3B				5B									10A																						24A		25A				27A						31A			34A	35A				
37(S)	1A		2B		3B				5B									10A																							24B							28A		29B						35A				
38(S)	1A		2B		3B				5B									10A																							24B							28A	29A			31A			34A	35A				
39(S)	1A		2B		3B			5A									9A																				22A		23B				25B					28A		29B						35A				
40(S)	1A		2B		3B			5A									9A																				22A		23B				25B					28A	29A			31A			34A	35A				
41(S)	1A		2B		3B			5A									9A																				22A		23B			25A					27B				30A		32A	33A	34A	35A				
42(S)	1A		2B		3B			5A									9A																				22A		23B			25A				27A						31A			34A	35A				
43(S)	1A		2B		3B			5A									9A																				22A	23A							26B		27B				30A		32A	33A	34A	35A				
44(S)	1A		2B		3B			5A									9A																				22A	23A							26B	27A						31A			34A	35A				
45(S)	1A		2B		3B			5A									9A																				22A	23A						26A							30A		32A	33A	34A	35A				
46(S)	1A		2B		3B					5C																											22A		23B				25B					28A		29B						35A				
47(S)	1A		2B		3B					5C																											22A		23B				25B					28A	29A			31A			34A	35A				
48(S)	1A		2B		3B					5C																											22A		23B			25A									30A		32A	33A	34A	35A				
49(S)	1A		2B		3B					5C																											22A		23B			25A				27A						31A			34A	35A				
50(S)	1A		2B		3B					5C																											22A	23A							26B		27B				30A		32A	33A	34A	35A				
51(S)	1A		2B		3B					5C																											22A	23A							26B	27A						31A			34A	35A				
52(S)	1A		2B		3B					5C																											22A	23A						26A							30A		32A	33A	34A	35A				
53(N)	1A	2A					4B																13A						16B	17A					20B																		32A	33A	34A	35A				
54(N)	1A	2A					4B																13A						16B	17A				20A		21A																		33A	34A	35A				
55(N)	1A	2A					4B																13A					16A			18A		19A			21A																		33A	34A	35A			40A	
56(N)	1A	2A					4B																13A					16A				18B				21A																		33A	34A	35A			40A	41A
57(N)	1A	2A				4A																		14A												21A																		33A	34A	35A	39A		40A	41A
58(N)	1A	2A				4A																		14A									19A			21A																		33A	34A	35A		39B		41A
59(N)	1A	2A				4A																			14B	15A					18A		19A			21A																		33A	34A	35A				41A
60(N)	1A	2A				4A																			14B	15A						18B				21A																		33A	34A	35A			40A	41A
61(N)	1A	2A				4A																			14B		15B			17A					20B																		32A	33A	34A	35A				
62(N)	1A	2A				4A																			14B		15B			17A				20A		21A																		33A	34A	35A				

C-2 Preliminary alternative segment summary of impacts (500-foot corridor width)

Table C-2: Preliminary alternative segment summary of impacts (500-foot corridor width)

STIP #R-2553

Segment	Alternative Length (Ft)	Alternative Length (Mi)	Archeological Properties (# of sites)	Historic Properties (# of sites)	Parks (# of sites)	Buildings (Ea)	Cemeteries (Ea)	Churches (Ea)	School Parcels (Ea)	Easements (# of sites)	Hazard Mitigation Grant Properties (# of sites)	Mountain to Sea Trail (# of crossings)	Onsite Mitigation (# of sites)	Other State Owned Lands (# of sites)	Anadromous Spawning Areas (# of crossings)	Floodplains-A and AE (Ac)	Streams (# of crossings)	Wetlands (Ac)	Gas Line (# of crossings)	Major Transmission Line (# of crossings)	Water Tanks (# of sites)	Low Income Greater Than Study Area Threshold (blockgroup, Ac)	Percent Minority Greater Then Study Area Threshold (block, Ac)	Cost per mile ($5 million/mile assumed for Upgrade Existing; $8 million/mile assume for New Location)
	Length		Structures																Utilities			Census		
1A*	4958	0.9				1											2	2						$ 7,512,104.67
2A	13304	2.5				8											4	4				67	15	$ 20,157,399.66
2B*	11347	2.1				59											2	4						$ 17,192,826.97
3A*	8472	1.6				40											3	1					38	$ 12,836,223.66
3B	7462	1.4				1										0	4	17		1			1	$ 11,305,500.59
4A	56638	10.7				39										19	18	115	4				39	$ 85,815,079.77
4B	21781	4.1	8			30										25	6	44					20	$ 33,001,098.20
5A	15324	2.9		1		6			1							159	8	41					59	$ 23,218,704.55
5B	25903	4.9				13						1			1	170	11	88						$ 39,246,962.54
5C	38,432	7.3				79									1	182	12	110					67	$ 58,230,511.32
6A*	11669	2.2				9							1		1	17	6	3	1			55	96	$ 17,679,582.44
6B	3597	0.7															1	0					44	$ 5,449,486.81
7A	10175	1.9		2		7			1	3						31	4	18					25	$ 15,416,628.50
7B	6080	1.2	1	1					1	2						28	2	1					19	$ 9,211,852.80
8A	3587	0.7		1					1							46	1	29						$ 5,434,193.50
8B	17869	3.4		1		26			1			1			1	106	5	58						$ 27,074,607.34
9A	21499	4.1		1		17			1						1	78	3	117						$ 32,574,623.04
10A	28652	5.4				20										27	9	69		1				$ 43,412,648.21
11A	20211	3.8				27				1					1	116	4	48					0	$ 30,623,101.43
12A*	19095	3.6	3			6		1					1	1			7	46				73	73	$ 28,931,724.28
12B*	56592	10.7	4	3	1	190			1		14			1	1	352	11	49	5	1		165	137	$ 85,745,750.95
12C	7582	1.4				3				3					1	43	4	18	1			22	21	$ 11,487,638.48
13A*	28757	5.4	8			16		2	1				1	1		3	6	54	7				205	$ 43,570,496.16
14A	7955	1.5				6												16	1					$ 12,053,498.72
14B	7227	1.4				7										9	2	9	2					$ 10,950,735.54
15A	5542	1.0				1												1	3					$ 8,397,510.22
15B	3895	0.7				4												2	1					$ 5,900,827.68
16A	5946	1.1				5												5	3					$ 9,009,362.78
16B	3742	0.7				7												6	1					$ 5,669,019.89
17A	31649	6.0		1		17									1	91	11	77	2		1	212	75	$ 47,953,618.07
18A	5110	1.0														12	2	15						$ 7,742,633.32
18B	13434	2.5				15										11	3	55					97	$ 20,355,078.17
19A	18574	3.5				10			1						1	88	7	77				89	70	$ 28,142,885.84

Notes:

1.) For comparison purposes, the impacts were calculated based upon 500-foot corridors, even though all corridors include portions of upgrade existing US 70 and possibly portions of Felix Harvey Parkway which is currently under construction. More realistic impacts will be prepared for all Detailed Study Alternatives in future stages of the project.

2.) For table clarity, Screening Criteria which resulted with zero impacts are shown as blank.

3.) * Indicates Upgrade Existing Roadway Route Option Segment

4.) A copy of the Data Dictionary is attached, which summarizes how the priority and non-priority data layers were assimilated resulting with one data layer for each of the screening criteria.

5.) Resources that were included in the analysis, but not included in the screening matrix since none of the alternatives had impacts to these resources are: Section 6(f) properties, Natural Heritage Program Natural Areas, airports, federal land ownership, gamelands, hazardous material sites, housing authority properties, voluntary agriculture districts, swine lagoons, threatened and endangered species element of occurrences, wastewater treatment plants, and water treatment plants.

Table C-2: Preliminary alternative segment summary of impacts (500-foot corridor width)

STIP #R-2553

Segment	Alternative Length (Ft)	Alternative Length (Mi)	Archeological Properties (# of sites)	Historic Properties (# of sites)	Parks (# of sites)	Buildings (Ea)	Cemeteries (Ea)	Churches (Ea)	School Parcels (Ea)	Easements (# of sites)	Hazard Mitigation Grant Properties (# of sites)	Mountain to Sea Trail (# of crossings)	Onsite Mitigation (# of sites)	Other State Owned Lands (# of sites)	Anadromous Spawning Areas (# of crossings)	Floodplains-A and AE (Ac)	Streams (# of crossings)	Wetlands (Ac)	Gas Line (# of crossings)	Major Transmission Line (# of crossings)	Water Tanks (# of sites)	Low Income Greater Than Study Area Threshold (blockgroup, Ac)	Percent Minority Greater Then Study Area Threshold (block, Ac)	Cost per mile ($5 million/mile assumed for Upgrade Existing; $8 million/mile assume for New Location)
	Length				Structures													Utilities				Census		
20A	10475	2.0			7										41	3	46	1						$ 15,871,357.43
20B	16231	3.1			18	1									47	4	68	1						$ 24,591,755.65
21A	11698	2.2			18										26	2	52					2	28	$ 17,723,799.17
22A	4942	0.9			7											3	12						5	$ 7,487,876.61
23A	9917	1.9													31	3	48						68	$ 15,025,881.29
23B	12438	2.4			11						1				26	2	35						44	$ 18,845,942.95
24A	7536	1.4			2											1	22							$ 11,418,399.34
24B	23697	4.5			2											4	186					129		$ 35,905,301.85
25A	13852	2.6			11						1					1	70					88		$ 20,987,575.88
25B	15854	3.0			3											3	148					112		$ 24,020,780.17
26A	22842	4.3		1	20											7	31		1			83		$ 34,608,482.41
26B	11799	2.2			8						1					2	9					42		$ 17,876,600.53
27A	18,582	3.5		1	6											3	27					82		$ 28,154,175.78
27B	12077	2.3		1	6											6	16		1			86		$ 18,297,995.81
28A	2364	0.4			6						1						24					32		$ 3,582,060.64
29A	15126	2.9			9										3	3	73					28		$ 22,918,710.17
29B	33284	6.3			4						1					8	263					27		$ 50,429,720.55
30A*	7900	1.5		1	25											1	2							$ 11,969,182.99
31A	10948	2.1			5										23	5	35		1					$ 16,588,613.71
32A*	8097	1.5			11										14	2	5						27	$ 12,268,335.89
33A*	3423	0.6															3						1	$ 5,187,060.88
34A*	11672	2.2									1						32		1					$ 17,685,320.60
35A*	6135	1.2															19							$ 9,294,907.84
39A	14911	2.8			24											4	51	1					134	$ 22,592,493.98
39B	8081	1.5			3											4	14	1						$ 12,243,853.72
40A	10183	1.9			6									1	61	3	62					58	45	$ 15,429,016.70
41A	29960	5.7			39		1								55	6	58	1					52	$ 45,393,677.05

Notes:

1.) For comparison purposes, the impacts were calculated based upon 500-foot corridors, even though all corridors include portions of upgrade existing US 70 and possibly portions of Felix Harvey Parkway which is currently under construction. More realistic impacts will be prepared for all Detailed Study Alternatives in future stages of the project.

2.) For table clarity, Screening Criteria which resulted with zero impacts are shown as blank.

3.) * Indicates Upgrade Existing Roadway Route Option Segment

4.) A copy of the Data Dictionary is attached, which summarizes how the priority and non-priority data layers were assimilated resulting with one data layer for each of the screening criteria.

5.) Resources that were included in the analysis, but not included in the screening matrix since none of the alternatives had impacts to these resources are: Section 6(f) properties, Natural Heritage Program Natural Areas, airports, federal land ownership, gamelands, hazardous material sites, housing authority properties, voluntary agriculture districts, swine lagoons, threatened and endangered species element of occurrences, wastewater treatment plants, and water treatment plants.

C-3 Preliminary alternative summary of impacts (500-foot corridor width)

Table C-3: Preliminary alternative summary of impacts (500-foot corridor width)

STIP #R-2553

Corridor (N=Northern Bypass, S=Southern Bypass)	Length		Structures															Utilities						Census		
	Alternative Length (Ft)	Alternative Length (Mi)	Archeological Properties (# of sites)	Historic Properties (# of sites)	Parks (# of sites)	Buildings (Ea)	Cemeteries (Ea)	Churches (Ea)	School Parcels (Ea)	Easements (# of sites)	Hazard Mitigation Grant Properties (# of sites)	Mountain to Sea Trail (# of crossings)	Onsite Mitigation (# of sites)	Other State Owned Lands (# of sites)	Anadromous Spawning Areas (# of crossings)	Floodplains-A and AE (Ac)	Streams (# of crossings)	Wetlands (Ac)	Gas Line (# of crossings)	Major Transmission Line (# of crossings)	Water Tanks (# of sites)	Low Income Greater Than Study Area Threshold (blockgroup, Ac)	Percent Minority Greater Then Study Area Threshold (block, Ac)	Cost per mile ($5 million/mile assumed for Upgrade Existing Segments; $8 million/mile assume for New Location Segments)
1	130,265	24.7	4	3	1	332	0	0	1	0	14	1	1	1	2	383	27	118	6	2	0	215	290	$ 123,357,061
2(N)	165,246	31.3	11	1	0	181	1	3	1	0	0	1	3	2	2	168	43	315	12	1	1	335	506	$ 185,813,508
3(N)	163,091	30.9	11	1	0	179	0	3	1	0	0	1	3	2	2	174	42	340	12	1	1	337	507	$ 187,149,199
4(N)	176,816	33.5	11	0	0	202	0	4	2	0	0	1	3	2	2	196	43	363	12	1	0	213	549	$ 207,943,762
5(N)	176,749	33.5	11	0	0	213	0	4	1	0	0	1	3	2	2	169	40	388	12	1	0	183	617	$ 207,842,338
6(S)	139,255	26.4	0	0	0	169	0	0	0	3	0	3	1	0	2	198	36	569	1	0	0	233	192	$ 186,799,399
7(S)	143,719	27.2	0	0	0	179	0	0	0	3	0	3	1	0	2	221	36	445	1	2	0	234	192	$ 186,930,328
8(S)	144,775	27.4	0	1	0	207	0	0	0	3	0	3	1	0	2	212	35	267	1	2	0	241	219	$ 177,496,097
9(S)	142,808	27.0	0	0	0	178	0	0	0	3	0	3	1	0	2	221	34	304	1	2	0	241	192	$ 185,550,529
10(S)	140,200	26.6	0	1	0	193	0	0	0	3	0	2	1	0	2	216	37	219	1	2	0	196	243	$ 170,565,060
11(S)	138,234	26.2	0	0	0	164	0	0	0	3	0	2	1	0	2	226	36	256	1	2	0	196	216	$ 178,619,492
12(S)	139,167	26.4	0	1	0	199	0	0	0	3	0	1	1	0	2	216	36	225	1	2	0	154	243	$ 173,487,390
13(S)	146,148	27.7	1	1	0	158	0	0	1	2	0	3	0	0	1	156	36	603	0	1	0	162	93	$ 203,872,095
14(S)	150,611	28.5	1	1	0	168	0	0	1	2	0	3	0	0	1	179	36	480	0	3	0	163	93	$ 204,003,024
15(S)	151,667	28.7	1	2	0	196	0	0	1	2	0	3	0	0	1	170	35	302	0	3	0	169	120	$ 194,568,793
16(S)	149,700	28.4	1	1	0	167	0	0	1	2	0	3	0	0	1	179	34	339	0	3	0	169	93	$ 202,623,225
17(S)	146,455	27.7	1	1	0	155	0	0	1	2	0	3	0	0	1	156	36	619	0	1	0	178	93	$ 204,338,218
18(S)	150,919	28.6	1	1	0	165	0	0	1	2	0	3	0	0	1	179	36	496	0	3	0	180	93	$ 204,469,146
19(S)	134,556	25.5	1	1	0	147	0	0	1	2	0	3	0	0	1	169	30	643	0	0	0	162	138	$ 186,309,077
20(S)	139,019	26.3	1	1	0	157	0	0	1	2	0	3	0	0	1	192	30	520	0	2	0	163	138	$ 186,440,005
21(S)	140,075	26.5	1	2	0	185	0	0	1	2	0	3	0	0	1	183	29	341	0	2	0	169	165	$ 177,005,775
22(S)	138,109	26.2	1	1	0	156	0	0	1	2	0	3	0	0	1	192	28	378	0	2	0	169	138	$ 185,060,206
23(S)	135,501	25.7	1	2	0	171	0	0	1	2	0	2	0	0	1	188	31	293	0	2	0	124	189	$ 170,074,738
24(S)	133,534	25.3	1	1	0	142	0	0	1	2	0	2	0	0	1	197	30	330	0	2	0	124	162	$ 178,129,169
25(S)	134,467	25.5	1	2	0	177	0	0	1	2	0	1	0	0	1	188	30	299	0	2	0	83	189	$ 168,508,624
26(S)	133,776	25.3	0	2	0	164	0	0	1	3	0	3	0	0	1	169	32	566	0	0	0	162	144	$ 185,128,138
27(S)	138,240	26.2	0	2	0	174	0	0	1	3	0	3	0	0	1	192	32	442	0	2	0	163	144	$ 185,259,066
28(S)	139,296	26.4	0	3	0	202	0	0	1	3	0	3	0	0	1	183	31	264	0	2	0	169	171	$ 175,824,836
29(S)	137,329	26.0	0	2	0	173	0	0	1	3	0	3	0	0	1	192	30	301	0	2	0	169	144	$ 183,879,267
30(S)	134,722	25.5	0	3	0	188	0	0	1	3	0	2	0	0	1	188	33	216	0	2	0	124	195	$ 168,893,799
31(S)	132,755	25.1	0	2	0	159	0	0	1	3	0	2	0	0	1	197	32	253	0	2	0	124	168	$ 176,948,230

= Highest number of impacts

= Lowest number of impacts

Notes:

1.) For comparison purposes, impacts were calculated based upon 500-foot corridors, even though all corridors include portions of upgrade existing US 70 and possibly portions of Felix Harvey Parkway which is currently under construction. More realistic impacts will be prepared for all Detailed Study Alternatives in future stages of the project.

2.) A copy of the Data Dictionary can be found in Appendix B, which summarizes how the priority and non-priority data layers were assimilated resulting with one data layer for each of the screening criteria.

3.) Resources that were included in the analysis, but not included in the screening matrix since none of the preliminary alternatives had impacts to these resources are: Section 6(f) properties, Natural Heritage Program Natural Areas, airports, federal land ownership, gamelands, hazardous material sites, housing authority properties, voluntary agriculture districts, swine lagoons, threatened and endangered species element of occurrences, wastewater treatment plants, and water treatment plants.

Table C-3: Preliminary alternative summary of impacts (500-foot corridor width)

STIP #R-2553

Corridor (N=Northern Bypass, S=Southern Bypass)	Length		Structures														Utilities			Census			
	Alternative Length (Ft)	Alternative Length (Mi)	Archeological Properties (# of sites)	Historic Properties (# of sites)	Parks (# of sites)	Buildings (Ea)	Cemeteries (Ea)	Churches (Ea)	School Parcels (Ea)	Easements (# of sites)	Hazard Mitigation Grant Properties (# of sites)	Mountain to Sea Trail (# of crossings)	Onsite Mitigation (# of sites)	Other State Owned Lands (# of sites)	Anadromous Spawning Areas (# of crossings)	Floodplains-A and AE (Ac)	Streams (# of crossings)	Wetlands (Ac)	Gas Line (# of crossings)	Major Transmission Line (# of crossings)	Water Tanks (# of sites)	Low Income Greater Than Study Area Threshold (blockgroup, Ac)	Percent Minority Greater Then Study Area Threshold (block, Ac)	Cost per mile ($5 million/mile assumed for Upgrade Existing Segments; $8 million/mile assume for New Location Segments)
32(S)	133,688	25.3	0	3	0	194	0	0	1	3	0	1	0	0	1	188	32	222	0	2	0	83	195	$ 167,327,685
33(S)	143,495	27.2	0	0	0	106	0	0	0	0	0	3	0	0	1	197	40	648	0	2	0	162	1	$ 204,665,972
34(S)	147,958	28.0	0	0	0	116	0	0	0	0	0	3	0	0	1	220	40	525	0	4	0	163	1	$ 204,796,900
35(S)	149,014	28.2	0	1	0	144	0	0	0	0	0	3	0	0	1	211	39	346	0	4	0	169	28	$ 195,362,670
36(S)	147,047	27.8	0	0	0	115	0	0	0	0	0	3	0	0	1	220	38	383	0	4	0	169	1	$ 203,417,101
37(S)	143,802	27.2	0	0	0	103	0	0	0	0	0	3	0	0	1	197	40	664	0	2	0	178	1	$ 205,132,094
38(S)	148,266	28.1	0	0	0	113	0	0	0	0	0	3	0	0	1	220	40	541	0	4	0	180	1	$ 205,263,023
39(S)	135,607	25.7	0	1	0	114	0	0	1	0	0	3	0	0	1	259	35	670	0	1	0	162	104	$ 192,715,109
40(S)	140,070	26.5	0	1	0	124	0	0	1	0	0	3	0	0	1	282	35	547	0	3	0	163	104	$ 192,846,037
41(S)	141,126	26.7	0	2	0	152	0	0	1	0	0	3	0	0	1	273	34	368	0	3	0	169	131	$ 183,411,807
42(S)	139,160	26.4	0	1	0	123	0	0	1	0	0	3	0	0	1	282	33	405	0	3	0	169	104	$ 191,466,238
43(S)	136,552	25.9	0	2	0	138	0	0	1	0	0	2	0	0	1	278	36	320	0	3	0	124	155	$ 176,480,770
44(S)	134,585	25.5	0	1	0	109	0	0	1	0	0	2	0	0	1	287	35	357	0	3	0	124	128	$ 184,535,201
45(S)	135,518	25.7	0	2	0	144	0	0	1	0	0	1	0	0	1	278	35	326	0	3	0	83	155	$ 174,914,656
46(S)	137,215	26.0	0	0	0	170	0	0	0	0	0	3	0	0	1	208	36	626	0	1	0	162	45	$ 195,152,293
47(S)	141,679	26.8	0	0	0	180	0	0	0	0	0	3	0	0	1	231	36	503	0	3	0	163	45	$ 195,283,221
48(S)	130,206	24.7	0	1	0	208	0	0	0	0	0	3	0	0	1	222	34	303	0	3	0	169	72	$ 166,865,442
49(S)	140,768	26.7	0	0	0	179	0	0	0	0	0	3	0	0	1	231	34	361	0	3	0	169	45	$ 193,903,422
50(S)	138,161	26.2	0	1	0	194	0	0	0	0	0	2	0	0	1	226	37	277	0	3	0	124	96	$ 178,917,954
51(S)	136,194	25.8	0	0	0	165	0	0	0	0	0	2	0	0	1	236	36	313	0	3	0	124	69	$ 186,972,385
52(S)	124,598	23.6	0	1	0	200	0	0	0	0	0	2	0	0	1	226	35	261	0	3	0	83	96	$ 158,368,291
53(N)	149,748	28.4	16	1	0	105	1	2	1	0	0	1	1	1	1	176	35	309	11	1	1	279	343	$ 191,071,783
54(N)	147,593	28.0	16	1	0	103	0	2	1	0	0	1	1	1	1	182	34	333	11	1	1	280	344	$ 192,407,474
55(N)	161,318	30.6	16	0	0	126	0	3	2	0	0	1	1	1	1	204	35	357	11	1	0	157	386	$ 213,202,037
56(N)	161,251	30.5	16	0	0	137	0	3	1	0	0	1	1	1	1	177	32	382	11	1	0	126	454	$ 213,100,612
57(N)	170,837	32.4	0	0	0	140	0	1	0	0	0	1	0	0	1	157	39	404	7	1	0	126	304	$ 243,964,586
58(N)	172,398	32.7	0	0	0	123	0	1	1	0	0	1	0	0	1	183	43	383	7	1	0	157	199	$ 246,329,814
59(N)	174,242	33.0	0	0	0	122	0	1	1	0	0	1	0	0	1	204	43	380	10	1	0	157	199	$ 249,123,340
60(N)	174,175	33.0	0	0	0	133	0	1	0	0	0	1	0	0	1	177	40	405	10	1	0	126	267	$ 249,021,916
61(N)	163,229	30.9	0	1	0	102	1	0	0	0	0	1	0	0	1	176	43	332	10	1	1	279	156	$ 227,836,748
62(N)	161,074	30.5	0	1	0	100	0	0	0	0	0	1	0	0	1	182	42	356	10	1	1	280	157	$ 229,172,439
Lowest Value	124,598	24	1	1	1	100	1	1	1	2	14	1	1	1	1	156	27	118	1	1	1	83	1	$ 123,357,060.55
Highest Value	176,816	33	16	3	1	332	1	4	2	3	14	3	3	2	2	383	43	670	12	4	1	337	617	$ 249,123,340.46
Average	145,609	28	6	1		159			1	3		2			1	207	36	389	7	2		174	178	$ 192,353,525.96
Median	140,947	27	1	1	1	164	1	3	1	3	14	3	1	1	1	197	35	357	10	2	1	166	155	$ 187,060,792.00

= Highest number of impacts

= Lowest number of impacts

Notes:

1.) For comparison purposes, impacts were calculated based upon 500-foot corridors, even though all corridors include portions of upgrade existing US 70 and possibly portions of Felix Harvey Parkway which is currently under construction. More realistic impacts will be prepared for all Detailed Study Alternatives in future stages of the project.

2.) A copy of the Data Dictionary can be found in Appendix B, which summarizes how the priority and non-priority data layers were assimilated resulting with one data layer for each of the screening criteria.

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C-4 Major hydraulic crossings and proposed structures

Table C-4: Major hydraulic crossings and proposed structures

Alternatives	Crossing No.	Structure Type	Structure Size [a]					Surface Water
1UE, 1SB, 11, 12, 31, 32, 35, 36, 51, 52, 63, 65	2	Culvert	Single	6’	x	6’	Box	UT to Whitelace Creek
1UE, 1SB, 11, 12	6	Culvert [b]	Double	9’	x	6’	Box	UT to Falling Creek
1UE, 1SB, 11, 12, 31, 32, 63	12	Culvert [b]	Triple	12’	x	10’	Box	UT to Falling Creek
1UE, 1SB, 12, 32, 35, 52, 63	48	Culvert [b]	Triple	7’	x	7’	Box	Tracey Swamp
1UE	104	Culvert [b]	Single	5’	x	6’	Box	UT to Falling Creek
1UE	105	Culvert [b]	Single	12’	x	8’	Box	UT to Neuse River
1UE, 1SB, 12, 32, 35, 52, 63	112	Culvert [b]	Double	6’	x	6’	Box	Mill Branch
35, 36	116	Culvert	Double	6’	x	6’	Box	Whitelace Creek
35, 36	118	Culvert	Single	6’	x	6’	Box	UT to Neuse River
35, 36	132	Culvert	Double	6’	x	6’	Box	Strawberry Branch
11, 31, 36, 51, 65	136	Culvert	Double	5’	x	6’	Box	Tracey Swamp
11, 12, 31, 32, 51, 52, 63, 65	150	Culvert	Single	8’	x	6’	Box	Mott Swamp
12, 32, 52, 63	154	Culvert	Double	6’	x	6’	Box	Strawberry Branch
12, 32, 35, 52, 63	157	Culvert	Single	8’	x	6’	Box	UT to Mill Branch
51, 52	172	Culvert	Double	8’	x	6’	Box	Whitelace Creek
51, 52	176	Culvert	Single	8’	x	6’	Box	Whitley's Creek
51, 52	177	Culvert	Single	6’	x	6’	Box	UT to Whitley's Creek
11, 31, 51, 65	180	Culvert	Double	6’	x	6’	Box	Strawberry Branch

Alternatives	Crossing No.	Structure Type	Structure Size [a]					Surface Water
35, 36, 51, 52	201	Culvert	Double	5’	x	6’	Box	UT to Whitelace Creek
51, 52	202	Culvert	Double	6’	x	6’	Box	Whitley's Creek
1SB	303	Culvert	Single	8’	X	6’	Box	UT to Falling Creek
1SB	304	Culvert	Single	8’	x	6’	Box	UT to Falling Creek
1SB	307	Culvert	Double	5’	x	6’	Box	UT to Neuse River
1SB	308	Culvert	Single	8’	x	6’	Box	UT to Neuse River
1SB	311	Culvert	Single	7’	x	6’	Box	UT to Neuse River
1SB	312	Culvert	Single	7’	x	6’	Box	UT to Neuse River
1SB	313	Culvert	Single	7’	x	6’	Box	UT to Neuse River
1UE	326	Culvert [c]	Double	6’	x	7’	Box	Rivermont Tributary
11, 31, 36, 51, 65	339	Culvert	Single	8’	x	6’	Box	Gum Swamp
1UE, 1SB, 11, 12	406	Culvert	Single	6’	x	6’	Box	UT to Whitelace Creek
1UE, 1SB, 11, 12	407	Culvert	Single	6’	x	6’	Box	UT to Whitelace Creek
1UE, 1SB, 11, 12	408	Culvert	Single	6’	x	6’	Box	UT to Whitelace Creek
1UE, 1SB, 12, 32, 35, 52, 63	415	Culvert	Double	5’	x	6’	Box	Gum Swamp
All Alts.	416	Culvert	Double	5’	x	6’	Box	Gum Swamp
11, 31, 36, 51, 65	417	Culvert	Double	5’	x	6’	Box	Gum Swamp
1UE, 1SB, 11, 12	4	Bridge [d]	121' (N. Service Road) 121’ (WBL) [4] 121’ (EBL) [4] 121’ (S. Service Road)					Falling Creek
11, 12, 31, 32, 63, 65	16	Bridge [d]	470’ (SBL) [4] 427’ (NBL) [4]					UT to Falling Creek

Alternatives	Crossing No.	Structure Type	Structure Size [a]	Surface Water
1UE	106A	Bridge [d]	405' (WBL) [d] 405’ (EBL) [d]	Neuse River
1UE	106B	Bridge [d]	315' (WBL) [d] 316’ (EBL) [d]	UT to Neuse River
1UE, 1SB	110	Bridge d	158' (WBL) [d] 167’ (EBL) [d] 167’ (S. Service Road)	Southwest Creek
35, 36	119	Bridge	3,800'	Neuse River
35, 36	121	Bridge	945'	Southwest Creek
63, 65	139	Bridge	85'	Whitelace Creek
63, 65	140	Bridge	5,480' (N. Ramp) 5,590' (WBL) 5,760' (EBL) 2,140' (S. Ramp)	Neuse River & UT to Neuse River
11, 12, 31, 32, 51, 52, 63, 65	149	Bridge	1,025'	Southwest Creek
11, 12, 31, 32	163	Bridge	3,691'	Neuse River
11, 12, 31, 32, 63, 65	167	Bridge	390'	Falling Creek
51, 52	175	Bridge	3,480’	Neuse River & UT to Neuse
1SB	305	Bridge	7,115’	Neuse River

Source: NCDOT 2017f

UT – Unnamed tributary

[a] All dimensions in feet. Culvert size shown as width x height. Bridge size refers to overall length of structure.

[b] Major hydraulic crossing with existing culvert structure. Existing structure meets or exceeds minimum hydraulic opening size determined based on contributing drainage area. Existing culverts are assumed to be retained and lengthened, if necessary.

[c] Crossing located within a Federal Emergency Management Agency (FEMA) regulated floodway; therefore, the box culvert size estimated based on Q100 (rather than Q50), assuming a Q/B of 55 cfs/ft and 7' culvert height. Single, double, and triple barrel considered.

[d] Major hydraulic crossing with existing bridge structure(s). Minimum hydraulic size recommendations for proposed ramp or service road structures adjacent to existing bridge structures are based on existing bridge lengths. Existing bridge structures assumed to be maintained and widened, if necessary. Plan and profile sheets not produced for bridge crossings 16, 24, 204, 205, 206, and 209. Note that crossings 16 and 24 are minor crossings based on contributing drainage area; however, crossing contains an existing bridge structure.

APPENDIX D: RELOCATION REPORT AND COST ESTIMATE

Contents
D-1 Relocation Report
D-2 Cost Estimate

D-1 Relocation Report

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate 1 of 12 Alternate
T.I.P. No.:	R-2553			
DESCRIPTION OF PROJECT:	Alternate 1 – Widening and Upgrade of existing US-70			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	90	38	128	27
Businesses	109	79	188	31
Farms	0	0	0	0
Non-Profit	6	0	6	6

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	18	37	46	27

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	27	150-250	0	20-40M	41	150-250	5
40-70M	31	250-400	22	40-70M	74	250-400	29
70-100M	28	400-600	14	70-100M	73	400-600	20
100 UP	4	600 UP	2	100 UP	174	600 UP	17
TOTAL	90		38		362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? **24 - 36**

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate	1SB	of	12	Alternate
T.I.P. NO.:	R-2553							
DESCRIPTION OF PROJECT:	Alternate 1SB – Widening and Upgrade of existing US-70 Southern Bypass							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	133	32	165	27
Businesses	60	55	115	19
Farms	0	0	0	0
Non-Profit	4	0	4	4

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	23	46	65	31

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	34	150-250	0
40-70M	43	250-400	17
70-100M	45	400-600	13
100 UP	11	600 UP	2
TOTAL	133		32

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
TOTAL	362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? 24 - 36

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online Realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate	11	of	12	Alternate
T.I.P. NO.:	R-2553							
DESCRIPTION OF PROJECT:	Alternate 11 – Improvements of existing US-70							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	90	9	99	24
Businesses	19	11	30	0
Farms	0	0	0	0
Non-Profit	4	0	4	4

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	9	46	23	21

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	32	150-250	0
40-70M	29	250-400	7
70-100M	18	400-600	2
100 UP	11	600 UP	0
TOTAL	90		9

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
TOTAL	362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? **24 - 36**

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate	12	of	12	Alternate
T.I.P. NO.:	R-2553							
DESCRIPTION OF PROJECT:	Alternate 12 – Improvements of existing US-70							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	92	11	103	27
Businesses	22	13	35	1
Farms	0	0	0	0
Non-Profit	4	0	4	4

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	12	43	25	23

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	32	150-250	0
40-70M	29	250-400	6
70-100M	18	400-600	5
100 UP	13	600 UP	0
TOTAL	92		11

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
TOTAL	362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? 24 - 36

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate	31	of	12	Alternate
T.I.P. NO.:	R-2553							
DESCRIPTION OF PROJECT:	Alternate 31 – Improvements of existing US-70							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	70	10	80	26
Businesses	16	11	27	1
Farms	0	0	0	0
Non-Profit	3	0	3	3

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	13	19	26	22

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	17	150-250	0
40-70M	24	250-400	7
70-100M	22	400-600	3
100 UP	7	600 UP	0
TOTAL	70		10

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
TOTAL	362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? **24 - 36**

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

02EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/CravenJones	Alternate 32 of 12 Alternate
T.I.P. No.:	R-2553			
DESCRIPTION OF PROJECT:	Alternate 32 – Improvements of existing US-70			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	82	13	95	27
Businesses	22	11	33	1
Farms	0	0	0	0
Non-Profit	3	0	3	3

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	15	29	32	19

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	18	150-250	0
40-70M	30	250-400	10
70-100M	27	400-600	3
100 UP	7	600 UP	0
TOTAL	82		13

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
TOTAL	362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
	x	1. Will special relocation services be necessary?
x		2. Will schools or churches be affected by displacement?
x		3. Will business services still be available after project?
x		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
	x	7. Will additional housing programs be needed?
x		8. Should Last Resort Housing be considered?
	x	9. Are there large, disabled, elderly, etc. families?
	x	10. Will public housing be needed for project?
x		11. Is public housing available?
x		12. Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13. Will there be a problem of housing within financial means?
x		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 24 - 36

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate	35	of 12	Alternate
T.I.P. NO.:	R-2553						
DESCRIPTION OF PROJECT:	Alternate 35 – Improvements of existing US-70						

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	122	13	135	31
Businesses	19	9	28	2
Farms	0	0	0	0
Non-Profit	3	0	3	3

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	12	52	50	21

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	19	150-250	0
40-70M	47	250-400	9
70-100M	42	400-600	4
100 UP	14	600 UP	0
TOTAL	122		13

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
TOTAL	362		71

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
	x	1. Will special relocation services be necessary?
x		2. Will schools or churches be affected by displacement?
x		3. Will business services still be available after project?
x		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
	x	7. Will additional housing programs be needed?
x		8. Should Last Resort Housing be considered?
	x	9. Are there large, disabled, elderly, etc. families?
	x	10. Will public housing be needed for project?
x		11. Is public housing available?
x		12. Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13. Will there be a problem of housing within financial means?
x		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 24 - 36

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate 36 of 12 Alternate	
T.I.P. NO.:	R-2553				
DESCRIPTION OF PROJECT:	Alternate 36 – Improvements of existing US-70				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	109	9	118	37
Businesses	17	8	25	1
Farms	0	0	0	0
Non-Profit	3	0	3	3

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	12	45	42	19

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	16	150-250	0
40-70M	45	250-400	6
70-100M	37	400-600	3
100 UP	11	600 UP	0
TOTAL	109		9

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
TOTAL	362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? **24 - 36**

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate 51 of 12 Alternate	
T.I.P. NO.:	R-2553				
DESCRIPTION OF PROJECT:	Alternate 51 – Improvements of existing US-70				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	99	9	108	32
Businesses	17	7	24	1
Farms	0	0	0	0
Non-Profit	3	0	3	3

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	12	36	43	17

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	13	150-250	0
40-70M	34	250-400	6
70-100M	43	400-600	3
100 UP	9	600 UP	0
TOTAL	99		9

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
TOTAL	362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? **24 - 36**

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate 52 of 12 Alternate	
T.I.P. NO.:	R-2553				
DESCRIPTION OF PROJECT:	Alternate 52 – Improvements of existing US-70				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	111	11	122	35
Businesses	21	8	29	1
Farms	0	0	0	0
Non-Profit	3	0	3	3

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	14	40	46	22

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	15	150-250	0
40-70M	42	250-400	7
70-100M	43	400-600	4
100 UP	11	600 UP	0
TOTAL	111		11

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
TOTAL	362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? 24 - 36

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate	63	of	12	Alternate
T.I.P. No.:	R-2553							
DESCRIPTION OF PROJECT:	Alternate 63 – Improvements of existing US-70							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	91	9	100	28
Businesses	24	9	33	1
Farms	0	0	0	0
Non-Profit	3	0	3	3

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	12	36	34	18

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? **24 - 36**

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	12	150-250	0
40-70M	35	250-400	6
70-100M	35	400-600	3
100 UP	9	600 UP	0
TOTAL	91		9

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	41	150-250	5
40-70M	74	250-400	29
70-100M	73	400-600	20
100 UP	174	600 UP	17
	362		71

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
6. Realtors, MLS, Online realtor websites, classifieds, Realtor Publications.
8. As required by law.
11. Public housing is available in Lenoir, Craven and Jones County.
12. There is plenty of DSS housing in the area as stated by realtors.
14. See #6 above. Various business sites and commercial lots are available around the project area.

	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E
Revised 7/7/14

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	34460.1.2	COUNTY	Lenoir/Craven/Jones	Alternate 65 of 12 Alternate
T.I.P. No.:	R-2553			
DESCRIPTION OF PROJECT:	Alternate 65 – Improvements of existing US-70			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	77	8	85	23
Businesses	21	7	28	1
Farms	0	0	0	0
Non-Profit	3	0	3	3

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	12	29	27	17

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	11	150-250	0	20-40M	41	150-250	5
40-70M	27	250-400	5	40-70M	74	250-400	29
70-100M	32	400-600	3	70-100M	73	400-600	20
100 UP	7	600 UP	0	100 UP	174	600 UP	17
TOTAL	77		8		362		71

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.	
	x	1.	Will special relocation services be necessary?
x		2.	Will schools or churches be affected by displacement?
x		3.	Will business services still be available after project?
x		4.	Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	x	5.	Will relocation cause a housing shortage?
		6.	Source for available housing (list).
	x	7.	Will additional housing programs be needed?
x		8.	Should Last Resort Housing be considered?
	x	9.	Are there large, disabled, elderly, etc. families?
	x	10.	Will public housing be needed for project?
x		11.	Is public housing available?
x		12.	Is it felt there will be adequate DSS housing housing available during relocation period?
	x	13.	Will there be a problem of housing within financial means?
x		14.	Are suitable business sites available (list source).
		15.	Number months estimated to complete RELOCATION? 24 - 36

REMARKS (Respond by Number)

2. See attached list.
3. Businesses will still be available.
4. See attached list.
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	2-9-18		05/23/2018
Right of Way Agent	Date	Relocation Coordinator	Date

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List of Churches and Non-Profits Affected by The Different Alternates of The Project

- Church of God-La Grange
- US Post Office
- Kinston/Lenoir Visitor Center
- Woodman of the World Lodge 46
- Wyse Fork Volunteer Fire
- Greater Vision Baptist Church
- Identity Ministries Church
- Church Destiny Ministries
- Trinity United Methodist
- Chosen Vessel Ministries
- Victorious Living Church
- Kennedy Home Church
- Grace Baptist

Business Relocations Alternate 1

- **(SOME BUILDINGS MAY BE VACANT AND/OR FOR LEASE)**
- 20/20 Vision Center
- Advance Auto Parts
- Ag Carolina Farm Credit
- Alien Are Tattoo
- American Tool Rentals
- Apperson's Auto Sales
- Auto Body Company
- Auto Pro of Kinston
- B J's Grill
- Barney's Pizzeria
- Barnhill Contracting
- Bert's Surf Shop
- Blizzard's Mini Warehouse
- Bo Jangles
- Car Wash
- Cauley Construction Company, LLC
- CDS Networks
- Childcare Center
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church Destiny Ministries
- Church of God-LaGrange
- Collison Repair
- Country Hearth Inn
- Craftmaster Collision
- CRI
- D & S Towing & Recovery
- Davis Wholesale Tire
- Deacon Jones Supercenter
- Dillard Wallace Construction
- Don's Barber Shop
- Eagle Homes Inc.
- East Coast Customs

- Eastern Restaurant & Equip.
- El Azteca Mexican Restaurant
- Enterprise
- Everett's Industrial
- Falling Creek Guns
- Falling Creek Service Center
- Family Dollar
- Frank's Place
- Froenius Kidney Care
- Frozen Storage
- Fuel Warehouse
- Furniture Gallery
- Galaxy Sports
- Good Times Country Music
- Greater Vision Baptist Church
- Hampton Inn
- Hardee's
- Harrison Motor Co
- Hess Trade Wilco
- Hobart Food Equipment
- Horizon RV
- Identity Ministries Church
- J & R Equipment
- J &J Trucking
- Jones Grill
- Kangaroo
- Ken's Grill
- KF Mart
- Kings BBQ & Chicken Restaurant
- Kinston Tire & Auto Service
- Kinstonian Family Buffet
- Kinston-Lenoir Co. Visitor Ctr.
- Knotts Warehouse
- La Azteca Torielleri
- Lidi

- LKQ
- Lloyd Moody
- Magnolia Cottage
- Mallard Gas
- Mallard Gas
- Mann's Automotive
- Maready Tire Co.
- Mary Lou's Grill
- McDonalds
- Mickey's Beach Bingo
- Mobile-Mini
- Monk's Furniture
- Monks Furniture Warehouse
- Mooring Group Inc.
- Mr. Tire Service Center
- Murphy Express
- NC Billiard's
- Neuse Sport Shop, Inc
- NYC Platters and Fuel
- Peace Boutique
- Pearson's
- Pee Wee's Self-Serve
- Pelicans Snowball
- Plumbing
- Pro 356 Electric
- Pure BP
- Quality Inn
- Red Apple Needle Craft
- Red Collar
- River Inn
- Roger's Audio & Body
- Rotary Dog Park
- Second Chance Thrift
- Shell Rapid Lube
- Simply Hair Salon

- Southeast Heating/AC
- Southland Flooring
- State Liquor Store
- Stor-All Mini Storage
- Subway
- Suddenlink
- Sunoco
- Super 8 Motel
- Suttons
- Sweet's Custom Shop
- Taco Bell
- Tarheel Preowned Autos
- Tattoo Aztec
- Texas Steakhouse
- The Alternative Shop
- The Barn Steakhouse
- The Dugout
- The Salon
- Thrift and Gift
- Tilghman's Garage
- Trinity United Methodist Ch.
- Two Amigo's Heating & Air
- Universal Leaf
- US Post Office
- Verizon Wireless
- Victorious Living Church
- Vintage Farm
- Vision Painting
- Wall to Wall Consignments
- Wallpaper Outlet
- Warehouse Storage
- Westview Monument Co.
- Woodmen of the World Lodge
- Wyse Fork Volunteer Fire

Business Relocations Alternate 1(Shallow Bypass)

- ABC Liquor Store
- Ag Carolina Farm Credit
- Aldridge Contractors
- Apperson's Auto Sales
- Auto Repair
- B J's Grill
- Baker Fence &Vinyl Siding
- Baron & Beef
- Blizzard's Mini Warehouse
- Bo Jangles
- Byrd's Restaurant
- Cannon Marketing Inc.
- Central Warehouse
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- CRI
- Crocker Solar Farm
- D & S Towing & Recovery
- Dillard Wallace Construction
- Eagle Homes Inc.
- Falling Creek Guns
- Falling Creek Service Center
- Forbes Mobile Home Supply
- Frank's Place
- Frozen Storage
- Good Times Country Music
- Goodman Concrete Co.

- Grace Baptist
- Grady Insurance
- H & H Warehouse
- Harper & Phillips
- Harrison Motor Co.
- Hasty Mart BP
- Herring Tanning & Auto Detail
- Hess Trade Wilco
- Hollands Super Circle
- Horizon RV
- J & R Equipment
- Ken's Grill
- KF Mart
- Lenoir Co. Schools Garage
- LKO Salvage
- Magnolia Cottage
- Mallard Gas
- Mann's Automotive
- Maready Tire Co.
- Mary Lou's Grill
- Men's Den
- Mini-Storage Facility
- Mobile-Mini
- Monk's Furniture
- Mooring Buildings
- Natures Touch Vintage Farm
- Pee Wee's Tavern
- Plumbing
- Sandpiper Seafood
- Serenity Family Groups
- SSY Statensburg LLC
- Sunspring American
- Sutton's
- Textbook Brokers

- Thrift and Gift
- Tilghman's Garage
- Trinity United Methodist Ch.
- Two Amigo's Heating and Air
- Victorious Living Church
- Vintage Farm
- Woodman of the World
- Wyse Fork Volunteer Fire

Business Relocations Alternate 11

- Ag Carolina Farm Credit
- Apperson's Auto Sales
- B J's Grill
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- Citgo-Lighthouse Food Mart
- Classic Care
- CRI
- Eagle Homes Inc.
- Falling Creek Guns
- Falling Creek Service Center
- Frank's Place
- Good Times Country Music
- Harrison Motor Co.
- Hasty Mart BP
- Horizon RV
- J&J Trucking
- Ken's Grill
- Kingdom Palace Grooming
- LKO Salvage
- Mallard Gas

- Maready Tire Co.
- Men's Den
- Mobile-Mini
- Monk's Furniture
- Mooring Buildings
- Sandpiper Seafood
- Southeastern Freight Lines
- Sutton's
- Tilghman's Garage
- Trinity United Methodist Ch.
- Venue
- Victorious Living Church
- Vintage Farm

Business Relocations Alternate 12

- ABC Store
- Ag Carolina Farm Credit
- Apperson's Auto Sales
- Auto Discount
- B J's Grill
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- Citgo-Lighthouse Food Mart
- Classic Care
- CRI
- Dillard Wallace Construction
- Eagle Homes Inc.
- Falling Creek Guns
- Falling Creek Service Center
- Frank's Place
- Good Times Country Music

- Harrison Motor Co.
- Hasty Mart BP
- Horizon RV
- J & R Equipment
- J&J Trucking
- Ken's Grill
- Kingdom Palace Grooming
- Magnolia Cottage
- Mallard Gas
- Maready Tire Co.
- Men's Den
- Mobile-Mini
- Monk's Furniture
- Mooring Buildings
- Sandpiper Seafood
- Southeastern Freight Lines
- Sutton's
- Tilgman's Garage
- Trinity United Methodist Ch.
- Two Amigo's Heating & Air
- Victorious Living Church
- Vintage Farm
- Wyse Fork Volunteer Fire

Business Relocations Alternate 31

- Ag Carolina Farm Credit
- Apperson's Auto Sales
- Auto Discount
- B J's Grill
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- Citgo-Lighthouse Food Mart
- Classic Care
- CRI
- Eagle Homes Inc.
- Frank's Place
- Good Times Country Music
- Hasty Mart BP
- Horizon RV
- J&J Trucking
- Ken's Grill
- Kingdom Palace Grooming
- LKO Salvage
- Men's Den
- Monks Furniture
- Mooring Buildings
- Plumbing
- Sandpiper Seafood
- Southwood Volunteer Fire Department
- Sutton's
- Tilgman's Garage
- Victorious Living Church
- Vintage Farm

Business Relocations Alternate 32

- ABC Liquor Store
- Ag Carolina Farm Credit
- Apperson's Auto Sales
- Auto Discount
- B J's Gril
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- Citgo-Lighthouse Food Mart
- Classic Care
- CRI
- Dillard Wallace Construction
- Eagle Homes Inc.
- Frank's Place
- Good Times Country Music
- Hasty Mart BP
- Horizon RV
- J & R Equipment
- J&J Trucking
- Ken's Grill
- Kennedy Home Church
- Kingdom Palace Grooming
- Magnolia Cottage
- Mallard Gas
- Men's Den
- Monk's Furniture
- Mooring Buildings
- Plumbing
- Sandpiper Seafood
- Southeastern Freight Lines
- Sutton's
- Tiglman's Garage
- Two Amigo's Heating & Air
- Victorious Living Church
- Vintage Farm
- Wyse Fork Volunteer Fire

Business Relocations Alternate 35

- ABC Liquor Store
- Ag Carolina Farm Credit
- Andrew's Logging
- Apperson's Auto Sales
- B J's Grill
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- CRI
- Dillard Wallace Construction
- Eagle Homes Inc.
- Frank's Place
- Good Times Country Music
- Hasty Mart BP
- Horizon RV
- J & R Equipment
- J&J Trucking
- Ken's Grill
- Magnolia Cottage
- Mallard Gas
- Men's Den
- Monk's Furniture
- Mooring Buildings
- Plumbing
- Sandpiper Seafood
- Southwood Volunteer Fire Department
- Sutton's
- Tilgman's Garage
- Two Amigo's Heating & Air
- Victorious Living Church

- Vintage Farm
- Wyse Fork Volunteer Fire

Business Relocations Alternate 36

- Ag Carolina Farm Credit
- Andrew's Logging
- Apperson's Auto Sales
- B J's Grill
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- CRI
- Eagle Homes Inc.
- Frank's Place
- Good Times Country Music
- Hasty Mart BP
- Horizon RV
- J&J Trucking
- Ken's Grill
- Men's Den
- Monk's Furniture
- Mooring Buildings
- Plumbing
- Sandpiper Seafood
- Southwood Volunteer Fire Dept
- Sutton's
- Tilghman's Garage
- Victorious Living Church
- Vintage Farm

Business Relocations Alternate 51

- AG Credit Union
- Apperson's
- B J's Grill
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- CRI
- Eagle Homes Inc.
- Frank's Place
- Good Times Country Music
- Hasty Mart BP
- Horizon RV
- J&J Trucking
- Ken's Grill
- Men's Den
- Monk's Furniture
- Mooring Group Inc
- Plumbing
- Sandpiper Seafood
- Sutton's
- Tilgman's Garage
- Victorious Living Church
- Vintage Farm

Business Relocations Alternate 52

- ABC Liquor Store
- Ag Carolina Farm Credit
- Apperson's Auto Sales
- B J's Grill
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- CRI
- Dillard Walbee Construction
- Eagle Homes Inc.
- Flea Market
- Frank's Place
- Fruit Stand
- Good Times Country Music
- Hasty Mart BP
- Horizon RV
- J & R Equipment
- J&J Trucking
- Ken's Grill
- Magnolia Cottage
- Mallard Gas
- Men's Den
- Monk's Furniture
- Mooring Buildings
- Plumbing
- Sandpiper Seafood
- Sutton's
- Tilgman's Garage
- Two Amigo's Heating & Air
- Victorious Living Church
- Wyse Fork Volunteer Fire

Business Relocations Alternate 63

- ABC Store
- Ag Carolina Farm Credit
- Apperson's Auto Sales
- Auto Discount
- B J's Grill
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- Citgo-Lighthouse Food Mart
- Classic Care
- CRI
- Dillard Wallace Construction
- Eagle Homes Inc.
- Frank's Place
- Hasty Mart BP
- Horizon RV
- J&J Trucking
- J&R Equipment
- Ken's Grill
- Kingdom Palace Grooming
- Magnolia's Cottage
- Mallard Gas
- Men's Den
- Monk's Furniture
- Mooring Group
- Good Times Country Music
- Plumbing
- Sandpiper Seafood
- Southeastern Freight Lines
- Tiglman's Garage
- Two Amigo's Heating and Air
- Sutton's
- Victorious Living Church
- Vintage Farm
- Wyse Fork Fire

Business Relocations Alternate 65

- Ag Carolina Farm Credit
- Apperson's Auto Sales
- Auto Discount
- B J's Grill
- Bo Jangles
- Chosen Vessel Ministries
- Chubby Nubbies Antiques
- Church of God-LaGrange
- Citgo-Lighthouse Food Mart
- Classic Care
- CRI
- Eagle Homes Inc.
- Frank's Place
- Hasty Mart BP
- Horizon RV
- J&J Trucking
- Ken's Grill
- Kingdom Palace Grooming
- Men's Den
- Monk's Furniture
- Mooring Group
- Good Times Country Music
- Plumbing
- Sandpiper Seafood
- Southeastern Freight Lines
- Sutton's
- Tiglman's Garage
- Victorious Living Church
- Vintage Farm

D-2 Cost Estimate

REQUEST FOR R/W COST ESTIMATE / RELOCATION EIS

COST ESTIMATE REQUEST ☒ **RELOCATION EIS REPORT** ☒

NEW REQUEST: ☐ **UPDATE REQUEST:** ☐ Update to ____ Estimate **REVISION REQUEST:** ☒ Revision to ____ Estimate Revision No.: ____

DATE RECEIVED: 07/26/17 **DATE ASSIGNED**: 07/26/17 **# of Alternates Requested**: 12

DATE DUE: 10/02/17-Revised 02/09/18-Revised 5/1/18-Revised 5/11/18

TIP No.: R-2553	DESCRIPTION: Kinston Bypass

WBS ELEMENT: 34460.1.2 **COUNTY**: Lenoir **DIV**: 2 **APPRAISAL OFFICE**: 1

REQUESTOR: Maria Rogerson **DEPT**: Div 2

TYPE OF PLANS: HEARING MAPS☐ | LOCATION MAP☐ | AERIAL☒ | VICINITY☐ | PRELIMINARY☒ | CONCEPTUAL☐

** Based on past project historical data, the land and damage figures have been adjusted to include condemnation and administrative increases that occur during settlement of all parcels.**

APPRAISER: Joe Martin - O.R. Colan **COMPLETED**: ____ **# of Alternates Completed**: ____

	Alt 1 Upgrade Existing		Alt 1 Upgrade Existing Shallow Bypass		Alt 11		Alt 12	
TYPE OF ACCESS:	NONE:☐	LIMITED: ☐	NONE: ☐	LIMITED: ☐	NONE: ☐	LIMITED: ☐	NONE: ☐	LIMITED: ☐
	PARTIAL:☐	FULL: ☒	PARTIAL:☐	FULL: ☒	PARTIAL: ☐	FULL: ☒	PARTIAL: ☐	FULL: ☒
ESTIMATED NO. OF PARCELS:	569		467		316		358	
RESIDENTIAL RELOCATEES:	128	$ 5,120,000	165	$ 6,600,000	99	$ 3,960,000	103	$ 4,118,400
BUSINESS RELOCATEES:	188	$ 9,675,000	115	$ 6,659,000	30	$ 2,800,000	35	$ 3,350,000
GRAVES:	414	$ 5,420,000	-	$ -	-	$ -	-	$ -
CHURCH / NON – PROFIT: ____	6	$ 300,000	4	$ 200,000	4	$ 200,000	4	$ 200,000
MISC: ____	16	$ 1,950,000	2	$ 3,100,000	2	$ 1,600,000	2	$ 1,600,000
SIGNS:	126	$ 4,525,000	56	$ 2,320,000	21	$ 880,000	34	$ 1,530,000
LAND, IMPROVEMENTS, & DAMAGES:	$ 150,610,850		$ 100,465,869		$ 65,886,507		$ 70,752,740	
ACQUISTION:	$ 5,690,000		$ 4,670,000		$ 3,160,000		$ 3,580,000	
TOTAL ESTIMATED R/W COST:	$ 183,290,850		$ 124,014,869		$ 78,486,507		$ 85,131,140	

CONTINUE PG. 2

CONTINUE from PG. 1

	Alt 31		Alt 32		Alt 35		Alt 36	
TIP: R-2553 COUNTY: Lenoir	NONE: ☐	LIMITED: ☐	NONE: ☐	LIMITED: ☐	NONE: ☐	LIMITED: ☐	NONE: ☐	LIMITED: ☐
TYPE OF ACCESS:	PARTIAL: ☐	FULL: ☒	PARTIAL: ☐	FULL: ☒	PARTIAL: ☐	FULL: ☒	PARTIAL: ☐	FULL: ☒
ESTIMATED NO. OF PARCELS:	285		310		358		348	
RESIDENTIAL RELOCATEES:	80	$ 3,200,000	95	$ 3,800,000	135	$ 5,405,000	118	$ 4,720,000
BUSINESS RELOCATEES:	27	$ 2,500,000	33	$ 3,225,000	28	$ 2,550,000	25	$ 2,196,000
GRAVES:	-	$ -	-	$ -	14	$ 140,000	14	$ 140,000
CHURCH / NON – PROFIT: _____	3	$ 150,000	3	$ 150,000	3	$ 150,000	3	$ 150,000
MISC: _____	1	$ 100,000	2	$ 1,600,000	1	$ 100,000	1	$ 100,000
SIGNS:	17	$ 755,000	29	$ 1,355,000	24	$ 1,300,000	12	$ 590,000
LAND, IMPROVEMENTS, & DAMAGES:	$ 53,945,984		$ 53,883,816		$ 52,466,140		$ 53,120,618	
ACQUISTION:	$ 2,850,000		$ 3,100,000		$ 3,580,000		$ 3,480,000	
TOTAL ESTIMATED R/W COST:	$ 63,500,984		$ 67,113,816		$ 65,691,140		$ 64,496,618	

	Alt 51		Alt 52		Alt 63		Alt 65	
TIP: R-2553 COUNTY: Lenoir	NONE: ☐	LIMITED: ☐	NONE: ☐	LIMITED: ☐	NONE: ☐	LIMITED: ☐	NONE: ☐	LIMITED: ☐
TYPE OF ACCESS:	PARTIAL: ☐	FULL: ☒	PARTIAL: ☐	FULL: ☒	PARTIAL: ☐	FULL: ☒	PARTIAL: ☐	FULL: ☒
ESTIMATED NO. OF PARCELS:	310		338		313		291	
RESIDENTIAL RELOCATEES:	108	$ 4,320,000	122	$ 4,880,000	100	$ 4,000,000	85	$ 3,400,000
BUSINESS RELOCATEES:	24	$ 2,250,000	29	$ 2,800,000	33	$ 3,225,000	28	$ 2,675,000
GRAVES:	-	$ -	-	$ -	-	$ -	-	$ -
CHURCH / NON – PROFIT: _____	3	$ 150,000	3	$ 150,000	3	$ 150,000	3	$ 150,000
MISC: _____	1	$ 100,000	3	$ 350,000	2	$ 1,600,000	2	$ 1,600,000
SIGNS:	14	$ 650,000	26	$ 1,250,000	27	$ 1,300,000	15	$ 620,000
LAND, IMPROVEMENTS, & DAMAGES:	$ 44,429,036		$ 44,930,043		$ 50,689,740		$ 50,029,977	
ACQUISTION:	$ 3,100,000		$ 3,380,000		$ 3,130,000		$ 2,910,000	
TOTAL ESTIMATED R/W COST:	$ 54,999,036		$ 57,740,043		$ 64,094,740		$ 61,384,977	

NOTES: * *A conceptual design for a new solar farm is being provided with this report that will impact Alternatives 31, 32, 63 & 65. A letter of Zoning Approval was issued on 6-15-17 for this site. Letter was issued by Wayland Humphries with Lenoir County. The site is approximate 250 acres and will have a major impact to the cost of the estimate and is not reflected on the costs submitted by ORC.*

APPENDIX E: AGENCY

Contents
E-1 Correspondence between SHPO and NCDOT
E-2 MEMORANDUM: Historic Architecture Eligibility Evaluation Report, US 70 Kinston Bypass, R-2553, Lenoir County, ER 09-1307
E-3 Concurrence Form for Assessment of Effects Letter
E-4 USACE Start of Study Response Letter

E-1 Correspondence between SHPO and NCDOT

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

June 22, 2009

MEMORANDUM

TO: Greg Thorpe, Ph.D., Director
Project Development & Environmental Analysis Branch
NCDOT Division of Highways

FROM: Peter Sandbeck for Peter Sandbeck

SUBJECT: US 70 Kinston Bypass, WBS 34460, R-2553, Lenoir County, ER 09-1307

Thank you for your memorandum of May 28, 2009, concerning the above project.

There are more than seventy properties within the study area that are listed in the National Register of Historic Places, determined eligible for listing, on the State Study List, or locally designated. In addition there are hundreds of properties that have been identified as having historical or architectural interest as a result of a 1993 county-wide architectural survey.

More than 360 archaeological sites have been recorded within the study area. By topographic map, Kinston has the most, at 186; with Falling Creek next, at 89. Concentrated in the northwestern section of the study area, the majority of these sites were recorded in connection with the Global Transpark. Most of them were evaluated as not eligible for the National Register of Historic Places. Areas associated with the first Battle of Kinston (1862) are situated to the immediate southwest of Kinston. The southern, eastern, and southeastern portions of the study area have seen little archaeological survey.

Despite this omission, the south/southeastern portion of the study area includes the entire footprint of the 4,069-acre National Register-eligible Wyse Fork 1865 Battlefield. Proposed as a district, the area will be presented to the National Register Advisory Committee in October 2009, with listing anticipated soon after. Eight contributing elements fall within the District and includes the purported location of a mass burial associated with the battle.

While we note that this project review is only for a state action or permit, the potential for federal permits may require further consultation with us and compliance with Section 106 of the National Historic Preservation Act.

We recommend a comprehensive archaeological survey of the selected alternate to identify any sites that may be affected by the proposed project. Further, on selection of an alternate, effects to the Wyse Fork 1865 Battlefield District should be assessed. If affected, consultation with the Office of State Archaeology will be needed to develop appropriate mitigation plans.

Two copies of the resulting archaeological survey report, as well as one copy of the appropriate site forms, should be forwarded to us for review and comment as soon as they are available and well in advance of any construction activities.

It is our understanding that our agencies are working together to develop an up to date GIS database for this project, pending the necessary funding, and that additional survey work will be undertaken as part of that effort.

We appreciate our early inclusion in discussions for this project, and look forward to continuing to work with you.

These comments are made in accord with G.S. 121-12(a) and Executive Order XVI. If you have questions regarding them, please contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Mark Pierce, NCDOT
Matt Wilkerson, NCDOT
Mary Pope Furr, NCDOT
Scott McClendon, ACOE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

May 12, 2015

Ramona Bartos
Administrator, State Historic Preservation Office
Deputy State Historic Preservation Officer
4617 Mail Service Center
Raleigh, NC 27699-4617

Re: Final – Revised, Terrestrial Archaeological Resources Predictive Model for Administrative Action, State Environmental Impact Statement, Kinston Bypass, Lenoir, Jones, and Craven Counties, North Carolina, TIP No. R-2553, WBS No. 34460.1.2, ER 09-1307.

Ms. Bartos,

Enclosed please find two (2) copies of the revised terrestrial archaeological resources predictive model report prepared as part of the R-2553 Kinston Bypass project. In 2008, the North Carolina Interagency Leadership Team (ILT) established the Kinston Bypass project as a GIS pilot project as a means to streamline the project development process by utilizing GIS data for alternative development, alternative evaluation, and selection of the Least Environmentally Damaging Practicable Alternative (LEDPA). The information and data generated as a result of the predictive model analysis will be used in the completion of any archaeological investigations conducted once the Preferred Alternative has been chosen for the overall project.

Thank you for your assistance in this matter. Should you have any questions concerning this project, please contact me at (919) 707-6089 or Mr. Paul J. Mohler, NCDOT Archaeologist, at (919) 707-6080.

Regards,

Matt Wilkerson
Archaeology Supervisor
Human Environment Section

MTW/pjm

Enclosures (2 copies of final report)

cc: Bob Deaton, PDEA
Paul J. Mohler, Archaeology

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PDEA – HUMAN ENVIRONMENT SECTION
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6000
FAX: 919-212-5785
WEBSITE:
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/ENVIRONMENTAL/PAGES/DEFAULT.ASPX

LOCATION:
CENTURY CENTER, BUILDING B
1000 BIRCH RIDGE DRIVE
RALEIGH NC 27610

North Carolina Department of Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

June 18, 2015

MEMORANDUM

TO: Matt Wilkerson
Office of Human Environment
NCDOT Division of Highways

FROM: Ramona M. Bartos RSE for Ramona M. Bartos

SUBJECT: Final – Revised, Terrestrial Archaeological Resources Predictive Model for Administrative Action, State Environmental Impact Statement, Kinston Bypass, R-2553, WBS No. 34460.1.2, Lenoir, Jones and Craven Counties, ER 09-1307

Thank you for your letter of May 14, 2015 transferring the revised report to our office. We have reviewed the report for the project referenced above and offer the following comments.

The report presents the final version of a terrestrial predictive model for the Kinston Bypass, R-2553. We agree with the selection of the variables used in this model. We concur that the model appears useful in terms of determining high and low probability areas within the overall Kinston Bypass project area. We recommend the implementation of this model in the completion of any archaeological investigations conducted once the preferred alternative has been chosen.

The report meets our office's guidelines and those of the Secretary of the Interior. The present version of this document will serve well as a basic guide to assess the impacts of this project on archaeological resources. Please keep us informed of any revisions to this predictive model.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comments, please contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

Location: 109 East Jones Street, Raleigh NC 27601 **Mailing Address**: 4617 Mail Service Center, Raleigh NC 27699-4617 **Telephone/Fax**: (919) 807-6570/807-6599

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

October 24, 2017

Ramona Bartos
Administrator, State Historic Preservation Office
Deputy State Historic Preservation Officer
4617 Mail Service Center
Raleigh, NC 27699-4617

Re: Revised - Terrestrial Archaeological Resources Predictive Model for Administrative Action, State Environmental Impact Statement, Kinston Bypass, Lenoir, Jones, and Craven Counties, North Carolina, TIP No. R-2553, WBS No. 34460.1.2, ER 09-1307.

Ms. Bartos,

Enclosed please find two (2) copies of the latest revised terrestrial archaeological resources predictive model report prepared as part of the R-2553 Kinston Bypass project. In 2008, the North Carolina Interagency Leadership Team (ILT) established the Kinston Bypass project as a GIS pilot project as a means to streamline the project development process by utilizing GIS data for alternative development, alternative evaluation, and selection of the Least Environmentally Damaging Practicable Alternative (LEDPA). The information and data generated as a result of the predictive model analysis will be used in the completion of any archaeological investigations conducted once the Preferred Alternative has been chosen for the overall project.

Thank you for your assistance in this matter. Should you have any questions concerning this project, please contact me at (919) 707-6089 or Mr. Paul J. Mohler, NCDOT Archaeologist, at (919) 707-6080.

Regards,

Matt Wilkerson
Archaeology Supervisor
Environmental Analysis Unit

MTW/pjm

Enclosures (2 copies of final report)

cc: Paul J. Mohler, Archaeology
Maria Rogerson, DOT Division 2

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
HUMAN ENVIRONMENT SECTION
1598 MAIL SERVICE CENTER
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Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
NCDOT CENTURY CENTER
BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

From: Wilkerson, Matt T
To: Jorgenson, Matt; Mohler, Paul J
Cc: Wilmot, Kory
Subject: RE: [External] R-2553 Kinston Bypass Archaeology Predictive Model October 2017 Update
Date: Thursday, November 30, 2017 9:40:15 AM
Attachments: image004.png
image001.png

Hi Matt,

We do not anticipate receiving comments on the updated model although the HPO ER notes will reflect the receipt of the revised information.

Regards,

Matthew Wilkerson
Archaeology Group Leader
Environmental Analysis Unit
N.C. Department of Transportation

919 707 6089 office
919 212 5785 fax
mtwilkerson@ncdot.gov

1020 Birch Ridge Drive
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

From: Jorgenson, Matt [mailto:matt.jorgenson@aecom.com]
Sent: Thursday, November 30, 2017 9:38 AM
To: Mohler, Paul J
Cc: Wilkerson, Matt T; Wilmot, Kory
Subject: RE: [External] R-2553 Kinston Bypass Archaeology Predictive Model October 2017 Update

Good morning, Paul.

Did NCDOT ever receive comments on the updated predictive model report from SHPO? We are updating our tracking/records and realized we haven't heard anything back on this.

IIRC I got the hardcopies to you like Oct 23ish? So maybe the standard 30-day period hasn't quite passed based on when exactly you submitted it to SHPO?

(please note my new cell phone number below and update your stored contact information with it)

_____

Matthew Jorgenson, M.A., RPA
Senior Archaeologist, Planning Department
Direct (919)-854-6225
****NEW MOBILE #: (724) 971-1569 ****
matt.jorgenson@aecom.com

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701 Corporate Center Drive
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aecom.com

From: Mohler, Paul J [mailto:pjmohler@ncdot.gov]
Sent: Tuesday, October 17, 2017 2:56 PM
To: Jorgenson, Matt; Cassedy, Daniel
Cc: Wilkerson, Matt T; Wilmot, Kory
Subject: RE: [External] R-2553 Kinston Bypass Archaeology Predictive Model October 2017 Update

Matt et al.,
This should be sufficient. Thanks for including the additional clarification. Please proceed with the hard copies.
Thanks,
Paul

From: Jorgenson, Matt [mailto:matt.jorgenson@aecom.com]
Sent: Tuesday, October 17, 2017 2:05 PM
To: Mohler, Paul J; Cassedy, Daniel
Cc: Wilkerson, Matt T; Wilmot, Kory
Subject: RE: [External] R-2553 Kinston Bypass Archaeology Predictive Model October 2017 Update

E-2 MEMORANDUM: Historic Architecture Eligibility Evaluation Report, US 70 Kinston Bypass, R-2553, Lenoir County, ER 09-1307

North Carolina Department of Natural and Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Roy Cooper
Secretary Susi H. Hamilton

Office of Archives and History
Deputy Secretary Kevin Cherry

October 27, 2017

MEMORANDUM

To: Mary Pope Furr, Senior Architectural Historian mfurr@ncdot.gov
NCDOT/PDEA/HES

From: Renee Gledhill-Earley
Environmental Review Coordinator

Subject: Historic Architecture Eligibility Evaluation Report, US 70 Kinston Bypass, R-2553, Lenoir County, ER 09-1307

Thank you for your September 28, 2017, submittal of the Historic Architecture Eligibility Evaluation Report, prepared by AECOM Technical Services for the above-referenced undertaking.

This report presents the results of the evaluation of the National Register of Historic Places (NRHP) eligibility for twenty-six architectural resources located within the project's Area of Potential Effects (APE); a re-evaluation of the integrity of seven historic architectural resources listed in the NRHP or determined eligible for listing in the NRHP; and a re-evaluation of the National Register-listed Wyse Fork Battlefield. We have reviewed the submittal and offer the following comments.

The following properties, previously listed in the NRHP or determined eligible for listing continue to retain sufficient historic integrity. The existing or recommended boundaries are appropriate:

- **James A. and Laura McDaniel House/Maxwood** (LR 0927): Determined eligible under Criterion C in 1998. Property has not been altered and retains historic integrity. We concur with the recommended determination and boundary.

- **Dr. James M. Parrott House** (LR 0703): Determined eligible in 1998. The report indicates that the property was determined eligible under Criteria A and C. While we concur with its potential eligibility under Criterion C, the information provided appears to support eligibility under Criterion B. Please check to be sure that Criterion B was not the intended recommendation. If Criterion B is being proposed, as this was used as a summer cottage, please provide information as to the existence and eligibility of other houses or buildings associated with Dr. Parrott's productive life. The property has changed little since 1998 and retains historic integrity. We concur with the recommended boundary.

- **Kennedy Memorial Home Historic District** (LR 1189): Listed under Criterion A in 2009. Property has not changed in any appreciable fashion since it was listed and retains historic integrity. The existing National Register boundary is appropriate.

- **Cedar Dell/Kennedy Memorial Home** (LR 0001): Listed under Criterion C in 1971. The property has not changed since it was listed and retains historic integrity. Existing seven-acre National Register boundary is appropriate and is now subsumed within the National Register boundary of the Kennedy Memorial Home Historic District.

- **Henry Loftin Herring Farm** (LR 0700): Determined eligible under Criteria A and C in 1998. The property has not notably changed since 1998 and retains historic integrity. We concur with the recommended determination and boundary.

- **Dempsey Wood House/James Wood House** (LR 0008): Listed under Criterion C in 1971. Despite the addition of vinyl siding, the house retains sufficient historic integrity to remain listed. The existing National Register boundary is appropriate.

- **Jesse Jackson House** (LR 0005): Listed under Criterion D in 1971. The property has changed little since it was listed and retains historic integrity. The existing National Register boundary is appropriate.

- **Wyse Fork Battlefield** (JN 0306): Listed under Criteria A and D in 2017. The property has not changed in any appreciable fashion since it was listed and retains historic integrity. The existing National Register boundary is appropriate.

The following properties are individually eligible for listing in the NRHP:

- **Sandy Bottom Primitive Baptist Church/Croom Meeting House** (LR 1040): Placed on the HPO Study List in 1994. The building retains a high degree of historic integrity and appears to be eligible under Criterion A in the areas of social history and religion, and under Criterion C as an excellent intact example of an antebellum meeting house/church. We concur with the recommended determination and boundary.

- **Kelly's Millpond Site [Mill Building]** (LR 1203): Determined eligible in 1990 and listed as a contributing property in the National Register-listed Wyse Fork Battlefield. The mill building has all but collapsed, leaving only a few members of the structural flooring system, timber supports, and mill foundation. The mill race and dam remain intact. Due to its ruinous condition, the mill building is no longer eligible under Criteria A, B, and C. Given that portions of the mill foundation, mill race, and dam remain intact, the mill site appears to be eligible under Criterion D for its information potential relating to mill technology. We recommend a site boundary consistent with the listed archaeological millpond site.

- **Cobb-King-Humphrey House** (LR 1197): Contributing property in the National Register-listed Wyse Fork Battlefield and referred to in the nomination as the Jackson/Cobb/Tolles House. The house retains a high degree of historic integrity and is eligible under Criterion A for its documented association with the Battle of Wyse Fork, and under Criterion C as a notable and intact representative example of Federal-style architecture in Lenoir County. Numerous nineteenth and twentieth-century outbuildings, a circa 1920 store, and an early/mid twentieth century one-story house remain on the property. While we concur with the recommended eligibility determination, the recommended southern boundary extends only to

the NCDOT right-of-way on the north side of US 70. Given the proximity of the house and store building to US 70, we recommend that the southern boundary extend to the edge of existing US 70 pavement. We concur with the recommended northern, eastern, and western boundaries as proposed.

- **Kelly's Pond Lookout Tower Complex** (LR 1550): The lookout tower retains a high degree of historic integrity and appears to be eligible under Criterion A for the role it played in conservation efforts and its association with the CCC, and under Criterion C as an excellent intact example of a mid-twentieth-century fire tower, towerman's house, and workshop complex. We concur with the recommended determination and boundary.

- **Elijah Loftin House** (LR 1195): Placed on the HPO Study List in 1994. The building retains a high degree of historic integrity and appears to be eligible under Criterion C as a notable intact example of a large late nineteenth/early-twentieth-century, T/L-plan farm house that represents a continued evolution of design. The house retains an unusually large number of contemporary outbuildings related to domestic activities and the production of food. We concur with the recommended determination and boundary.

The following properties are not individually eligible for listing in the NRHP, but do contribute to the Wyse Fork Battlefield (JN 0306):

- **Robert Bond Vause House** (LR 1186): Contributing property in the National Register-listed Wyse Fork Battlefield. We concur that due to deterioration and modern siding, the house is not individually eligible for listing in the NRHP under Criterion C.

- **Wooten-Whaley House/John Council Wooten House** (LR 1185): Placed on the HPO Study List in 1994. Contributing property in the National Register-listed Wyse Fork Battlefield. We concur that due to modern alterations including the application of aluminum siding, replacement windows and doors, and removal of the chimney stacks, the house is not eligible for listing in the NRHP under Criterion C.

The following properties are not eligible for listing in the NRHP due to the loss of integrity, nature of the property type, and/or significance:

- **Nathan George Sutton House** (LR 0956): We concur that due to the loss of the two-tier porch, large rear addition, and first-floor interior alterations the building has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The house also does not meet Criterion A, B, or D.

- **Banks Chapel Missionary Baptist Church** (LR 0914): We concur that due to the addition of a vestibule, steeple, rear wings, and the application of vinyl siding the building has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The church also does not meet Criterion A, B, D, or Criteria Consideration A.

- **Warters-Parrott-Coleman Farm** (LR 0967): We concur that due to the cumulative effect of interior and exterior alterations to the house, alterations to some outbuildings, and the loss of outbuildings (including a tenant house) the property has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The property also does not meet Criterion A, B, or D.

- **Trinity United Methodist Church** (LR 0702): We concur that due to the large additions, window replacement, brick veneer, and other alterations the church has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The church also does not meet Criterion A, B, D, or Criteria Consideration A. Please note that the Historic Property Survey Summary Form and database entry for the property indicate that the church is a contributing building in the Sandy Bottom Historic District. As this is not the case, please revise the form and database accordingly.

- **Moss Hill School** (former) (LR 1146): We concur that due to the relocation of the building, later additions, changes in fenestration, window replacement, application of vinyl siding, and changes to the floor plan the school has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The school also does not meet Criterion A, B, D or Criteria Consideration B.

- **Danny Shepherd House** (LR 1035): We concur that due to major alterations and additions, changes in fenestration, window replacement, application of vinyl siding, and alteration of outbuildings the house has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The house also does not meet Criterion A, B, or D.

- **Sandy Bottom Historic District** (LR 1039): We concur that the district is not eligible under Criteria A, B, and D. The district is recommended as being eligible for listing under Criterion C for its architecture. As described on page 95 the district consists of twenty resources, sixteen being contributing and four being non-contributing. The list of resources in the district indicates that fifteen are contributing and five are non-contributing. We believe that five additional resources are non-contributing, *viz*: the Taylor House due to the addition, modern siding, and window replacement. We also question the date of the half-shoulder chimneys; the Bessie Croom Stroud Store due to the large addition and change in roof slope that has altered the form of the building; the Sandy Bottom Baptist Church due to later additions, window replacement, and the application of vinyl siding; Webb Chapel United Methodist Church due to later additions, enlargement of the window openings, brick veneer, and the replacement of the front doors; and Ideal Glass and Mirror due to the change in the façade fenestration, modern glass doors, and the addition of brick veneer resulting in a significant change in appearance to the storefront. We also believe that the late twentieth century fellowship hall buildings at Sandy Bottom Baptist Church and Webb Chapel United Methodist Church should be both counted as individual non-contributing resources. This would result in a district of twenty-two total resources of which twelve would be non-contributing. Therefore, we believe that the collection of buildings does not retain enough integrity to warrant listing under Criterion C.

- **Sandy Bottom Baptist Church** (LR 1037): We concur that due to later additions, window replacement, and the application of vinyl siding the church has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The church also does not meet Criterion A, B, D, or Criteria Consideration A.

- **Webb Chapel United Methodist Church** (LR 1038): We concur that due to later additions, enlargement of the window openings, brick veneer, and the replacement of the front doors the church has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The church also does not meet Criterion A, B, D, or Criteria Consideration A. The associated **Joseph R. Croom Cemetery** does not have the level of significance to meet Criterion A, B, C, D or Criteria Consideration D. The cemetery does not appear to contain the graves of persons

of transcendent importance, is not of great age, does not exhibit distinctive design features, and is not associated with important historic events.

- **Woodington Elementary/Middle School** (LR 1544): We concur that due to modern additions, reduction of the historic window opening size, and replacement of the windows the school has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The school also does not meet Criterion A, B, or D.

- **Harper House** (LR 1545): We concur that the house is a common house type with the form and finishes altered through time and thus has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The house also does not meet Criterion A, B, or D.

- **Simpson Waller House** (LR 1213): Placed on the HPO Study List in 1994. We concur that due to the enclosure of the porch, replacement of porch elements, application of vinyl siding, replacement of windows, removal of the chimney stacks, interior alterations, and the loss of some outbuildings the house has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The house also does not meet Criterion A, B, or D.

- **Rouse-Capps House** (LR 0923): We concur that due to a large modern rear addition and the replacement of windows the house has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The house also does not meet Criterion A, B, or D.

- **C.S.S Neuse/ Governor Richard Caswell Memorial Visitors Center** (LR 0076): We concur that a modern rear addition and the replacement of windows has impacted the visitor's center's historic integrity. When compared with other institutional buildings the visitors center does not appear to be architecturally significant and is not eligible for listing in the NRHP under Criterion C. The visitors center also does not meet Criterion A, B, or D. As the building was constructed as a museum/visitor's center and not a monument it is not eligible under Criteria Consideration F. The **Caswell Cemetery** does not meet Criterion A, B, C, or D or Criteria Consideration D. ntil proven otherwise, the cemetery does not appear to contain the graves of persons of transcendent importance. It is not of great age, does not exhibit distinctive design features, and is not associated with important historic events. Please note that the C.S.S Neuse Shed is noted in the report as being constructed in both the 1960s and 1970s. Please revise to reflect correct date of construction.

- **Wilmouth Taylor Sutton House** (LR 1548): We concur that due to modern additions, the enlargement of window openings, replacement of doors and windows, and the application of vinyl siding the house has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The house also does not meet Criterion A, B, or D. The outbuildings do not constitute a significant historic collection of resources without an associated intact dwelling.

- **Moseley-Stroud House** (LR 0857): Placed on the HPO Study List in 1994. We concur that due to modern alterations and severe deterioration the house has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The house also does not meet Criterion A, B, or D.

- **Beautiful Valley Free Will Baptist Church** (JN 0102): We concur that due to modern additions, brick veneer, replacement of windows and doors, and modern interior finishes the church has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The church also does not meet Criterion A, B, D, or Criteria Consideration A.

- **Kings Chapel Church of Christ/Disciples of Christ** (LR 1194): We concur that due to the rear addition, brick veneer, and modern entry the church has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The church also does not meet Criterion A, B, D, or Criteria Consideration A.

- **Dover Teacherage** (CV 1410): We concur that due to a rear addition, the replacement of the windows and porch columns, the application of vinyl siding, and changes to the interior floor plan the teacherage has lost historic integrity and is not eligible for listing in the NRHP under Criterion C. The teacherage also does not meet Criterion A, B, or D. As a vestige of a school complex, the **Dover School Vocational Agricultural Building** does not meet Criterion A, B, C, or D.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR part 800.

Thank you for your cooperation and consideration. If you have any questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/807-6579.

E-3 Concurrence Form for Assessment of Effects Letter

TIP#: **R-2553** ***Counties:*** **Lenoir, Jones, and Craven**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Kinston Bypass -- All alternatives designed to be 4-lane facility with 12' lanes, 46' median, and 12' paved shoulders. Service roads with 12' lanes and 4' shoulders will be included, where needed.

On *November 28, 2017,* representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [x] US Army Corps of Engineers (USACE)
- [x] North Carolina State Historic Preservation Office (HPO)
- [ ] Other

Reviewed the subject project and agreed on the effects findings listed within the table on the reverse of this signature page.

Signed:

Mary Pope Furr 1/30/2018

Representative, NCDOT Date

STEFFENS.THOMAS.ANCRUM.1284706273

Digitally signed by STEFFENS.THOMAS.ANCRUM.1284706273
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=STEFFENS.THOMAS.ANCRUM.1284706273
Date: 2018.02.05 14:41:27 -05'00'

Representative, USACE Date

Renee Gledhill-Earley 1.30.18

Representative, HPO Date

Wyse Fork Battlefield (JN 0306) -- NR, Criteria A&D

Alternative	Effects Assessment
1UE	ADVERSE EFFECT- impacts to 207.4 acres in district, impacts to archaeological features along existing US 70, impacts to Cobb King Humphrey House. Requires ROW from historic district.
1SB	ADVERSE EFFECT- impacts to 266.9 acres in district, impacts to archaeological features along existing US 70, impacts to Cobb King Humphrey House. Requires ROW from historic district.
11	No Effect – no construction in district boundaries
12	ADVERSE EFFECT- impacts to 141.9 acres in district , impacts to archaeological features
31	No Effect – no construction in district boundaries
32	ADVERSE EFFECT- impacts to 141.9 acres in district , impacts to archaeological features
35	ADVERSE EFFECT- impacts to 94.2 acres in district , impacts to archaeological features (closest alternative to potential mass grave site)
36	No Effect – no construction in district boundaries
51	No Effect – no construction in district boundaries
52	ADVERSE EFFECT- impacts to 141.9 acres in district , impacts to archaeological features
63	ADVERSE EFFECT- impacts to 141.9 acres in district , impacts to archaeological features
65	No Effect – no construction in district boundaries

Kelly's Millpond Site (LR 1203) – DE individual, Criterion D, contributes to (JN0306)

Alternative	Effects Assessment
1UE	No Adverse Effect with environmental commitments –adjacent to replacement bridges and 27' from boundary to new ROW but no ROW required from historic property. If construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible
1SB	No Adverse Effect with environmental commitments –adjacent to replacement bridges and 27' from boundary to new ROW but no ROW required from historic property. If construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible
11	No Effect -- no construction in historic property's boundaries
12	No Effect – no construction in vicinity of site
31	No Effect -- no construction in historic property's boundaries
32	No Effect – no construction in vicinity of site
35	No Effect – no construction in vicinity of site
36	No Effect -- no construction in historic property's boundaries
51	No Effect -- no construction in historic property's boundaries
52	No Effect – no construction in vicinity of site
63	No Effect – no construction in vicinity of site
65	No Effect -- no construction in historic property's boundaries

Cobb-King-Humphrey House (LR 1197) – DE individual, Criteria A&C, contributes to (JN0306)

Alternative	Effects Assessment
1UE	ADVERSE EFFECT- impacts to 4.9 acres. Requires ROW from historic boundary and removal of contributing structures
1SB	ADVERSE EFFECT- impacts to 4.9 acres. Requires ROW from historic boundary and removal of contributing structures
11	No Effect -- no construction in historic property's boundaries
12	No Effect – no construction in vicinity of site
31	No Effect -- no construction in historic property's boundaries
32	No Effect – no construction in vicinity of site
35	No Effect – no construction in vicinity of site
36	No Effect -- no construction in historic property's boundaries
51	No Effect -- no construction in historic property's boundaries
52	No Effect – no construction in vicinity of site
63	No Effect – no construction in vicinity of site
65	No Effect -- no construction in historic property's boundaries

Kelly's Pond Lookout Tower Complex (LR 1550) – DE individual, Criteria A&C, contributes to (JN0306)

Alternative	Effects Assessment
1UE	No Adverse Effect with environmental commitments –1,353' from tower to new ROW and no ROW required from historic property. If construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible
1SB	No Adverse Effect with environmental commitments –1,353' from tower to new ROW and no ROW required from historic property. If f construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible
11	No Effect -- no construction in historic property's boundaries
12	No Effect – no construction in vicinity of site
31	No Effect -- no construction in historic property's boundaries
32	No Effect – no construction in vicinity of site
35	No Effect – no construction in vicinity of site
36	No Effect -- no construction in historic property's boundaries
51	No Effect -- no construction in historic property's boundaries
52	No Effect – no construction in vicinity of site
63	No Effect – no construction in vicinity of site
65	No Effect -- no construction in historic property's boundaries

Robert Bond Vause House (LR 1186) -- contributes to (JN0306)

Alternative	Effects Assessment
1UE	No Effect – no construction in vicinity of site
1SB	No Effect – no construction in vicinity of site
11	No Effect – no construction in vicinity of site
12	No Adverse Effect –1,068' from dwelling to new ROW and no ROW required from historic property. Access to the site will change. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district
31	No Effect – no construction in vicinity of site
32	No Adverse Effect –1,068' from dwelling to new ROW and no ROW required from historic property. Access to the site will change. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district
35	No Effect –1,678' from dwelling to new ROW and no ROW required from historic property. It will not impact the characteristics for which the property is a contributing resource within the historic district
36	No Effect – no construction in vicinity of site
51	No Effect – no construction in vicinity of site
52	No Adverse Effect –1,068' from dwelling to new ROW and no ROW required from historic property. Access to the site will change. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district
63	No Adverse Effect –1,068' from dwelling to new ROW and no ROW required from historic property. Access to the site will change. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district
65	No Effect – no construction in vicinity of site

Wooten-Whaley House/John Council Wooten House (LR 1185) -- contributes to (JN0306)

Alternative	Effects Assessment
1UE	No Effect – no construction in vicinity of site
1SB	No Effect – no construction in vicinity of site
11	No Adverse Effect –1,021' from dwelling to new ROW and no ROW required from historic property. Access to the site will change. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district
12	No Adverse Effect –398' from dwelling to new ROW but no ROW required from historic property. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district
31	No Adverse Effect –1,021' from dwelling to new ROW and no ROW required from historic property. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district
32	No Effect – no construction in vicinity of site
35	No Effect – no construction in vicinity of site
36	No Effect – no construction in vicinity of site
51	No Adverse Effect –1,021' from dwelling to new ROW and no ROW required from historic property. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district
52	No Adverse Effect –398' from dwelling to new ROW but no ROW required from historic property. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district
63	No Adverse Effect –398' from dwelling to new ROW but no ROW required from historic property. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district

65	No Adverse Effect –1,021' from dwelling to new ROW and no ROW required from historic property. If construction staging areas not allowed adjacent to the dwelling it will not impact the characteristics for which the property is a contributing resource within the historic district

Dempsey Wood House/James Wood House (LR 0008) – NR, Criteria A&C

Alternative	Effects Assessment
1UE	No Effect – no construction in vicinity of site
1SB	No Effect – no construction in vicinity of site
11	No Effect – no construction in vicinity of site
12	No Effect – no construction in vicinity of site
31	No Effect – no construction in vicinity of site
32	No Effect – no construction in vicinity of site
35	No Adverse Effect but reasonably foreseeable indirect and cumulative effects –578' from dwelling to new ROW and no ROW required from historic property. If construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible, but HPO would like to review future driveway permits and proposed improvements to Kennedy Home Road in vicinity of historic property
36	No Adverse Effect but reasonably foreseeable indirect and cumulative effects –578' from dwelling to new ROW and no ROW required from historic property. If construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible, but HPO would like to review future driveway permits and proposed improvements to Kennedy Home Road in vicinity of historic property
51	No Effect – no construction in vicinity of site
52	No Effect – no construction in vicinity of site
63	No Effect – no construction in vicinity of site
65	No Effect – no construction in vicinity of site

Sandy Bottom Primitive Baptist Church /Croom Meeting House (LR 1040) – DE, Criteria A&C

Alternative	Effects Assessment
1UE	No Effect – no construction in vicinity of site
1SB	No Effect – no construction in vicinity of site
11	No Effect – no construction in vicinity of site
12	No Effect – no construction in vicinity of site
31	No Effect – no construction in vicinity of site
32	No Effect – no construction in vicinity of site
35	ADVERSE EFFECT -- reasonably foreseeable indirect and cumulative effects –3' from meeting house to new ROW but no ROW required from historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to Highway 55 in vicinity of historic property
36	ADVERSE EFFECT -- reasonably foreseeable indirect and cumulative effects –3' from meeting house to new ROW but no ROW required from historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to Highway 55 in vicinity of historic property
51	No Effect – no construction in vicinity of site
52	No Effect – no construction in vicinity of site
63	No Effect – no construction in vicinity of site
65	No Effect – no construction in vicinity of site

James A. & Laura McDaniel House/Maxwood (LR 0927) – DE, Criterion C

Alternative	Effects Assessment
1UE	No Effect – no construction in vicinity of site
1SB	No Effect – no construction in vicinity of site
11	No Effect – no construction in vicinity of site
12	No Effect – no construction in vicinity of site
31	ADVERSE EFFECT- impacts to 4.7 acres. Requires ROW from historic boundary and removal of contributing structures
32	ADVERSE EFFECT- impacts to 4.7 acres. Requires ROW from historic boundary and removal of contributing structures
35	No Effect – no construction in vicinity of site
36	No Effect – no construction in vicinity of site
51	No Effect – no construction in vicinity of site
52	No Effect – no construction in vicinity of site
63	No Adverse Effect but reasonably foreseeable indirect and cumulative effects –551' from dwelling to new ROW and no ROW required from historic property. If construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible, but HPO would like to review future driveway permits and proposed improvements to Kennedy Home Road in vicinity of historic property
65	No Adverse Effect but reasonably foreseeable indirect and cumulative effects –551' from dwelling to new ROW and no ROW required from historic property. If construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible, but HPO would like to review future driveway permits and proposed improvements to Kennedy Home Road in vicinity of historic property

Kennedy Memorial Home Historic District, including. Cedar Dell (LR 1189 and LR 0001), -- NR, Criterion A&C

Alternative	Effects Assessment
1UE	No Effect – no construction in vicinity of site
1SB	No Effect – no construction in vicinity of site
11	No Adverse Effect – impacts to 18.1 acres on eastern edge of property where there is a plan to construct a solar farm. If construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible
12	No Adverse Effect – impacts to 18.1 acres on eastern edge of property where there is a plan to construct a solar farm. If construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible
31	ADVERSE EFFECT- impacts to 55.8 acres. Requires ROW from historic boundary and bisects structures from contributing landscape, new roadway directly adjacent to campus buildings
32	ADVERSE EFFECT- impacts to 55.8 acres. Requires ROW from historic boundary and bisects structures from contributing landscape, new roadway directly adjacent to campus buildings
35	No Effect – no construction in vicinity of site
36	No Effect – no construction in vicinity of site
51	No Effect – no construction in vicinity of site
52	No Effect – no construction in vicinity of site
63	ADVERSE EFFECT- impacts to 109.9 acres. Requires ROW from historic boundary and two new roadways intersect in lower half of contributing landscape
65	ADVERSE EFFECT- impacts to 109.9 acres. Requires ROW from historic boundary and two new roadways intersect in lower half of contributing landscape

Dr. James M. Parrott House (LR 0703) – DE, Criteria A&C

Alternative	Effects Assessment
1UE	No Effect – no construction in vicinity of site
1SB	No Adverse Effect with environmental commitments – 0.2 acres of impacts required for upgrades to Sanderson Road so it can serve as service road. NCDOT must honor mitigation commitments of R-2719 project and plant screening landscape on former eastbound lanes of US 70. In addition, if construction staging areas not allowed within historic boundaries and access to the historic site remains the same it will not impact the characteristics for which the property is eligible
11	ADVERSE EFFECT – new roadway directly adjacent to historic farmstead, 465' from dwelling to new ROW but no ROW required from historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to Sanderson Way in vicinity of historic property
12	ADVERSE EFFECT – new roadway directly adjacent to historic farmstead, 465' from dwelling to new ROW but no ROW required from historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to Sanderson Way in vicinity of historic property
31	ADVERSE EFFECT – new roadway will be elevated 25' directly adjacent to historic farmstead, 437' from dwelling to new ROW but no ROW required from historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to Sanderson Way in vicinity of historic property
32	ADVERSE EFFECT – new roadway will be elevated 25'directly adjacent to historic farmstead, 437' from dwelling to new ROW but no ROW required from historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to Sanderson Way in vicinity of historic property
35	No Effect – no construction in vicinity of site
36	No Effect – no construction in vicinity of site
51	No Effect – no construction in vicinity of site

52	No Effect – no construction in vicinity of site
63	ADVERSE EFFECT – new roadway will be elevated 25'directly adjacent to historic farmstead, 437' from dwelling to new ROW but no ROW required from historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to Sanderson Way in vicinity of historic property
65	ADVERSE EFFECT – new roadway will be elevated 25'directly adjacent to historic farmstead, 437' from dwelling to new ROW but no ROW required from historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to Sanderson Way in vicinity of historic property

Henry Loftin Herring Farm (LR 0700) – DE Criteria A&C

Alternative	Effects Assessment
1UE	No Adverse Effect with environmental commitments – bypass elevated and interchange @ west side of property, 975' from dwelling to new ROW, 1.8 acres of impacts required for upgrades to US 70 and control of access will require relocation of driveway. If construction staging areas not allowed within historic boundaries and HPO has the opportunity to review and comment on the driveway relocation plans it will not impact the characteristics for which the property is eligible
1SB	No Adverse Effect with environmental commitments – bypass elevated and interchange @ east side of property, 975' from dwelling to new ROW, 1.8 acres of impacts required for upgrades to US 70 and control of access will require relocation of driveway. If construction staging areas not allowed within historic boundaries and HPO has the opportunity to review and comment on the driveway relocation plans it will not impact the characteristics for which the property is eligible
11	No Effect – no construction in vicinity of site
12	No Effect – no construction in vicinity of site
31	No Effect – no construction in vicinity of site
32	No Effect – no construction in vicinity of site
35	No Effect – no construction in vicinity of site
36	No Effect – no construction in vicinity of site
51	No Effect – no construction in vicinity of site
52	No Effect – no construction in vicinity of site
63	No Effect – no construction in vicinity of site
65	No Effect – no construction in vicinity of site

Jesse Jackson House (LR 0005) – NR, Criterion D

Alternative	Effects Assessment
1UE	No Effect – no construction in vicinity of site
1SB	No Effect – no construction in vicinity of site
11	ADVERSE EFFECT – new roadway and interchange will be west of historic farmstead and will require service roads and ramps, 387' from dwelling to new ROW and 2.0 acres of impacts to historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to NC 11 in vicinity of historic property
12	ADVERSE EFFECT – new roadway and interchange will be west of historic farmstead and will require service roads and ramps, 387' from dwelling to new ROW and 2.0 acres of impacts to historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to NC 11 in vicinity of historic property
31	ADVERSE EFFECT – new roadway and interchange will be west of historic farmstead and will require service roads and ramps, 387' from dwelling to new ROW and 2.0 acres of impacts to historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to NC 11 in vicinity of historic property
32	ADVERSE EFFECT – new roadway and interchange will be west of historic farmstead and will require service roads and ramps, 387' from dwelling to new ROW and 2.0 acres of impacts to historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to NC 11 in vicinity of historic property
35	No Effect – no construction in vicinity of site
36	No Effect – no construction in vicinity of site
51	No Effect – no construction in vicinity of site
52	No Effect – no construction in vicinity of site

63	ADVERSE EFFECT – new roadway and interchange will be west of historic farmstead and will require service roads and ramps, 387' from dwelling to new ROW and 2.0 acres of impacts to historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to NC 11 in vicinity of historic property
65	ADVERSE EFFECT – new roadway and interchange will be west of historic farmstead and will require service roads and ramps, 387' from dwelling to new ROW and 2.0 acres of impacts to historic property. Potential access complications, potential noise impacts during and after construction and possible construction staging area will impact the characteristics for which the property is eligible. HPO would like to review noise study results, staging areas, future driveway permits and proposed improvements to NC 11 in vicinity of historic property

Elijah Loftin Farm (LR 1195) – DE, Criterion C

Alternative	Effects Assessment
1UE	No Effect – no construction in vicinity of site
1SB	No Effect – no construction in vicinity of site
11	ADVERSE EFFECT- impacts to 4.5 acres of historic property and requires demolition of contributing structures
12	ADVERSE EFFECT- impacts to 4.5 acres of historic property and requires demolition of contributing structures
31	ADVERSE EFFECT- impacts to 4.5 acres of historic property and requires demolition of contributing structures
32	ADVERSE EFFECT- impacts to 4.5 acres of historic property and requires demolition of contributing structures
35	No Effect – no construction in vicinity of site
36	No Effect – no construction in vicinity of site
51	ADVERSE EFFECT- impacts to 4.5 acres of historic property and requires demolition of contributing structures
52	ADVERSE EFFECT- impacts to 4.5 acres of historic property and requires demolition of contributing structures
63	ADVERSE EFFECT- impacts to 4.5 acres of historic property and requires demolition of contributing structures
65	ADVERSE EFFECT- impacts to 4.5 acres of historic property and requires demolition of contributing structures

E-4 USACE Start of Study Response Letter

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

REPLY TO
ATTENTION OF

March 4, 2010

Regulatory Division

SUBJECT: ORM ID SAW-2009-01603; Start of Study Letter for US Highway 70 Kinston Bypass located on new location between the Town of LaGrange, Lenoir County and the Town of Dover, Jones County, North Carolina, STIP No. R-2553

Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
N.C. Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Dr. Thorpe:

Please reference your request for information regarding potential environmental impacts associated with the proposed US 70 Kinston Bypass, (STIP No. R-2553), currently defined as a 12- mile, four-lane, median-divided freeway on new location. The proposed project study area is located between LaGrange and Dover, in Lenoir and Jones Counties, North Carolina.

Based on information provided in your letter and enclosed map, it was noted that any proposed 12-mile, four-lane, median-divided freeway will likely impact the main stem of the Neuse River, multiple major stream systems, floodplains and wetlands adjacent to and associated with the Neuse River. These resource areas provide a number of benefits to receiving waters including the attenuation and de-synchronization of flood events, improvements to water quality in downstream receiving waters, and the uptake and transformation of many biologically active compounds. These areas also provide valuable wildlife habitat for a variety of birds, mammals, amphibians, and reptiles. In addition, the Neuse River and its associated tributaries may provide suitable spawning and foraging habitat for anadromous fish and threatened and endangered species. You should be aware that we consider these wetlands and tributaries to be of high quality and therefore believe that all efforts should be undertaken to avoid and minimize impacts. These efforts should include bridging to avoid wetland, stream and/or flood plain impacts, utilizing off-site detours, employing temporary work bridges during project construction, and the removal of any approach fills not necessary for the project.

As there is no Federal Highway Administration (FHWA) funding for this project and it will require a permit from the Wilmington District, U.S. Army Corps of Engineers (Corps) under authority of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act, we understand that the Corps will be the lead federal agency for ensuring the project's compliance with National Environmental Policy Act (NEPA). Although FHWA will not be

involved, we believe that this project should be carried forward through the Merger Process in accordance with the 2005 Merger agreement. In addition, we suggest that you review Appendix B of the Corps of Engineers regulations (found at 33 C.F.R. § 325, Appendix B) regarding NEPA compliance and Section 404 of the Clean Water Act to assist in your NEPA planning efforts (copy enclosed).

Based on our initial evaluation of the project, we believe that this project will require an Environmental Impact Statement (EIS). Although we will not require that a third party contract be executed for the preparation of this document, we want to stress that this document will become the Corps of Engineers' NEPA document for this project. To this end, we will need to ensure that the contractor preparing the EIS does not have any financial interest in the outcome of the NEPA or 404 permit process. I have enclosed a disclosure statement that must be signed by the lead contractor developing the document and returned to us for our files. In addition, we will need to be invited to any public scoping meetings and/or public hearings you may hold concerning this project, and may need to hold hearings or scoping meetings of our own, if the need arises. In accordance with the Council on Environmental Quality (CEQ) requirements, we will publish a Notice of Intent (NOI) to prepare an EIS in the Federal Register and will be responsible for distribution of the draft and final EIS to EPA and the public for review and comment. Finally, it is our intention to prepare our own Record of Decision (ROD) for the project once the EIS has been finalized. As the Corps will be the lead federal agency on the project, and holds ultimate responsibility for the content of the EIS, it will be incumbent upon NCDOT to provide advance copies of the EIS to the Corps for review and approval prior to NCDOT's circulation of the document to any other agency or to the public.

As indicated in our letter of November 4, 2009 to you, it will be incumbent upon NCDOT to ensure that the GIS data for stream and wetlands that is collected during the alternatives analysis is sufficiently accurate for us to make decisions to satisfy our requirements relative to Section 404 of the Clean Water Act including the 404 (b) (1) Guidelines. As the GIS effort/method is developed, we would like to participate in the on-the-ground verification of Department of the Army (DA) jurisdictional streams and wetlands. We believe that it is important to reiterate that prediction of the location and amount of jurisdictional streams wetlands from remotely sensed data will be very difficult on the coastal plain of NC and that adequate ground-truthing must be conducted to ensure its accuracy.

Department of the Army (DA) permit authorization, pursuant to Section 404 of the Clean Water Act of 1977, as amended, will be required for the discharge of excavated or fill material in waters of the United States or any adjacent or isolated wetlands in conjunction with this project, including disposal of construction debris. Under our mitigation policy, impacts to wetlands should first be avoided or minimized. We will then consider compensatory mitigation for unavoidable impacts. When final plans are completed, including the extent and location of any work in wetlands, our regulatory branch would appreciate the opportunity to review these plans for project-specific determinations of DA permit requirements.

During the alternatives analysis phase, the Corps, as lead Federal agency, would recommend that all investigations for Historic Properties, Essential Fish Habitat and Threatened and Endangered species be conducted in accordance with survey level investigations as

conducted now on any Federal aid project. In order to ensure that our requirements pursuant to Section 106 of the Historic Preservation Act, the Magnuson-Stevens Fishery Management and Conservation Act, and Section 7 of the Endangered Species Act are met, we would like to be invited to any coordination and/or consultation meetings with the State Historic Preservation Office (SHPO), National Marine Fisheries Service (NMFS), and/or the US Fish and Wildlife Service. Once the Corps effect(s) determinations have been made, we expect that NCDOT will prepare appropriate documentation (eg, Biological Assessments, Surveys for historic/archeological features, EFH documentation) and forward to the Corps for review prior to transmittal to the appropriate agency. Environmental Justice (EJ) issues (if any) will need to be clearly identified and adequately addressed in the NEPA document. Depending on the level and severity of impacts, additional public involvement and outreach may be necessary in order to fully satisfy our requirements under the EJ Executive Order.

In order to clarify our intentions regarding the development of NEPA documents in support of State funded projects, we would like to meet with you and members of your project development staff to discuss the contents of this letter. In the meantime please do not hesitate to contact Mr. Tom Steffens in the Washington Regulatory Field Office at (910) 251- 4615 or the undersigned at (910) 251-4811.

Sincerely,

Mickey Sugg
Acting Assistant Chief,
Regulatory Division

Enclosure

Copies furnished (without enclosure):

Mr. Brian Wrenn
NCDENR-DWQ
Wetlands Section
1621 Mail Service Center
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1142 I-85 Service Road
Creedmoor, North Carolina 27522

APPENDIX F: NATURAL RESOURCES

Contents
F-1 Soils in the NRTR study area
F-2 Water Resources
F-3 Birds, mammals, reptiles, and amphibians likely to occur within the project study area
F-4 Aquatic wildlife likely to occur in the project study area
F-5 Field Meeting Summaries
F-6 Stream and Wetland Model Development & Metadata
F-7 Impacted Streams

F-1 Soils in the NRTR study area

Table F-1: Soils in the NRTR study area

Soil Series	Mapping Unit	Drainage Class	Hydric Status	County
Alpin fine sand, 0-6% slopes	AnB	Excessively drained	Nonhydric	Jones
Autryville loamy fine sand, 0-4% slopes	AuB	Well drained	Hydric[a]	Jones
Bibb soils, frequently flooded	BB	Poorly drained	Hydric	Lenoir
Blanton sand, 0-6% slopes	Bn	Moderately well drained	Hydric[a]	Lenoir
Chewacla loam, frequently flooded	Ch	Somewhat poorly drained	Hydric[a]	Lenoir
Coxville loam	Co	Poorly drained	Hydric	Lenoir
Craven fine sandy loam, 1-4% slopes	Cr	Moderately well drained	Hydric[a]	Lenoir
Croatan muck	Ct	Very poorly drained	Hydric	Jones
Craven fine sandy loam, 4-8% slopes	Cv	Moderately well drained	Hydric[a]	Lenoir
Goldsboro loamy sand, 0-2% slopes	Go	Moderately well drained	Hydric[a]	Lenoir, Jones
Goldsboro loamy sand, 0-2% slopes	GoA	Moderately well drained	Hydric[a]	Craven
Grifton sandy loam	Gr	Poorly drained	Hydric	Lenoir
Grifton fine sandy loam	Gt	Poorly drained	Hydric	Jones
Johns sandy loam	Jo	Moderately well drained	Hydric[a]	Lenoir, Jones
Kalmia loamy sand, 0-2% slopes	Ka	Well drained	Nonhydric	Lenoir
Kalmia loamy sand, 0-3% slopes	KaA	Well drained	Hydric[a]	Jones
Kalmia loamy sand, 2-6% slopes	Kb	Well drained	Hydric[a]	Lenoir
Kenansville loamy sand, 0-6% slopes	Ke	Well drained	Nonhydric	Lenoir
Kinston loam, frequently flooded	Kn	Poorly drained	Hydric	Lenoir
Lakeland sand, 0-6% slopes	La	Excessively drained	Hydric[a]	Lenoir

Soil Series	Mapping Unit	Drainage Class	Hydric Status	County
Leaf loam	Le	Poorly drained	Hydric	Lenoir
Lenoir loam	Ln	Somewhat poorly drained	Hydric[a]	Lenoir
Leon sand	Ln	Poorly drained	Hydric	Craven, Jones
Leon sand	Lo	Poorly drained	Hydric	Lenoir
Lumbee sandy loam	Lu	Poorly drained	Hydric	Lenoir
Lynchburg sandy loam	Ly	Somewhat poorly drained	Hydric[a]	Lenoir, Craven, Jones
Meggett fine sandy loam	Me	Poorly drained	Hydric	Lenoir, Craven, Jones
Muckalee loam	Mk	Poorly drained	Hydric	Jones
Masontown mucky fine sandy loam and Muckalee sandy loam, frequently flooded	MM	Poorly drained and very poorly drained	Hydric	Craven
Murville fine sand	Mu	Very poorly drained	Hydric	Lenoir, Jones
Norfolk loamy sand, 0-2% slopes	Na	Well drained	Hydric[a]	Lenoir
Norfolk loamy sand, 2-6% slopes	Nb	Well drained	Hydric[a]	Lenoir
Norfolk loamy sand, 6-10% slopes	Nc	Well drained	Nonhydric	Lenoir
Norfolk loamy sand, 1-4% slopes	NoB	Well drained	Hydric[a]	Jones
Norfolk loamy fine sand, 2-6% slopes	NoB	Well drained	Hydric[a]	Craven
Onslow fine sandy loam	On	Moderately well drained	Hydric[a]	Jones
Onslow loamy sand	On	Moderately well drained	Hydric[a]	Craven
Pactolus loamy sand	Pa	Moderately well drained	Hydric[a]	Lenoir, Craven
Pamlico muck	Pc	Very poorly drained	Hydric	Lenoir

Soil Series	Mapping Unit	Drainage Class	Hydric Status	County
Pantego loam	Pe	Very poorly drained	Hydric	Lenoir
Pantego loam	Pn	Very poorly drained	Hydric	Jones
Pocalla loamy sand, 0-6% slopes	Po	Somewhat excessively drained	Nonhydric	Lenoir
Portsmouth loam	Pr	Very poorly drained	Hydric	Lenoir
Rains sandy loam	Ra	Poorly drained	Hydric	Lenoir, Craven, Jones
Stallings loamy sand	St	Somewhat poorly drained	Hydric[a]	Lenoir, Jones
Stockade loamy fine sand	Sx	Very poorly drained	Hydric	Jones
Tomotley fine sandy loam	Tm	Poorly drained	Hydric	Craven
Torhunta loam	To	Very poorly drained	Hydric	Lenoir, Craven, Jones
Umbric ochraqualfs	Uo	Poorly drained	Hydric[a]	Lenoir
Wagram loamy sand, 0-6% slopes	Wb	Well drained	Hydric[a]	Lenoir
Wagram loamy sand, 6-10% slopes	Wc	Well drained	Nonhydric	Lenoir
Wagram loamy sand, 10-15% slopes	Wd	Well drained	Nonhydric	Lenoir
Wickham loamy sand, 1-6% slopes	Wk	Well drained	Hydric[a]	Lenoir
Woodington loamy sand	Wn	Poorly drained	Hydric	Lenoir
Woodington fine sandy loam	Wo	Poorly drained	Hydric	Jones

Source: NCDOT 2017b

[a] Soils that are primarily nonhydric, but that may contain hydric inclusions.

F-2 Water Resources

Table F-2: Notable water resources in the NRTR study area

Stream Name	Stream ID	NCDWR Index Number	Best Usage Classification and Designation	Within Designated FEMA Floodway	Number of Unnamed Tributaries within NRTR Study Area
Neuse River	S1	27-(56); 27-(70.5); (27-75.3); 27-(75.7)	C; NSW; WS-IV; AFSA; IPNA	Yes	185
Falling Creek	S2	27-77	C; Sw; NSW	Yes	87
Southwest Creek	S3	27-80	C; Sw; NSW	Yes	70
Bear Creek	S4	27-72-(5)	WS-IV; Sw; NSW	Yes	9
Mosely Creek	S5	27-77-2	C; Sw; NSW	Yes	5
Buck Branch	S6	27-77-2-0.5	C; Sw; NSW	No	5
Walters Mill Pond	S7	27-77-2-1	C; Sw; NSW	No	5
Squirrel Creek	S8	27-75	WS-IV; Sw; NSW	Yes	2
Whitley's Creek	S9	27-76	C; Sw; NSW	Yes	12
White Mash Run	S10	27-77-2.5	C; Sw; NSW	Yes	6
Gum Swamp Creek	S11	27-77-3	C; Sw; NSW	Yes	21
Peter Creek	S12	27-78	C; Sw; NSW	No	14
Clarks Branch	S13	27-80-4	C; Sw; NSW	Yes	8
Lucy Branch	S14	27-80-5-1	C; Sw; NSW	No	2
Spring Branch	S15	27-80-5	C; Sw; NSW	Yes	6
Vine Swamp	S16	27-101-15-1	C; Sw; NSW	No	5
Wheat Swamp Creek	S17	27-86-24	C; Sw; NSW	Yes	26
Briery Run	S18	27-81-1	C; Sw; NSW	Yes	34
Taylors Branch	S19	27-81-1-1	C; Sw; NSW	Yes	4
Stonyton Creek	S20	27-81	C; Sw; NSW	Yes	56
Yadkin Branch	S21	27-79	C; Sw; NSW	Yes	22
Mott Swamp	S22	27-80-6	C; Sw; NSW	Yes	9
Strawberry Branch	S23	27-80-7	C; Sw; NSW	Yes	15

Stream Name	Stream ID	NCDWR Index Number	Best Usage Classification and Designation	Within Designated FEMA Floodway	Number of Unnamed Tributaries within NRTR Study Area
Jericho Run	S24	27-81-2	C; Sw; NSW	Yes	19
Mill Branch	S25	27-80-8	C; Sw; NSW	Yes	11
Heath Branch	S26	27-80-9	C; Sw; NSW	Yes	18
Rattlesnake Branch[a]	S27	27-101-15-2	C; Sw; NSW	No	2
Beaverdam Branch	S28	27-83	C; Sw; NSW	No	12
Bone Gray Branch	S29	27-82	C; Sw; NSW	Yes	2
Mosley Creek[a]	S30	27-84	C; Sw; NSW	Yes	1
Harrys Branch	S31	27-84-3	C; Sw; NSW	Yes	7
Tracey Swamp	S32	27-84-1	C; Sw; NSW	Yes	22
Gum Swamp	S33	27-84-1-1	C; Sw; NSW	No	2
Core Creek	S34	27-90	C; Sw; NSW	No	11
Hallam Branch	S35	27-86-24-1	C; Sw; NSW	No	4
Jumping Run[a]	S36	27-77-1	C; Sw; NSW	Yes	2

Source: NCDOT 2017b

[a] The main stems of Mosley Creek, Jumping Run, and Rattlesnake Branch are not within the NRTR study area, but some tributaries to these water resources are contained within the NRTR study area.

C- Class C Waters (C), NSW- Nutrient Sensitive Waters, Sw- Swamp Waters, WS-IV- waters within a water supply watershed, AFSA- Anadromous Fish Spawning Areas, and IPNA- Inland Primary Nursery Areas.

F-3 Birds, mammals, reptiles, and amphibians likely to occur within the project study area

List F-1: Birds, mammals, reptiles, and amphibians likely to occur within the project study area

Common year-round resident birds may include the following:

- turkey vulture* (*Cathartes aura*)
- red-shouldered hawk* (*Buteo lineatus*)
- red-tailed hawk (*Buteo jamaicensis*)
- American robin (*Turdus migratorius*)
- northern cardinal* (*Cardinalis cardinalis*)
- eastern towhee (*Pipilo erythrophthalmus*)
- American crow (*Corvus brachyrhynchos*)
- American woodcock (*Scolopax minor*)
- eastern bluebird* (*Sialia sialis*)
- northern mockingbird* (*Mimus polyglottos*)
- Carolina wren (*Thryothorus ludovicianus*)
- Carolina chickadee (*Poecile carolinensis*)
- northern bobwhite* (*Colinus virginianus*)
- rock dove (*Columba livia*)
- pileated woodpecker* (*Dryocopus pileatus*)
- red-bellied woodpecker (*Melanerpes carolinus*)
- mourning dove* (*Zenaida macroura*)
- blue jay* (*Cyanocitta cristata*)
- American goldfinch (*Spinus tristis*)
- northern flicker (*Colaptes auratus*)
- common starling* (*Sturnus vulgaris*)
- tufted titmouse (*Baeolophus bicolor*)
- pine warbler (*Setophaga pinus*)
- wild turkey* (*Meleagris gallopavo*)
- Cooper's hawk (*Accipiter cooperii*)
- field sparrow (*Spizella pusilla*)
- gray catbird (*Dumetella carolinensis*)
- Canada goose* (*Branta canadensis*)
- great blue heron* (*Ardea herodias*)

Common winter residents may include the following:

- song sparrow (*Melospiza melodia*)
- white-throated sparrow (*Zonotrichia albicollis*)
- myrtle warbler (*Setophaga coronata coronata*)
- yellow-rumped warbler (*Dendroica coronata*)
- mallard* (*Anas platyrhynchos*)

Common breeding residents may include the following:

- prothonotary warbler (*Protonotaria citrea*)
- ruby-throated hummingbird (*Archilochus colubris*)
- eastern kingbird (*Tyrannus tyrannus*)
- wood thrush (*Hylocichla mustelina*)

Mammals that could occur within the project study area include the following:

- eastern gray squirrel* (*Sciurus carolinensis*)
- white-tailed deer* (*Odocoileus virginianus*)
- American black bear* (*Ursus americanus*)
- coyote* (*Canis latrans*)
- beaver* (*Castor canadensis*)
- eastern cottontail (*Sylvilagus floridanus*)
- cotton mouse (*Peromyscus gossypinus*)
- raccoon (*Procyon lotor*)
- Virginia opossum (*Didelphis virginiana*)
- groundhog (*Marmota monax*)
- gray fox (*Urcyon cinereoargenteus*)
- striped skunk (*Mephitis mephitis*)
- white-footed mouse (*Peromyscus leucopus*)

Reptiles and amphibians likely to occur within the project study area include the following:

- brown watersnake (*Nerodia taxispilota*)
- rough green snake (*Opheodrys aestivus*)
- rat snake* (*Pantherophis obsoletus*)
- copperhead (*Agkistrodon contortix*)
- eastern fence lizard (*Sceloporus undulatus*)
- American toad* (*Anaxyrus americanus*)

- northern slimy salamander (*Plethodon glutinosus*)
- eastern river cooter (*Pseudemys concinna*)
- eastern mud turtle (*Kinosternon subrubrum*)
- five-lined skink (*Plestiodon fasciatus*)
- green anole* (*Carolina anole*)
- gray treefrog (*Hyla versicolor*)
- upland chorus frog (*Pseudacris feriarum*)
- bullfrog (*Rana catesbeiana*)
- eastern box turtle* (*Terrapene carolina carolina*)
- eastern king snake (*Lampropeltis getula*)
- eastern garter snake (*Thamnophis sirtalis*)

F-4 Aquatic wildlife likely to occur in the project study area

List F-2: Aquatic wildlife likely to occur in the project study area

Reptiles and amphibians include the following:

- brown water snake (*Nerodia taxispilota*)
- snapping turtle* (*Chelydra serpentina*)
- green treefrog (*Hyla cinerea*)
- barking tree frog (*Hyla gratiosa*)
- water moccasin* (*Agkistrodon piscivorus*)
- yellow-bellied slider (*Trachemys scripta scripta*)
- bullfrog
- American alligator (*Alligator mississippiensis*)

Fish and crustaceans include the following:

- bluegill (*Lepomis macrochirus*)
- crayfish* (*Procambarus* spp.)
- largemouth bass (*Micropterus salmoides*)
- striped bass (*Morone saxatilis*)
- American shad (*Alosa sapidissima*)
- white catfish (*Ictalurus catus*)
- American eel (*Anguilla rostrata*)
- channel catfish (*Ictalurus punctatus*)
- blue catfish (*Ictalurus furcatus*)
- crappie (*Pomoxis* spp.)
- mosquitofish* (*Gambusia* spp.)

F-5 Field Meeting Summaries

RECORD OF FIELD MEETING

To: Project File

From: Susan Westberry

Date: May 2, 2012

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Stream and Wetland Modeling Verification and Field Spot Checking

Two meetings were held on Wednesday, April 11, 2012 and Thursday, April 19, 2012 at the project site in Kinston, NC. The meeting began at the District Engineers Office on Hwy 258 at 9:00am. Attendees of the meeting are listed below:

LeiLani Paugh	North Carolina Department of Transportation Natural Environment Section (NCDOT)
Morgan Weatherford	NCDOT
Tom Steffens	United States Army Corp of Engineers (USACE)
David Wainwright	North Carolina Department of Environment and Natural Resources Division of Water Quality (NCDWQ)
Sandy Smith	Axiom Environmental
Susan Westberry	URS

Purpose of Meeting

The purpose of the field meetings was to verify and spot check the accuracy of the wetland model being used by NCDOT to assess wetland impacts for the project.

The intent of the first field meeting was for NCDOT to show the USACE and NCDWQ (agencies) five sites where the wetland model had issues and/or inaccuracies. These sites were chosen by NCDOT as 'problem areas.'

The intent of the second field meeting was to allow the agencies to choose sites that they wanted to visit based on the mapping provided by NCDOT.

General Overview of Meeting #1

The meeting began with discussion about the modeling efforts to date, project mapping, and potential issues NCDOT has seen with the modeling. Mr. Weatherford detailed the modeling methodologies and provided mapping of each of the five sites the group was to visit during the meeting.

The sites chosen included 'fringe' areas where the modeling had potential to be inaccurate. These sites included areas within pine plantations that could be impacted by ditching, sites near agricultural fields containing ditches, and pine flats. Overall, the model was found to be fairly accurate and both the USACE and NCDWQ expressed confidence in the model.

Discussions also included the development of a new model, a 'ditch' model. The intent of the 'ditch' model is to locate areas that have been modeled as wetlands by the wetland model where drainage features have negatively affected the hydrology of the site. The USACE and NCDWQ are both very interested in seeing the results of this model. It was also determined that the 'ditch' model should be referred to as the 'linear drainage model' as it does not determine the jurisdictionality of a feature.

NCDOT has contracted consultants to digitize the linear drainage features within the study area. Once the features have been delineated, NCDOT will develop a model that will adjust the wetland model according to the location of drainage features that may be removing hydrology from the wetlands.

The meeting concluded with NCDOT providing USACE and NCDWQ mapping to assist them in choosing the sites to be visited during the second field meeting. NCDOT expressed that they wish to be transparent with the agencies throughout this process and that they value their input and opinion during the field investigations.

General Overview of Meeting #2

Meeting #2 began with discussions between the agencies and NCDOT regarding the sites that were to be visited. The USACE chose sites that were within the delineated 'riparian' area, adjacent to wetlands, but not modeled as wetlands. There was also a site that was suspect of being candidate for the 'ditch' model that the agencies wished to visit to determine if it should be removed by the ditch model. The intent was to locate sites where NCDOT and the agencies agree that linear drainages are negatively affecting hydrology of wetlands shown by the model in order to spot check the 'ditch' model once it has been completed.

Three sites were visited. NCDOT and the agencies were pleased with what was found at each site. The agencies expressed that the 'ditch' model would be an important component in their confidence with the modeling. No decisions/determinations will be made until the ditch model is complete and more spot checking is accomplished.

The meeting concluded with all agreeing that more field spot checking would be necessary once the ditch model was complete.

Action Items

- NCDOT will continue working on the digitization of the Riparian model. Delineation of riparian zones to be used in NC Wetland Assessment Methodology (NCWAM) wetland classifications could come into play later in the project.
- NCDOT will inform the agencies when the ditch model has been complete. The data will be provided to the agencies once finished so that additional field meetings can be held.
- NCDOT will update mapping/modeling upon the completion of the ditch model.
- Additional field meetings will be needed to spot check the ditch model and address any other concerns the agencies may have.

General Summary

The field exercises provided URS and the agencies with some insight into the accuracy and history of stream and wetland modeling. Model parameters were discussed. The addition of parameters to the ditch model was explored. The utility of such modeling for use in future projects was discussed, as was the agencies' ability to 'sign off' on impacts/alternatives based on such modeling.

Neither agency member is willing to sign off on anything at this point. Both agencies feel the ditch model is going to be an important factor in their decision, and any/all future stream and wetland project decisions.

The ditch model is estimated to be complete sometime during the summer of 2012. Additional field meetings should be anticipated late summer/early fall 2012.

RECORD OF FIELD MEETING

To: Project File

From: Susan Westberry

Date: December 17, 2012

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Sample NRTR Stream and Wetland Verification and Field Spot Checking

A meeting was held on Thursday, November 29, 2012 at the project site in Kinston, NC. The meeting began at the TradeMark/Hess gas station at the corner of US 258 and US 70 in Kinston at 9:30 am. Attendees of the meeting are listed below:

Chris Manley	NCDOT NES
James Mason	NCDOT NES
LeiLani Paugh	NCDOT Natural Environment Section (NES)
Tom Steffens	US Army Corps of Engineers (USACE)
David Wainwright	NC Division of Water Quality (NCDWQ)
Morgan Weatherford	NCDOT NES
Susan Westberry	URS
Travis Wilson	NC Wildlife Resources Commission (NCWRC)

Purpose of Meeting

The purpose of the field meeting was to verify and spot check the accuracy of the stream and wetland models being used by NCDOT to assess wetland impacts for the project – and in particular, to assess the accuracy of the modeled features within the study area for the Sample NRTR. Additionally, the NCWRC used the field meeting as an opportunity to spot check community classifications identified within the C-CAP data.

The intent of the meeting was to give the NCWRC, NCDWQ, and USACE an opportunity to hand choose sites within the Sample NRTR study area that they would like to view (to verify streams, wetlands, and natural communities/potential T&E habitat).

Five sites were chosen and viewed on November 29, 2012.

All agency members were pleased with the field meeting and instructed NCDOT to proceed with the completion of the NRTR for the entire study area based on the discussions held during the November 27, 2012 Sample NRTR review meeting.

Travis Wilson noted that after seeing the communities within the study area that he would like to look further into the C-CAP classifications and their derivations, but that his exercises were for his knowledge only, and should not delay the project in any way.

RECORD OF FIELD MEETING

To: File

From: Susan Westberry

Date: July 3, 2013

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
NRTR Threatened and Endangered Species Protocol Verification and Field Spot Checking

A meeting was held on Wednesday, May 22, 2013 at the project site in Kinston, NC. The meeting began at the TradeMark/Hess gas station at the corner of US 258 and US 70 in Kinston at 9:30 am. Attendees of the meeting are listed below:

LeiLani Paugh	NCDOT Natural Environment Section (NES)
Morgan Weatherford	NCDOT NES
Tom Steffens	US Army Corps of Engineers
David Wainwright	NC Division of Water Quality
Gary Jordan	US Fish and Wildlife Service
Travis Wilson	NC Wildlife Resources Commission
Susan Westberry	URS

Purpose of Meeting

The purpose of the field meetings was to verify and spot check the accuracy of the protocol being used to assess the presence of habitat for threatened and endangered species in the NRTR study area. This protocol is being used mainly for the identification of habitat for red-cockaded woodpecker, but similar protocols could be developed for other plant and animal species with particular habitat requirements. The GIS-based protocol proposed within the NRTR for this pilot project utilizes C-CAP landcover data in conjunction with aerial photography to screen for potential habitat sites.

A total of 96 potential habitat sites were identified within the NRTR. These sites were developed using the evergreen forest and scrub/shrub landcover types within the C-CAP data coupled with a size threshold of 30 acres and visual screening against aerial photography. URS performed field spot checking of 28 of the potential sites prior to this meeting.

The intent of the meeting was to take the USFWS and NCWRC to a number of the sites that URS had visited during field spot checks to show the agencies 1. What types of habitat the protocol was producing, 2. The habitat features that URS was using to determine the presence or absence of suitable habitat, and 3. To gain information/guidance/acceptance of the protocol in use.

Five sites were chosen and viewed on May 22, 2013. Two additional sites were also visited at the end of the field meeting that occurred within the radius of the previous record of red-cockaded woodpecker for Lenoir County.

USFWS and NCWRC expressed agreement with the protocol being used to assess community types. Gary Jordan offered further guidance that may help to reduce the number of potential habitat areas identified using the protocol. These discussions are summarized below.

Summary of Guidance

- Could discount the need to search for foraging habitat if we could determine the absence of nesting habitat first.
- Suggested a screening for 60+ year pines. If no old pine stands fall within the ½ mile radius, no foraging assessment would be required.
- If we could determine at the onset that no nesting is present, could make a 'No Effect' determination.
- Foraging habitat needs to be connected to suitable nesting habitat – no more than 200 feet of separation.
- RCW are not bothered by human activity. If nesting and foraging habitat are separated by humans (residence, golf course, etc.), potential for colonies does exist.
- If located within the context of a larger pine-dominated landscape of any age, 30 acres minimum of combined nesting and foraging habitat (only a few potential cavity trees are required) would require field investigation to determine the presence or absence of cavity trees.
- If **not** located within the context of a larger pine-dominated landscape of any age a minimum threshold of 75 acres of combined nesting and foraging habitat would be required to trigger the need for field investigation to determine the presence or absence of cavity trees.
- Areas smaller than 30 acres in total wooded size do not need to be assessed. No habitat.
- In even-aged stands, the entire stand can be discounted based on size/age determination. No nesting/cavity searches are needed if it is known the stand is even-aged.

Mr. Jordan stressed that the guidance given during the May 22, 2013 field meeting is guidance applicable to RCW habitat assessments for Lenoir County, and this project in particular. He stated that different protocol would be appropriate for different projects in different parts of the state. This is due to new findings related to RCW and habitat variability in Outer Banks and southeastern counties.

SUMMARY OF FIELD INVESTIGATIONS AND ACTIVITY

URS

To: File

From: Susan Westberry

Date: July 3, 2013

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Summary of Field Investigations and Activity Since May 22, 2013 T&E Spot Checks

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Foot surveys for rough-leaved loosestrife were conducted on June 5, 2013. These surveys were conducted within the field/forested edge regions of Leon and Torhunta soils within Craven County identified within the Draft NRTR. No rough-leaved loosestrife plants were identified. The biological conclusion for this species can be changed to **No Effect** within the NRTR.

Thirty additional RCW habitat sites were also spot checked on June 5, 2013. An attempt was made to visit sites 51-70 and 72-81. Eleven of the sites were not accessible due to gated plantation roads. In general, the majority of the sites in the east (Craven and Jones counties) appear to be Weyerhauser property. Many of these are contained within extensive Weyerhauser logging roads. If any of these areas require further investigation in the future, an attempt should be made to obtain keys for these gates.

Sites 68, 69, and 70 should be surveyed for cavity trees if they fall within the range of the LEDPA. These three sites appear to be timber plantation and are also part of the land used by Dover Mosley Creek Hunting Club. These three sites support potential nesting habitat and are contiguous to hundreds of acres of younger plantation.

As a result of the May 22, 2013 field meeting, the District Ranger for the Kinston Area of the NC Forest Service was contacted to obtain timber stand age information. Rhonda Huttlinger was provided with several of the sites visited during the first round of spot checks for RCW habitat. It appears that the NC Forest Service maintains data on privately owned timber plantations, but does not keep data on larger plantations (Weyerhauser properties).

Data provided by the NC Forest Service indicates that our estimations of stand age in the field on May 22 were over-estimates in almost all cases. Site 10 – potential foraging habitat was aged in the field to be 40-50 years. Plantation data show the stand is 25 years old.

Site 17 – field notes indicate that the trees were large enough for cavities but the stand was exceedingly thick. Plantation data show the stand is 24-25 years old.

Site 21 – roadside stand next to golf course neighborhood with large potential cavity trees across the road. Plantation data show 22-23 years old.

An attempt will be made to contact Weyerhauser to obtain timber stand age data for the NRTR study area – particularly sites 68-70.

RECORD OF FIELD MEETING

To: File

From: Susan Westberry

Date: November 7, 2013

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Remote Wetland Quality Assessment Methodology Field Verifications

A meeting was held on Wednesday, October 23, 2013 at the project site in Kinston, NC. The meeting began at the TradeMark/Hess gas station at the corner of US 258 and US 70 in Kinston at 9:00 am. Attendees of the meeting are listed below:

LeiLani Paugh	NCDOT Natural Environment Section (NES)
Morgan Weatherford	NCDOT NES
David Johnson	NCDOT NES
Tom Steffens	US Army Corps of Engineers
Gary Jordan	US Fish and Wildlife Service
Travis Wilson	NC Wildlife Resources Commission
Susan Westberry	URS

Purpose of Meeting

The purpose of the field meeting was to verify the accuracy of the methodologies developed by NCDOT to remotely assess wetland quality for hydraulic crossings on the project. The methodology is intended to aid in decision making on hydraulic crossings during CP2A. NCDOT developed a form/checklist to evaluate each crossing. The checklist documents wetland stressors and attributes identifiable with GIS data layers. If no stressors or other attributes can be identified to negatively impact wetland quality, the wetland is assumed to be high quality (see form attached).

David Johnson of NCDOT identified five sites to visit during the field meeting (#s 132, 48, 110, 150, and 118). Each of the five sites were different in size and potential stressors. A summary of the discussion at each of the five sites and a general summary of discussions is included below.

Summary of Discussion

- Travis Wilson warned that 'typical' CP2A decisions would not be possible with this limited data. He does not feel comfortable committing to bridge sizes or culvert sized 100% based solely on GIS data.
- It was suggested that crossings could be 'categorized' into broad types.
- Mr. Wilson suggested final length and size decisions be pushed to CP4A.
- Agencies want to be sure that expectations of the types and finality of decisions made at CP2A are understood – agencies want to reserve the right to change their sizing decisions when field verified data are made available (after LEDPA field studies).
- Agencies feel confident that the 'obvious' crossings could be committed to. Definite bridges and areas where minimum hydraulic will be sufficient.
- There will likely be a population of sites left over that will need revisiting once a LEDPA has been chosen.
- These data would be sufficient to make alternative decisions.

- There is concern that stream quality assessments have not been done – only wetlands. For crossings where it is stream only and not wetland, there is no assessment.
- Agencies want reassurance that if poor decisions are made at CP2A, changes can be made at CP4A.
- NCDOT stressed that new information allows for changes to be made to merger decisions and that stream and wetland delineations would constitute new information and allow for changes.
- Travis Wilson would like to push structure decisions until after LEDPA.
- **Agencies request to have more than two weeks lead time with CP2A package.**

Summary of Crossing Sites

#132

'Stressed' crossing. Crossing itself does not require large hydraulic opening, but the riparian structure and floodplain width dictate otherwise. This site is an example of where the decision would likely be different desktop vs. field visit. The width and quality of the wetland and floodplain is not obvious from data.

#48

Triple box culvert now and proposed. Travis Wilson requested that these types of data be provided at CP2A (list of existing and proposed structures).

#110

Existing bridge. This would be a crossing where a decision could be made.

#150

Site had stressors in all three categories. Travis Wilson agreed with culvert call on this location on the ground – not sure if he would be as positive in the office.

A discussion ensued about farm fields having both positive and negative effects from a wildlife perspective – dependent upon surrounding landscape.

#118

A single 6' x 6' proposed for this location. Not sufficient. See photo. Agencies asked how watersheds are being calculated. In this instance, this would be undersized.

Next Steps

- NCDOT to develop 'categories' for lumping of crossing types (for example, bridge, single box, minimum hydraulic, etc.).
- A trial run of sites will be completed prior to CP2A to be sure that 'categories' are sufficient.
- An office meeting to lump sites will be done (similar to what would be done at CP2A).
- A field meeting to each site would occur to verify accuracy of grouping methodology.

Assessor Name:_____ Crossing No:_____

Remote Wetland Quality Assessment Form for Major Stream Crossings

Usage Guidance:

This form seeks to document wetland stressors and attributes identifiable with GIS data layers. If no stressors or other attributes can be identified to negatively impact wetland quality, we will assume the wetland is of high quality.

Terminology, thresholds and criteria are based on definitions provided in NCWAM manual version 4.1.

Potential wetland types for this exercise are assumed to be limited to Bottomland Hardwood, Riverine Swamp Forest, Headwater Forest and Non-Tidal Freshwater marsh.

Wetland type boundaries cannot generally be distinguished with this approach and answers to the questions may be applied to the wetland complex instead.

The following GIS data layers must be acquired to assess the wetlands with this method:

- 2010 Statewide and 2012 Orthoimagery (if available)
- NCDOT Wetland Prediction Model raster
- NLCS SSURGO soils layer
- 2006 National Land Cover Database raster
- USGS 24K hydrography layer
- NCDOT Lateral Effect GIS Model drainage feature layer
- NCDWQ 303D stream layer
- NCNHP Elemental Occurrence layer
- NPDES Point Source layer
- NCDMF Anadromous Fish layer
- NCDMF Fish Nursery Area layer
- NCDENR Animal Feeding Operation Permits layer
- Other layers that may identify the site as federally or state-owned or conservation area

Consider the three major functions of wetlands according to NCWAM and identify the stressors/attributes that may affect those functions.

Hydrologic Function

1) Is there any evidence the vegetation is severely altered?

   ☐Yes ☐No

2) Is there any evidence of extensive ditching or fill?

   ☐Yes ☐No

3) Is there any evidence of long duration inundation or saturation?

☐Yes ☐No

4) Is there any evidence the over-land or over-bank flow is severely altered?

☐Yes ☐No

Notes:_____

_____

_____

Water Quality Function

1) Record the total lateral width of wetland in feet: _____

(include width from both sides of stream, if applicable)

2) Record the estimated width of the actual channel in feet: _____

3) Based on canopy coverage, do the roots of the vegetation appear to extend into the bank of the tributary?

☐Yes ☐No

Notes:_____

_____

_____

Habitat Function

1) Record the estimated size of the wetland in acres: _____

2) Is the wetland well connected to ≥100 acres *or* loosely connected to ≥ 500 acres of landscape patch?

☐Yes ☐No

3) Is there an artificial edge within 150 feet in four or more directions *or* is the wetland clear-cut?

☐Yes ☐No

Notes:_____

_____

_____

Opportunity-Watershed Landuse

Execute NCDOT's Watershed Landuse Calculator tool which provides a report that answers NCWAM question 6. The report should be pasted below and used to interpret the wetland's opportunity to improve water quality in the wetland assessment report.

Notes:_____

SUMMARY OF T&E DETERMINATIONS

To: File

From: Susan Westberry

Date: November 19, 2013

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Summary of T&E Determinations

A summary of field investigations and activities pertaining to T&E investigations for the R-2553 Kinston Bypass project was distributed on June 12, 2013. A Section 404/NEPA Interagency Merger Process Team Informational Meeting was held on June 13, 2013. During the Informational Meeting, T&E investigations and summaries were discussed with the team. One of the conclusions made during field investigations and site visits with the USACE, NCDWR, USFWS, and NCWRC was that screening for pines younger than 60 years of age may be necessary within the project area due to the larger size of some of the younger-aged pine stands. It was preliminarily suggested that screening would be needed for pines in the 30-40 year age range. URS and NCDOT recommended dropping the age of stands from 60 years to 30 to 40 years for identifying potential RCW nesting areas.

In an email dated June 20, 2013, Gary Jordan of USFWS advised that upon further investigation, RCW will not nest in trees younger than 60 years of age regardless of their diameter. RCW require thick heartwood in which to nest. Heartwood is thin in young trees and increases in width as trees age. In younger trees, the sapwood is too thick for RCW to nest. If it can be determined that there is no nesting habitat within the survey area, there is no need to search for foraging habitat.

Based upon Mr. Jordan's statements above, it was determined that further field spot checks and/or investigations may not be needed if forest stand age could be determined based on either aerial photography or landowner information. URS had been in touch with Rhonda Huttlinger, the District Ranger with NC Forest Service (rhonda.huttlinger@ncagr.gov; 252-520-2400). Ms. Huttlinger was able to provide stand age for some tracts visited during spot checks where the team (USACE, NCDWR, USFWS, NCWRC, NCDOT, and URS) felt that trees would be sufficiently large enough for nesting. Information provided by Ms. Huttlinger verified that these stands were all within the 20-30 year age range. Further field spot checks performed by URS located several stands in the southern and eastern portion of the study area with trees that appeared to be sufficiently large for nesting. Most of the timber land in the southern and eastern portions of the study area is owned by the Weyerhaueser Paper Company.

URS contacted Jessica Homyack, the Southern Wildlife Program Leader with Weyerhaueser on November 7, 2013 (jessica.homyack@weyerhaueser.com; 252-633-7525). Ms. Homyack was not able to issue specific stand information due to their confidentiality policies, but was able to provide the following statements pertaining to RCW on their lands in Lenoir, Jones, and Craven counties:

- There are no records of RCW within any of their timber stands.
- Typical rotation lengths for their stands are between 20 and 30 years.
- They do have some 'natural' stands which get to be 50 or 60 years old, but they are not maintained and are often a dense mixture of pine and hardwood species.
- They provide some known foraging habitat adjacent to the Croatan National Forest, but that is the only RCW in the vicinity of any of their lands that they are aware of.

- Weyerhaueser contractors are trained to look for signs of RCW in all of their stands prior to harvesting; Ms. Homyack is consulted if RCW are suspected.

Based on URS' previous investigations and the forest size and structure that has been observed within the study area coupled with the information that Ms. Huttlinger and Ms. Homyack have provided, URS has concluded that T&E investigations for RCW habitat can be concluded at this time. The largest trees observed have been within stands that were less than 30 years old (as verified by Ms. Huttlinger and Ms. Homyack). URS has determined there is no potential nesting habitat within the study area and, therefore, no need to search for foraging habitat. In an email dated November 15, 2013, NCDOT agreed with URS' conclusion.

Once a LEDPA has been selected, URS/NCDOT should request specific stand information from both the NC Forest Service and Weyerhaueser to confirm that conditions have not changed. The Biological Conclusion for RCW will be left 'unresolved' until a LEDPA has been chosen.

F-6 Stream and Wetland Model Development & Metadata

DWR Lenoir Model (Streams)

Two ArcGIS models were used in order to assess potential stream and wetland impacts for the project. A jurisdictional stream model was created by the North Carolina Division of Water Resources (NCDWR) and a jurisdictional wetland model was created by NCDOT.

The jurisdictional stream analysis was completed by NCDWR for this pilot project. The data generated for the project consisted of stream lines within the three US Environmental Protection Agency (USEPA) Level IV ecoregions that were present in the larger project study area for the entire project. The ecoregions present were Rolling Coastal Plain (RCP), Carolina Flatwoods (CF) and Southeastern Floodplains and Terraces (SEFT). Jurisdictional stream models were developed for the RCP and CF ecoregions by utilizing 20-foot grid cell digital elevation models (DEM) generated from bare-earth Light Detection and Ranging (LIDAR) data and subsequent terrain derivatives and other ancillary data as variables. The models were developed in SAS 9.2 as binary logistic regression models. The National Hydrography Dataset (NHD) flowlines were used for SEFT in lieu of a model due to the streams in this ecoregion being heavily manipulated by channelization (ditching) and impractical to model accurately. NHD is similar to USGS 24k hydrolines, but does not include 'double line' streams and polygons that appear in USGS 24k line. All procedures used to collect stream data for the three ecoregions are collectively referred to as the 'DWR Lenoir Model.'

The outputted data from the most recent version of the DWR Lenoir Model (January 29, 2013) was clipped to the NRTR study area to determine which streams are located within the NRTR study area, and clipped again to each alternative's slope stake limits plus 40 feet to estimate which streams might be impacted by each alternative. Named streams were labeled (S1, S2, S3, etc.) in numerical order according to watershed moving from west to east across the NRTR study area.

Streams subject to the Neuse River Buffer Rules were identified based solely on their presence on 24k USGS topographic mapping. For the purposes of this document, streams absent from the topographic mapping were not considered to be subject to buffer rules. NRCS soils mapping was not consulted for buffer applicability at this time.

Wetland Prediction Model

Wetland data were derived from a wetland prediction model completed by NCDOT Natural Environment Section (NES) for this pilot project (April 15, 2011). The layer depicts wetlands of Lenoir County and portions of Jones and Craven Counties. Similar to the DWR Lenoir Model, the model utilizes 20-foot grid cell DEMs generated from bare-earth LIDAR data and subsequent terrain derivatives and other ancillary data as variables. The model was developed in SAS 9.2 as a binary logistic regression model. An updated set of models was developed using the next generation LiDAR data that was in the process of being acquired statewide. The purpose of these models, referred to as the 2017 QL2 models, were requested by the resource agencies to study the effects of using the next generation LiDAR in the models as compared to the legacy LiDAR data in the original 2011 models. For more information on the accuracy comparison of these models, please refer to the memo titled "Revised Supplement to NCDOT's Wetland Predictive Model Accuracy Assessment" dated September 14, 2017.

The wetland model used for this project is an aggregate of five different models based on ecoregion (listed below). Each model applies to one of the discrete areas for which it was

developed. The ecoregion boundaries were edited based on terrain data to improve the accuracy, which in turn, improved the model accuracy for each respective region. The applications of riparian and non-riparian within each of the ecoregion models were based on a riparian shapefile that NCDOT digitized based on terrain data and aerial photography. The resulting models included: Non-Riparian Rolling Coastal Plain Wetland, Riparian Rolling Coastal Plain Wetland, Non-Riparian Flatwood Wetland, Riparian Flatwood Wetland, and Southeastern Floodplains and Low Terraces Wetland. These data were also verified through multiple field surveys with the resource agencies. Field verifications of the wetland model took place on March 22, April 11, April 19, and June 7, 2012. Tom Steffens of US Army Corps of Engineers (USACE) and David Wainwright of NCDWR were in attendance, along with Leilani Paugh and Morgan Weatherford of NCDOT, Sandy Smith of Axiom, and Susan Westberry of URS.

The wetland model resulted in a wetland prediction raster file. The original raster file was converted to a polygon layer in order to assess potential wetland impacts of the project. First, the raster file was converted to an integer file such that geoprocessing could occur. Next, the Raster to Polygon tool was used to convert the integer raster to a single polygon layer (that included the five different wetland types listed above). The resulting polygon layer was then clipped to the NRTR study area to determine the acreage of each wetland type located within the NRTR study area, and clipped again to the slope stake limits plus 40 feet to determine the acreage of each wetland type located within each alternative.

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Pat McCrory
Governor

Charles Wakild, P. E.
Director

John E. Skvarla, III
Secretary

January 29, 2013

To: Leilani Paugh, NCDOT Natural Environment Unit

From: Periann Russell, NCDWQ Transportation Permitting Unit

Subject: Delivery of Updated Final Stream Map for Kinston Bypass Study Area

For the last several months DWQ has been working to improve the Carolina Flatwoods headwater stream model. We have improved the consistency and accuracy for this ecoregion by recalibrating the model, reducing the number of variables in the model and removing known ditchlines from the model streamlines; please see the updated table below.

The attached shape file includes the stream map created by DWQ for the Kinston bypass study area. The map consists of stream lines for five EPA Level IV ecoregions; they are Rolling Coastal Plain (RCP), Carolina Flatwoods (CF), Mid-Atlantic Floodplains and Low Terraces (MAFLT), Southeastern Floodplains and Terraces (SEFT) and Swamps and Peatlands (no streams in this ecoregion). As previously discussed, United States Geological Survey (USGS) stream lines were used for SEFT stream lines. The National Hydrography Dataset (NHD) flowlines were applied to this ecoregion and provide more flexible and complete stream line data than USGS 24k hydrolines. NHD is similar to USGS 24,000 hydrolines, but does not include "double line" streams and polygons that appear in USGS 24k lines. NHD flowlines are also attributed with descriptive data that may be useful in calculating stream impact lengths.

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492
Internet: www.ncwaterquality.org

Map Description

The study area stream map includes an attribute table with the fields listed in Table 1. The use of NHD flowlines in SEFT resulted in some inconsistency of stream line continuation and alignment across ecoregion boundaries, e.g., a modeled stream may be present in the RCP but not continue into the SEFT, or the stream may be present on both maps, not in alignment. Since DWQ has a higher confidence in the modeled streams and the LiDAR-derived topography than in the NHD flowlines, these few inconsistencies were not edited across boundaries. Additionally, stream lines may stop or start at ecoregion boundaries due to DEM shifts in the original data layers delivered by Michael Baker Corp. The DEM shift issue was discovered during this project and has been resolved for future mapping projects.

Table 1: Attribute Table Definitions

Field	Description	Values
Grid Code	stream	1 – is a stream
Source	Source of stream line	M-RCP/CF Model F-Field Determined NHDFType558-Artifical Path (center line of stream) NHDFType460-Stream/River NHDFtype336-Canal/Ditch
Ecoregion	EPA Level IV ecoregion	63h-Carolina Flatwoods 65m-Rolling Coastal Plain 65p-Southeastern Floodplains and Terraces 65n-Mid-Atlantic Floodplains and Low Terraces
Field date	Date Field data collected	
Length	Length of stream segment in feet	

Headwater Stream Model Accuracy

General observations and field verification of the modeled streams indicate that in most areas overestimation of stream length occurs due to pronounced ditching in valleys and in wetlands that occur in pronounced, narrow valleys. Overestimation is also associated with low elevation roads that were misclassified as streams (Figures 1, 2 and 3) and extension of streams into ponds and lakes.

Errors associated with ditches, wetlands, roads and ponds were removed using known field data, 2010 aerial photos, DOT roads, and USGS 24K hydro polygons. Many of the ponds shown on the 24k polygon file do not exist on the ground, so all final decision to remove were made based on the 2010 aerial photos. Accuracies of the model vs. field stream length are listed in Table 2. For comparison, the accuracies of USGS stream length vs. field stream length are included as well.

Table 2: Headwater Stream Model Accuracy

	Site	Field Stream Length (ft)	Model Stream Length (ft)	Model Length Accuracy	USGS Stream Length (ft)	USGS Length Accuracy
RCP	LCB	20770	24657	119%	30241	146%
	LCC	23348	28320	121%	42423	182%
	LCD	50850	59728	117%	47094	93%
Total RCP		94968	112705	119%	119758	126%
CF						
	On02	2252	2105	93%	5758	256%
	Le02	9581	9071	95%	10234	107%
	Co02	9481	8879	94%	8825	93%
Total CF		21314	20055	94%	24817	116%
Total Study Area		116282	132760	114%	144575	124%

Please call or email if you have any questions. I can be reached by phone at 919.807.6478 or email at periann.russell@ncdenr.gov.

cc: Cheryl Gregory (DWQ-TPU)
Morgan Weatherford (NCDOT-NEU)

Carolina Flatwoods Headwater Stream Model
Example of Area of Overprediction

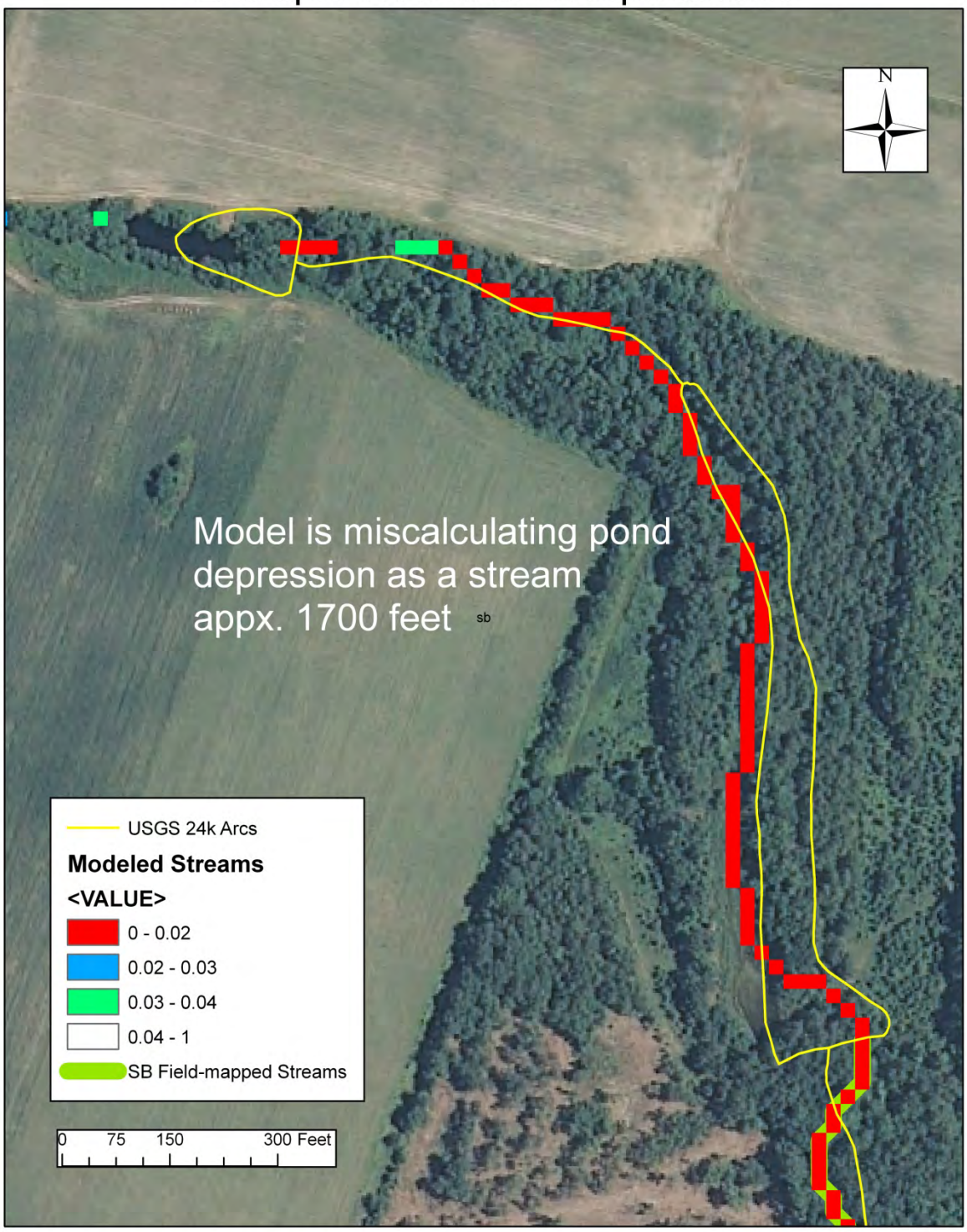

Figure 1

Carolina Flatwoods Headwater Stream Model
Example of Area of Overprediction (2)

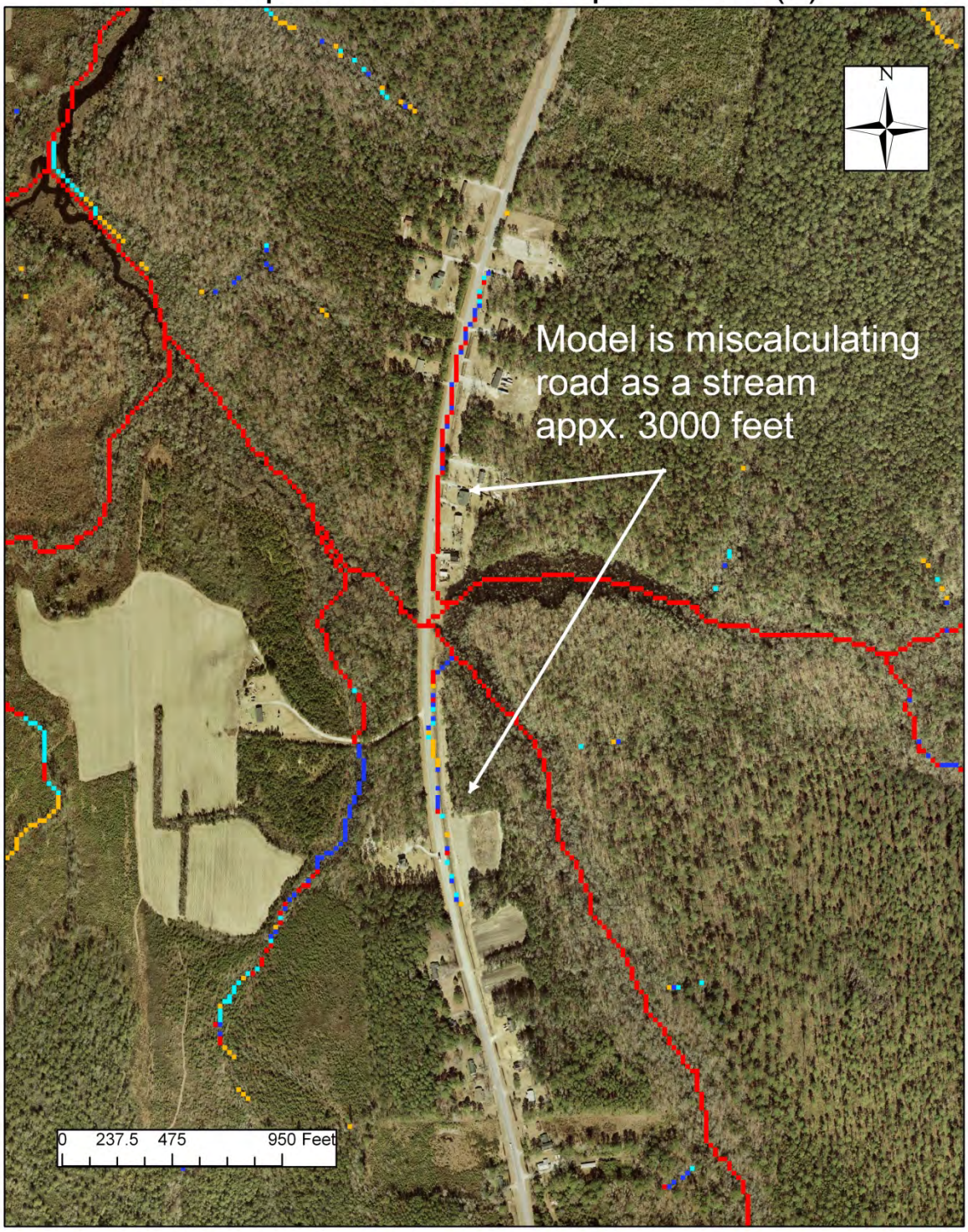

Figure 2

Carolina Flatwoods Headwater Stream Model
Example of Area of Overprediction (2)

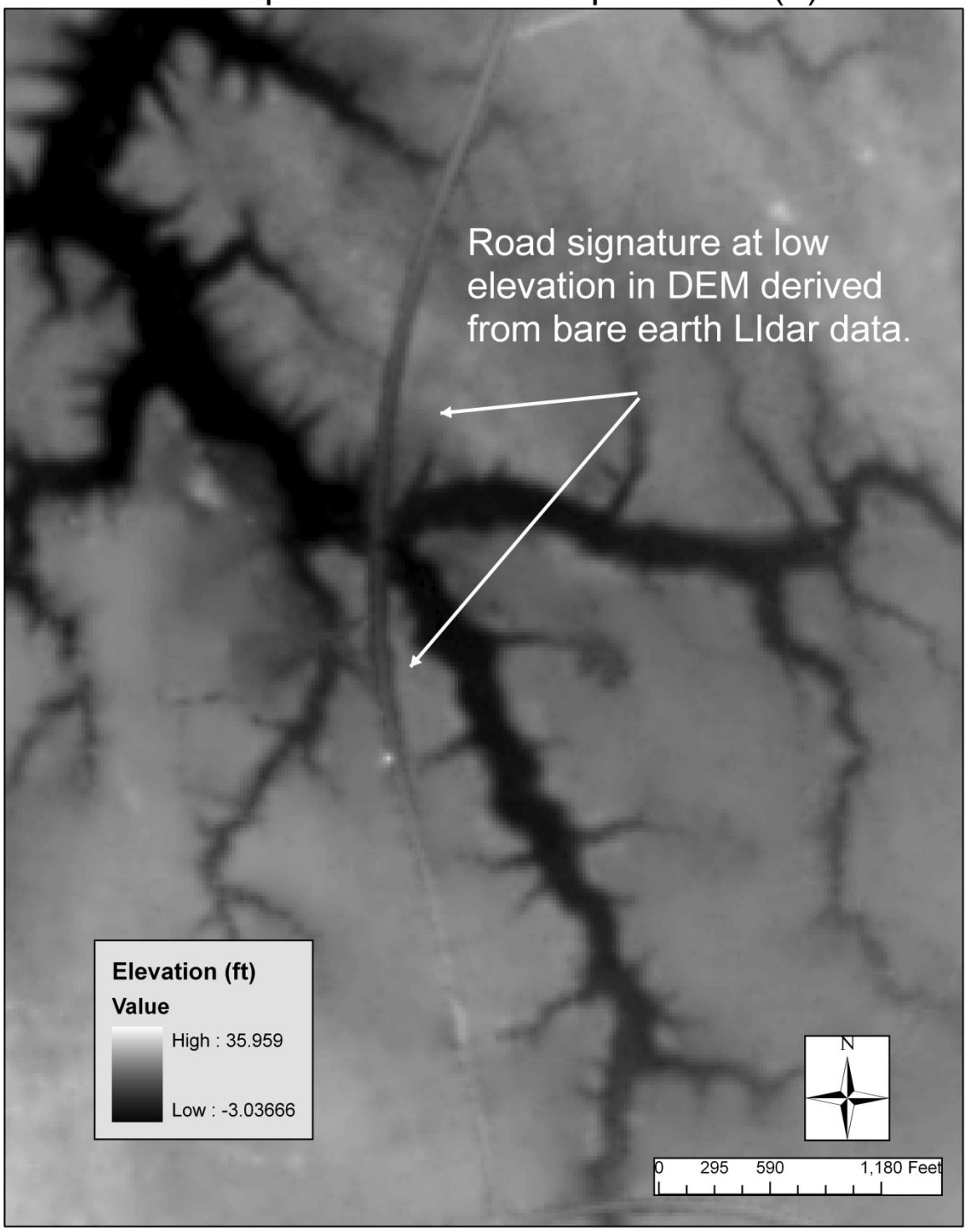

Figure 3

RollingCP_Riparian

Shapefile

Description | Spatial | Attributes

Keywords

Theme: Wetlands

Place: Lenoir County

Description

Abstract

This layer depicts wetlands of Lenoir County and portions of Jones and Craven Counties. These wetland locations were generated by the North Carolina Dept. of Transportation wetland prediction model. The model utilizes 20' grid cell digital elevation models generated from bare-earth LiDAR data and subsequent terrain derivatives as variables. The model may also use Southeast GAP land cover data, NOAA C-CAP land cover data, NC Division of Coastal Managment NC CREWS data and NRCS SSURGO soils data as variables. The model is developed in SAS 9.2 as a binary logistic regression model.

Purpose

These wetland locations were created as part of the Lenoir County GIS pilot project initiated and funded by NCDOT.

Status of the data

Complete

Data update frequency: As needed

Time period for which the data is relevant

Date and time: REQUIRED: The year (and optionally month, or month and day) for which the data set corresponds to the ground.

Description:

publication date

Publication Information

Who created the data: NCDOT- Natural Environment Unit - Indirect and Cumulative Impacts Group

Date and time: 4/15/2011

Data storage and access information

File name: RollingCP_Riparian

Type of data: vector digital data

Data processing environment: Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 3; ESRI ArcCatalog 9.3.1.4000

Accessing the data

Size of the data: 78.970 MB

Data transfer size: 78.970 MB

Constraints on accessing and using the data

Access constraints: None

Use constraints:

These wetland locations are for planning purposes only and do not consistently represent the delineated boundaries as defined by the 1987 US Army Corps of Engineers Wetland Delineation Manual of the wetlands contained herein. Specific locations should be verified if any actions to be taken in proximity of these locations. The North Carolina Department of Transportation shall not be held liable for any errors in this data. This includes errors of omission, commission, errors concerning the content of the data, and relative and positional accuracy of the data. This data cannot be construed to be a legal document. Primary sources from which this data was compiled must be consulted for verification of information contained in this data.

Details about this document

Contents last updated: 20110815 at time 15425400

Who completed this document

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Standards used to create this document

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Metadata profiles defining additonal information

- ESRI Metadata Profile: http://www.esri.com/metadata/esriprof80.html

Appendix E: Records of Field Meetings and Protected Species Determinations

RECORD OF FIELD MEETING

To: Project File

From: Susan Westberry

Date: May 2, 2012

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Stream and Wetland Modeling Verification and Field Spot Checking

Two meetings were held on Wednesday, April 11, 2012 and Thursday, April 19, 2012 at the project site in Kinston, NC. The meeting began at the District Engineers Office on Hwy 258 at 9:00am. Attendees of the meeting are listed below:

LeiLani Paugh	North Carolina Department of Transportation Natural Environment Section (NCDOT)
Morgan Weatherford	NCDOT
Tom Steffens	United States Army Corp of Engineers (USACE)
David Wainwright	North Carolina Department of Environment and Natural Resources Division of Water Quality (NCDWQ)
Sandy Smith	Axiom Environmental
Susan Westberry	URS

Purpose of Meeting

The purpose of the field meetings was to verify and spot check the accuracy of the wetland model being used by NCDOT to assess wetland impacts for the project.

The intent of the first field meeting was for NCDOT to show the USACE and NCDWQ (agencies) five sites where the wetland model had issues and/or inaccuracies. These sites were chosen by NCDOT as 'problem areas.'

The intent of the second field meeting was to allow the agencies to choose sites that they wanted to visit based on the mapping provided by NCDOT.

General Overview of Meeting #1

The meeting began with discussion about the modeling efforts to date, project mapping, and potential issues NCDOT has seen with the modeling. Mr. Weatherford detailed the modeling methodologies and provided mapping of each of the five sites the group was to visit during the meeting.

The sites chosen included 'fringe' areas where the modeling had potential to be inaccurate. These sites included areas within pine plantations that could be impacted by ditching, sites near agricultural fields containing ditches, and pine flats. Overall, the model was found to be fairly accurate and both the USACE and NCDWQ expressed confidence in the model.

Discussions also included the development of a new model, a 'ditch' model. The intent of the 'ditch' model is to locate areas that have been modeled as wetlands by the wetland model where drainage features have negatively affected the hydrology of the site. The USACE and NCDWQ are both very interested in seeing the results of this model. It was also determined that the 'ditch' model should be referred to as the 'linear drainage model' as it does not determine the jurisdictionality of a feature.

NCDOT has contracted consultants to digitize the linear drainage features within the study area. Once the features have been delineated, NCDOT will develop a model that will adjust the wetland model according to the location of drainage features that may be removing hydrology from the wetlands.

The meeting concluded with NCDOT providing USACE and NCDWQ mapping to assist them in choosing the sites to be visited during the second field meeting. NCDOT expressed that they wish to be transparent with the agencies throughout this process and that they value their input and opinion during the field investigations.

General Overview of Meeting #2

Meeting #2 began with discussions between the agencies and NCDOT regarding the sites that were to be visited. The USACE chose sites that were within the delineated 'riparian' area, adjacent to wetlands, but not modeled as wetlands. There was also a site that was suspect of being candidate for the 'ditch' model that the agencies wished to visit to determine if it should be removed by the ditch model. The intent was to locate sites where NCDOT and the agencies agree that linear drainages are negatively affecting hydrology of wetlands shown by the model in order to spot check the 'ditch' model once it has been completed.

Three sites were visited. NCDOT and the agencies were pleased with what was found at each site. The agencies expressed that the 'ditch' model would be an important component in their confidence with the modeling. No decisions/determinations will be made until the ditch model is complete and more spot checking is accomplished.

The meeting concluded with all agreeing that more field spot checking would be necessary once the ditch model was complete.

Action Items

- NCDOT will continue working on the digitization of the Riparian model. Delineation of riparian zones to be used in NC Wetland Assessment Methodology (NCWAM) wetland classifications could come into play later in the project.
- NCDOT will inform the agencies when the ditch model has been complete. The data will be provided to the agencies once finished so that additional field meetings can be held.
- NCDOT will update mapping/modeling upon the completion of the ditch model.
- Additional field meetings will be needed to spot check the ditch model and address any other concerns the agencies may have.

General Summary

The field exercises provided URS and the agencies with some insight into the accuracy and history of stream and wetland modeling. Model parameters were discussed. The addition of parameters to the ditch model was explored. The utility of such modeling for use in future projects was discussed, as was the agencies' ability to 'sign off' on impacts/alternatives based on such modeling.

Neither agency member is willing to sign off on anything at this point. Both agencies feel the ditch model is going to be an important factor in their decision, and any/all future stream and wetland project decisions.

The ditch model is estimated to be complete sometime during the summer of 2012. Additional field meetings should be anticipated late summer/early fall 2012.

RECORD OF FIELD MEETING

To: Project File

From: Susan Westberry

Date: December 17, 2012

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Sample NRTR Stream and Wetland Verification and Field Spot Checking

A meeting was held on Thursday, November 29, 2012 at the project site in Kinston, NC. The meeting began at the TradeMark/Hess gas station at the corner of US 258 and US 70 in Kinston at 9:30 am. Attendees of the meeting are listed below:

Chris Manley	NCDOT NES
James Mason	NCDOT NES
LeiLani Paugh	NCDOT Natural Environment Section (NES)
Tom Steffens	US Army Corps of Engineers (USACE)
David Wainwright	NC Division of Water Quality (NCDWQ)
Morgan Weatherford	NCDOT NES
Susan Westberry	URS
Travis Wilson	NC Wildlife Resources Commission (NCWRC)

Purpose of Meeting

The purpose of the field meeting was to verify and spot check the accuracy of the stream and wetland models being used by NCDOT to assess wetland impacts for the project – and in particular, to assess the accuracy of the modeled features within the study area for the Sample NRTR. Additionally, the NCWRC used the field meeting as an opportunity to spot check community classifications identified within the C-CAP data.

The intent of the meeting was to give the NCWRC, NCDWQ, and USACE an opportunity to hand choose sites within the Sample NRTR study area that they would like to view (to verify streams, wetlands, and natural communities/potential T&E habitat).

Five sites were chosen and viewed on November 29, 2012.

All agency members were pleased with the field meeting and instructed NCDOT to proceed with the completion of the NRTR for the entire study area based on the discussions held during the November 27, 2012 Sample NRTR review meeting.

Travis Wilson noted that after seeing the communities within the study area that he would like to look further into the C-CAP classifications and their derivations, but that his exercises were for his knowledge only, and should not delay the project in any way.

RECORD OF FIELD MEETING

To: File

From: Susan Westberry

Date: July 3, 2013

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
NRTR Threatened and Endangered Species Protocol Verification and Field Spot Checking

A meeting was held on Wednesday, May 22, 2013 at the project site in Kinston, NC. The meeting began at the TradeMark/Hess gas station at the corner of US 258 and US 70 in Kinston at 9:30 am. Attendees of the meeting are listed below:

LeiLani Paugh	NCDOT Natural Environment Section (NES)
Morgan Weatherford	NCDOT NES
Tom Steffens	US Army Corps of Engineers
David Wainwright	NC Division of Water Quality
Gary Jordan	US Fish and Wildlife Service
Travis Wilson	NC Wildlife Resources Commission
Susan Westberry	URS

Purpose of Meeting

The purpose of the field meetings was to verify and spot check the accuracy of the protocol being used to assess the presence of habitat for threatened and endangered species in the NRTR study area. This protocol is being used mainly for the identification of habitat for red-cockaded woodpecker, but similar protocols could be developed for other plant and animal species with particular habitat requirements. The GIS-based protocol proposed within the NRTR for this pilot project utilizes C-CAP landcover data in conjunction with aerial photography to screen for potential habitat sites.

A total of 96 potential habitat sites were identified within the NRTR. These sites were developed using the evergreen forest and scrub/shrub landcover types within the C-CAP data coupled with a size threshold of 30 acres and visual screening against aerial photography. URS performed field spot checking of 28 of the potential sites prior to this meeting.

The intent of the meeting was to take the USFWS and NCWRC to a number of the sites that URS had visited during field spot checks to show the agencies 1. What types of habitat the protocol was producing, 2. The habitat features that URS was using to determine the presence or absence of suitable habitat, and 3. To gain information/guidance/acceptance of the protocol in use.

Five sites were chosen and viewed on May 22, 2013. Two additional sites were also visited at the end of the field meeting that occurred within the radius of the previous record of red-cockaded woodpecker for Lenoir County.

USFWS and NCWRC expressed agreement with the protocol being used to assess community types. Gary Jordan offered further guidance that may help to reduce the number of potential habitat areas identified using the protocol. These discussions are summarized below.

Summary of Guidance

- Could discount the need to search for foraging habitat if we could determine the absence of nesting habitat first.
- Suggested a screening for 60+ year pines. If no old pine stands fall within the ½ mile radius, no foraging assessment would be required.
- If we could determine at the onset that no nesting is present, could make a 'No Effect' determination.
- Foraging habitat needs to be connected to suitable nesting habitat – no more than 200 feet of separation.
- RCW are not bothered by human activity. If nesting and foraging habitat are separated by humans (residence, golf course, etc.), potential for colonies does exist.
- If located within the context of a larger pine-dominated landscape of any age, 30 acres minimum of combined nesting and foraging habitat (only a few potential cavity trees are required) would require field investigation to determine the presence or absence of cavity trees.
- If **not** located within the context of a larger pine-dominated landscape of any age a minimum threshold of 75 acres of combined nesting and foraging habitat would be required to trigger the need for field investigation to determine the presence or absence of cavity trees.
- Areas smaller than 30 acres in total wooded size do not need to be assessed. No habitat.
- In even-aged stands, the entire stand can be discounted based on size/age determination. No nesting/cavity searches are needed if it is known the stand is even-aged.

Mr. Jordan stressed that the guidance given during the May 22, 2013 field meeting is guidance applicable to RCW habitat assessments for Lenoir County, and this project in particular. He stated that different protocol would be appropriate for different projects in different parts of the state. This is due to new findings related to RCW and habitat variability in Outer Banks and southeastern counties.

SUMMARY OF FIELD INVESTIGATIONS AND ACTIVITY

URS

To: File

From: Susan Westberry

Date: July 3, 2013

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Summary of Field Investigations and Activity Since May 22, 2013 T&E Spot Checks

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Foot surveys for rough-leaved loosestrife were conducted on June 5, 2013. These surveys were conducted within the field/forested edge regions of Leon and Torhunta soils within Craven County identified within the Draft NRTR. No rough-leaved loosestrife plants were identified. The biological conclusion for this species can be changed to **No Effect** within the NRTR.

Thirty additional RCW habitat sites were also spot checked on June 5, 2013. An attempt was made to visit sites 51-70 and 72-81. Eleven of the sites were not accessible due to gated plantation roads. In general, the majority of the sites in the east (Craven and Jones counties) appear to be Weyerhauser property. Many of these are contained within extensive Weyerhauser logging roads. If any of these areas require further investigation in the future, an attempt should be made to obtain keys for these gates.

Sites 68, 69, and 70 should be surveyed for cavity trees if they fall within the range of the LEDPA. These three sites appear to be timber plantation and are also part of the land used by Dover Mosley Creek Hunting Club. These three sites support potential nesting habitat and are contiguous to hundreds of acres of younger plantation.

As a result of the May 22, 2013 field meeting, the District Ranger for the Kinston Area of the NC Forest Service was contacted to obtain timber stand age information. Rhonda Huttlinger was provided with several of the sites visited during the first round of spot checks for RCW habitat. It appears that the NC Forest Service maintains data on privately owned timber plantations, but does not keep data on larger plantations (Weyerhauser properties).

Data provided by the NC Forest Service indicates that our estimations of stand age in the field on May 22 were over-estimates in almost all cases. Site 10 – potential foraging habitat was aged in the field to be 40-50 years. Plantation data show the stand is 25 years old.

Site 17 – field notes indicate that the trees were large enough for cavities but the stand was exceedingly thick. Plantation data show the stand is 24-25 years old.

Site 21 – roadside stand next to golf course neighborhood with large potential cavity trees across the road. Plantation data show 22-23 years old.

An attempt will be made to contact Weyerhauser to obtain timber stand age data for the NRTR study area – particularly sites 68-70.

RECORD OF FIELD MEETING

URS

To: File

From: Susan Westberry

Date: November 7, 2013

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Remote Wetland Quality Assessment Methodology Field Verifications

A meeting was held on Wednesday, October 23, 2013 at the project site in Kinston, NC. The meeting began at the TradeMark/Hess gas station at the corner of US 258 and US 70 in Kinston at 9:00 am. Attendees of the meeting are listed below:

LeiLani Paugh	NCDOT Natural Environment Section (NES)
Morgan Weatherford	NCDOT NES
David Johnson	NCDOT NES
Tom Steffens	US Army Corps of Engineers
Gary Jordan	US Fish and Wildlife Service
Travis Wilson	NC Wildlife Resources Commission
Susan Westberry	URS

Purpose of Meeting

The purpose of the field meeting was to verify the accuracy of the methodologies developed by NCDOT to remotely assess wetland quality for hydraulic crossings on the project. The methodology is intended to aid in decision making on hydraulic crossings during CP2A. NCDOT developed a form/checklist to evaluate each crossing. The checklist documents wetland stressors and attributes identifiable with GIS data layers. If no stressors or other attributes can be identified to negatively impact wetland quality, the wetland is assumed to be high quality (see form attached).

David Johnson of NCDOT identified five sites to visit during the field meeting (#s 132, 48, 110, 150, and 118). Each of the five sites were different in size and potential stressors. A summary of the discussion at each of the five sites and a general summary of discussions is included below.

Summary of Discussion

- Travis Wilson warned that 'typical' CP2A decisions would not be possible with this limited data. He does not feel comfortable committing to bridge sizes or culvert sized 100% based solely on GIS data.
- It was suggested that crossings could be 'categorized' into broad types.
- Mr. Wilson suggested final length and size decisions be pushed to CP4A.
- Agencies want to be sure that expectations of the types and finality of decisions made at CP2A are understood – agencies want to reserve the right to change their sizing decisions when field verified data are made available (after LEDPA field studies).
- Agencies feel confident that the 'obvious' crossings could be committed to. Definite bridges and areas where minimum hydraulic will be sufficient.
- There will likely be a population of sites left over that will need revisiting once a LEDPA has been chosen.
- These data would be sufficient to make alternative decisions.

- There is concern that stream quality assessments have not been done – only wetlands. For crossings where it is stream only and not wetland, there is no assessment.
- Agencies want reassurance that if poor decisions are made at CP2A, changes can be made at CP4A.
- NCDOT stressed that new information allows for changes to be made to merger decisions and that stream and wetland delineations would constitute new information and allow for changes.
- Travis Wilson would like to push structure decisions until after LEDPA.
- **Agencies request to have more than two weeks lead time with CP2A package.**

Summary of Crossing Sites

#132

'Stressed' crossing. Crossing itself does not require large hydraulic opening, but the riparian structure and floodplain width dictate otherwise. This site is an example of where the decision would likely be different desktop vs. field visit. The width and quality of the wetland and floodplain is not obvious from data.

#48

Triple box culvert now and proposed. Travis Wilson requested that these types of data be provided at CP2A (list of existing and proposed structures).

#110

Existing bridge. This would be a crossing where a decision could be made.

#150

Site had stressors in all three categories. Travis Wilson agreed with culvert call on this location on the ground – not sure if he would be as positive in the office.

A discussion ensued about farm fields having both positive and negative effects from a wildlife perspective – dependent upon surrounding landscape.

#118

A single 6' x 6' proposed for this location. Not sufficient. See photo. Agencies asked how watersheds are being calculated. In this instance, this would be undersized.

Next Steps

- NCDOT to develop 'categories' for lumping of crossing types (for example, bridge, single box, minimum hydraulic, etc.).
- A trial run of sites will be completed prior to CP2A to be sure that 'categories' are sufficient.
- An office meeting to lump sites will be done (similar to what would be done at CP2A).
- A field meeting to each site would occur to verify accuracy of grouping methodology.

Assessor Name:_____ Crossing No:_____

Remote Wetland Quality Assessment Form for Major Stream Crossings

Usage Guidance:

This form seeks to document wetland stressors and attributes identifiable with GIS data layers. If no stressors or other attributes can be identified to negatively impact wetland quality, we will assume the wetland is of high quality.

Terminology, thresholds and criteria are based on definitions provided in NCWAM manual version 4.1.

Potential wetland types for this exercise are assumed to be limited to Bottomland Hardwood, Riverine Swamp Forest, Headwater Forest and Non-Tidal Freshwater marsh.

Wetland type boundaries cannot generally be distinguished with this approach and answers to the questions may be applied to the wetland complex instead.

The following GIS data layers must be acquired to assess the wetlands with this method:

- 2010 Statewide and 2012 Orthoimagery (if available)
- NCDOT Wetland Prediction Model raster
- NLCS SSURGO soils layer
- 2006 National Land Cover Database raster
- USGS 24K hydrography layer
- NCDOT Lateral Effect GIS Model drainage feature layer
- NCDWQ 303D stream layer
- NCNHP Elemental Occurrence layer
- NPDES Point Source layer
- NCDMF Anadromous Fish layer
- NCDMF Fish Nursery Area layer
- NCDENR Animal Feeding Operation Permits layer
- Other layers that may identify the site as federally or state-owned or conservation area

Consider the three major functions of wetlands according to NCWAM and identify the stressors/attributes that may affect those functions.

Hydrologic Function

1) Is there any evidence the vegetation is severely altered?

   ☐Yes ☐No

2) Is there any evidence of extensive ditching or fill?

   ☐Yes ☐No

3) Is there any evidence of long duration inundation or saturation?

☐Yes ☐No

4) Is there any evidence the over-land or over-bank flow is severely altered?

☐Yes ☐No

Notes:_____

_____

_____

Water Quality Function

1) Record the total lateral width of wetland in feet: _____

(include width from both sides of stream, if applicable)

2) Record the estimated width of the actual channel in feet: _____

3) Based on canopy coverage, do the roots of the vegetation appear to extend into the bank of the tributary?

☐Yes ☐No

Notes:_____

_____

_____

Habitat Function

1) Record the estimated size of the wetland in acres: _____

2) Is the wetland well connected to ≥100 acres *or* loosely connected to ≥500 acres of landscape patch?

☐Yes ☐No

3) Is there an artificial edge within 150 feet in four or more directions *or* is the wetland clear-cut?

☐Yes ☐No

Notes:_____

_____

_____

Opportunity-Watershed Landuse

Execute NCDOT's Watershed Landuse Calculator tool which provides a report that answers NCWAM question 6. The report should be pasted below and used to interpret the wetland's opportunity to improve water quality in the wetland assessment report.

Notes:_____

SUMMARY OF T&E DETERMINATIONS

To: File

From: Susan Westberry

Date: November 19, 2013

RE: STIP Number R-2553, Kinston Bypass, Lenoir County, North Carolina
Summary of T&E Determinations

A summary of field investigations and activities pertaining to T&E investigations for the R-2553 Kinston Bypass project was distributed on June 12, 2013. A Section 404/NEPA Interagency Merger Process Team Informational Meeting was held on June 13, 2013. During the Informational Meeting, T&E investigations and summaries were discussed with the team. One of the conclusions made during field investigations and site visits with the USACE, NCDWR, USFWS, and NCWRC was that screening for pines younger than 60 years of age may be necessary within the project area due to the larger size of some of the younger-aged pine stands. It was preliminarily suggested that screening would be needed for pines in the 30-40 year age range. URS and NCDOT recommended dropping the age of stands from 60 years to 30 to 40 years for identifying potential RCW nesting areas.

In an email dated June 20, 2013, Gary Jordan of USFWS advised that upon further investigation, RCW will not nest in trees younger than 60 years of age regardless of their diameter. RCW require thick heartwood in which to nest. Heartwood is thin in young trees and increases in width as trees age. In younger trees, the sapwood is too thick for RCW to nest. If it can be determined that there is no nesting habitat within the survey area, there is no need to search for foraging habitat.

Based upon Mr. Jordan's statements above, it was determined that further field spot checks and/or investigations may not be needed if forest stand age could be determined based on either aerial photography or landowner information. URS had been in touch with Rhonda Huttlinger, the District Ranger with NC Forest Service (rhonda.huttlinger@ncagr.gov; 252-520-2400). Ms. Huttlinger was able to provide stand age for some tracts visited during spot checks where the team (USACE, NCDWR, USFWS, NCWRC, NCDOT, and URS) felt that trees would be sufficiently large enough for nesting. Information provided by Ms. Huttlinger verified that these stands were all within the 20-30 year age range. Further field spot checks performed by URS located several stands in the southern and eastern portion of the study area with trees that appeared to be sufficiently large for nesting. Most of the timber land in the southern and eastern portions of the study area is owned by the Weyerhaueser Paper Company.

URS contacted Jessica Homyack, the Southern Wildlife Program Leader with Weyerhaueser on November 7, 2013 (jessica.homyack@weyerhaueser.com; 252-633-7525). Ms. Homyack was not able to issue specific stand information due to their confidentiality policies, but was able to provide the following statements pertaining to RCW on their lands in Lenoir, Jones, and Craven counties:

- There are no records of RCW within any of their timber stands.
- Typical rotation lengths for their stands are between 20 and 30 years.
- They do have some 'natural' stands which get to be 50 or 60 years old, but they are not maintained and are often a dense mixture of pine and hardwood species.
- They provide some known foraging habitat adjacent to the Croatan National Forest, but that is the only RCW in the vicinity of any of their lands that they are aware of.

- Weyerhaueser contractors are trained to look for signs of RCW in all of their stands prior to harvesting; Ms. Homyack is consulted if RCW are suspected.

Based on URS' previous investigations and the forest size and structure that has been observed within the study area coupled with the information that Ms. Huttlinger and Ms. Homyack have provided, URS has concluded that T&E investigations for RCW habitat can be concluded at this time. The largest trees observed have been within stands that were less than 30 years old (as verified by Ms. Huttlinger and Ms. Homyack). URS has determined there is no potential nesting habitat within the study area and, therefore, no need to search for foraging habitat. In an email dated November 15, 2013, NCDOT agreed with URS' conclusion.

Once a LEDPA has been selected, URS/NCDOT should request specific stand information from both the NC Forest Service and Weyerhaueser to confirm that conditions have not changed. The Biological Conclusion for RCW will be left 'unresolved' until a LEDPA has been chosen.

F-7 Impacted Streams

Table F-4: Impacted Streams

Stream ID	Stream Name	Subject to Buffer Rules[a]	Best Usage Classification	Stream Impact by Alternative (feet)											
				1UE	1SB	11	12	31	32	35	36	51	52	63	65
S2	Falling Creek	Yes	C;Sw,NSW	--	42	--	15	--	--	--	--	--	--	--	--
S3	Southwest Creek	Yes	C;Sw,NSW	12	26	--	--	--	--	--	--	--	--	--	--
S6	Buck Branch	Yes	C;Sw,NSW	504	504	504	504	504	504	504	504	504	504	504	504
S9	Whitleys Creek	Yes	C;Sw,NSW	--	--	--	--	--	--	879	879	502	502	--	--
S12	Peter Creek	Yes	C;Sw,NSW	--	--	356	356	356	356	--	--	--	--	356	356
S13	Clarks Branch	Yes	C;Sw,NSW	--	--	--	--	--	--	758	758	--	--	--	--
S15	Spring Branch	Yes	C;Sw,NSW	--	--	--	--	--	--	252	252	--	--	--	--
S22	Mott Swamp	Yes	C;Sw,NSW	--	--	389	389	389	389	--	--	389	389	389	389
S23	Strawberry Branch	Yes	C;Sw,NSW	--	--	532	492	532	492	729	729	532	492	492	532
S25	Mill Branch	Yes	C;Sw,NSW	616	616	--	--	--	--	--	--	--	--	--	--
S32	Tracey Swamp	Yes	C;Sw,NSW	562	562	253	562	253	562	562	263	532	562	562	253
S73	UT to Buck Branch	No	C;Sw,NSW	234	234	234	234	234	234	234	234	234	234	234	234
S74	UT to Walters Mill Pond	Yes	C;Sw,NSW	815	815	815	815	815	815	815	815	815	815	815	815
S76	UT to Walters Mill Pond	No	C;Sw,NSW	911	911	911	911	911	911	911	911	911	911	911	911
S79	UT to Mill Branch	Yes	C;Sw,NSW	479	479	--	--	--	--	--	--	--	--	--	--
S80	UT to Peter Creek	No	C;Sw,NSW	--	--	561	561	561	561	--	--	--	--	561	561

Stream ID	Stream Name	Subject to Buffer Rules[a]	Best Usage Classification	Stream Impact by Alternative (feet)											
				1UE	1SB	11	12	31	32	35	36	51	52	63	65
S82	UT to Mill Branch	Yes	C;Sw,NSW	--	--	--	619	--	619	619	--	--	619	619	--
S84	UT to Mill Branch	No	C;Sw,NSW	--	--	--	340	--	340	--	--	--	340	340	--
S85	UT to Whitleys Creek	Yes	C;Sw,NSW	--	--	--	--	--	--	--	--	499	499	--	--
S86	UT to Mill Branch	Yes	C;Sw,NSW	--	--	--	506	--	506	506	--	--	506	506	--
S87	UT to Strawberry Branch	Yes	C;Sw,NSW	--	--	343	224	343	224	--	--	343	224	224	343
S88	UT to Strawberry Branch	Yes	C;Sw,NSW	--	--	--	310	--	310	--	--	--	310	310	--
S89	UT to Strawberry Branch	Yes	C;Sw,NSW	--	--	260	250	260	250	--	--	260	250	250	260
S90	UT to Southwest Creek	No	C;Sw,NSW	--	--	--	--	--	--	--	--	432	432	--	--
S91	UT to Mill Branch	No	C;Sw,NSW	--	--	--	400	--	400	239.2	--	--	400	400	--
S92	UT to Mill Branch	Yes	C;Sw,NSW	--	--	--	308	--	308	307	--	--	308	308	--
S93	UT to Neuse River	No	WS-IV;NSW	--	--	--	--	--	--	1,080	1,080	--	--	--	--

Stream ID	Stream Name	Subject to Buffer Rules[a]	Best Usage Classification	Stream Impact by Alternative (feet)											
				1UE	1SB	11	12	31	32	35	36	51	52	63	65
S94	UT to Strawberry Branch	Yes	C;Sw,NSW	--	--	306	306	306	306	--	--	306	306	306	306
S96	UT to Mott Swamp	Yes	C;Sw,NSW	--	--	1,871	1,871	1,871	1,871	--	--	1,871	1,871	1,871	1,871
S98	UT to Southwest Creek	No	C;Sw,NSW	--	--	--	--	--	--	--	--	424	424	--	--
S99	UT to Southwest Creek	Yes	C;Sw,NSW	--	--	630	628	630	630	--	--	630	630	630	630
S100	UT to Southwest Creek	No	C;Sw,NSW	--	--	421	421	421	421	--	--	421	421	421	421
S101	UT to Neuse River	Yes	WS-IV;NSW,CA	--	--	--	--	--	--	1,549	1,549	--	--	--	--
S102	UT to Whitleys Creek	Yes	C;Sw,NSW	--	--	--	--	--	--	733	733	--	--	--	--
S103	UT to Whitleys Creek	Yes	C;Sw,NSW	--	--	--	--	--	--	290	290	--	--	--	--
S104	UT to Mott Swamp	Yes	C;Sw,NSW	--	--	--	--	--	--	491	491	--	--	--	--
S106	UT to Southwest Creek	Yes	C;Sw,NSW	--	--	--	--	--	--	330	330	--	--	--	--
S109	UT to Southwest Creek	Yes	C;Sw,NSW	--	--	--	--	--	--	599	599	--	--	--	--

Stream ID	Stream Name	Subject to Buffer Rules[a]	Best Usage Classification	Stream Impact by Alternative (feet)											
				1UE	1SB	11	12	31	32	35	36	51	52	63	65
S110	UT to Clarks Branch	Yes	C;Sw,NSW	--	--	--	--	--	--	57	57	--	--	--	--
S111	UT to Clarks Branch	Yes	C;Sw,NSW	--	--	--	--	--	--	50	50	--	--	--	--
S115	UT to Neuse River	Yes	C;NSW	--	--	--	--	--	--	--	--	--	--	335	335
S118	UT to Neuse River	Yes	C;NSW	--	--	--	--	--	--	601	601	568	568	--	--
S121	UT to Neuse River	Yes	C;NSW	587	587	587	587	587	587	709	709	667	667	587	587
S122	UT to Neuse River	Yes	C;NSW	717	717	717	717	834	834	613	613	613	613	834	834
S124	UT to Falling Creek	Yes	C;Sw,NSW	1,059	1,059	1,059	1,059	2,303	2,303	--	--	--	--	2,303	2,303
S126	UT to Neuse River	No	C;NSW	553	553	553	553	553	553	553	553	553	553	553	553
S127	UT to Neuse River	No	C;NSW	--	--	--	--	1,166	1,166	--	--	--	--	--	--
S128	UT to Falling Creek	Yes	C;Sw,NSW	--	--	--	--	988	988	--	--	--	--	--	--
S129	UT to Neuse River	Yes	C;NSW	--	--	--	--	--	--	272	272	780	780	--	--
S130	UT to Falling Creek	Yes	C;Sw,NSW	--	--	205	205	--	--	--	--	--	--	--	--
S133	UT to Falling Creek	Yes	C;Sw,NSW	339	1,162	--	--	--	--	--	--	--	--	--	--
S134	UT to Neuse River	Yes	C;NSW	445	445	445	445	445	445	892	892	892	892	445	445

Stream ID	Stream Name	Subject to Buffer Rules[a]	Best Usage Classification	Stream Impact by Alternative (feet)											
				1UE	1SB	11	12	31	32	35	36	51	52	63	65
S137	UT to Neuse River	Yes	C;NSW	--	--	--	--	--	--	--	--	298	298	--	--
S138	UT to Falling Creek	Yes	C;Sw,NSW	--	--	99	99	--	--	--	--	--	--	--	--
S139	UT to Neuse River	Yes	C;NSW	--	--	--	--	--	--	325	325	--	--	--	--
S143	UT to Neuse River	Yes	C;NSW	--	--	--	--	--	--	487	487	487	487	--	--
S145	UT to Falling Creek	Yes	C;Sw,NSW	--	508	965	965	292	292	--	--	--	--	292	292
S146	UT to Falling Creek	Yes	C;Sw,NSW	--	752.8	278.3	278.3	--	--	--	--	--	--	--	--
S148	UT to Neuse River	Yes	C;NSW	244	--	--	--	--	--	--	--	--	--	--	--
S149	UT to Neuse River	Yes	C;NSW	863	863	863	863	863	863	863	863	863	863	863	863
S150	UT to Neuse River	Yes	C;NSW	696	--	--	--	--	--	--	--	--	--	--	--
S152	UT to Neuse River	Yes	C;NSW	468	2,857	--	--	--	--	--	--	--	--	--	--
S153	UT to Falling Creek	Yes	C;Sw,NSW	--	--	235	235	547	547	--	--	--	--	547	547
S154	UT to Falling Creek	Yes	C;Sw,NSW	251	407	--	--	--	--	--	--	--	--	--	--
S155	UT to Falling Creek	Yes	C;Sw,NSW	--	--	298	298	946	946	--	--	--	--	335	335
S156	UT to Neuse River	Yes	C;NSW	381	--	--	--	--	--	--	--	--	--	--	--

Stream ID	Stream Name	Subject to Buffer Rules[a]	Best Usage Classification	Stream Impact by Alternative (feet)											
				1UE	1SB	11	12	31	32	35	36	51	52	63	65
S157	UT to Neuse River	No	C;NSW	42	--	--	--	--	--	--	--	--	--	--	--
S158	UT to Neuse River	Yes	C;NSW	1.049	1,049	1,049	1,049	153	153	121	121	121	121	153	153
S160	UT to Neuse River	Yes	C;NSW	658	--	--	--	--	--	--	--	--	--	--	--
S161	UT to Neuse River	Yes	C;NSW	1,957	--	--	--	--	--	--	--	--	--	--	--
S162	UT to Peter Creek	Yes	C;Sw,NSW	--	--	97	98	97	97	--	--	--	--	97	97
S166	UT to Neuse River	Yes	C;NSW	191	191	191	191	180	180	1,554	1,554	1,554	1,554	457	457
S167	UT to Falling Creek	Yes	C;Sw,NSW	--	348	261	261	--	--	--	--	--	--	--	--
S170	UT to Falling Creek	Yes	C;Sw,NSW	149	454	--	--	--	--	--	--	--	--	--	--
S171	UT to Falling Creek	Yes	C;Sw,NSW	--	--	--	--	278	278	--	--	--	--	--	--
S172	UT to Neuse River	No	C;NSW	--	--	--	--	--	--	--	--	259	259	--	--
S174	UT to Falling Creek	Yes	C;Sw,NSW	1,275	382	--	--	--	--	--	--	--	--	--	--
S175	UT to Falling Creek	Yes	C;Sw,NSW	536	916	--	--	--	--	--	--	--	--	--	--
S176	UT to Neuse River	Yes	WS-IV;NSW,CA	--	--	--	--	--	426	426	--	--	--	--	--
S178	UT to Falling Creek	No	C;Sw,NSW	--	--	268	268	530	530	--	--	--	--	332	332

Stream ID	Stream Name	Subject to Buffer Rules[a]	Best Usage Classification	Stream Impact by Alternative (feet)											
				1UE	1SB	11	12	31	32	35	36	51	52	63	65
S181	UT to Neuse River	Yes	C;NSW	76	--	--	--	--	--	--	--	--	--	--	--
S182	UT to Falling Creek	Yes	C;Sw,NSW	--	--	873	873	--	--	--	--	--	--	--	--
S184	UT to Falling Creek	Yes	C;Sw,NSW	--	--	980	980	299	299	--	--	--	--	299	299
S185	UT to Neuse River	No	C;NSW	151	--	--	--	--	--	--	--	--	--	--	--
S186	UT to Falling Creek	Yes	C;Sw,NSW	--	--	--	--	379	379	--	--	--	--	--	--
S193	UT to Tracey Swamp	No	C;Sw,NSW	4,968	4,968	1,760	4,968	1,760	4,968	4,968	1,760	1,760	4,968	4,968	1,760
S194	UT to Gum Swamp	Yes	C;Sw,NSW	1,550	1,550	127	1,550	127	1,550	1,550	127	127	1,550	1,550	127
S195	UT to Gum Swamp	Yes	C;Sw,NSW	876	876	776	873	776	873	873	776	776	873	873	776
S196	UT to Tracey Swamp	Yes	C;Sw,NSW	--	--		--		--	--	9		--	--	
S197	UT to Tracey Swamp	Yes	C;Sw,NSW	826	826	350	826	350	826	826	356	350	826	826	350
S198	UT to Tracey Swamp	Yes	C;Sw,NSW	2,671	2,671	3,100	2,596	3,100	2,596	2,596	3,100	3,100	2,596	2,596	3,100
S199	UT to Mill Branch	Yes	C;Sw,NSW	--	--	244	--	244	--	--	249	244	--	--	244
S202	UT to Falling Creek	Yes	C;Sw,NSW	450	994	--	--	--	--	--	--	--	--	--	--

Stream ID	Stream Name	Subject to Buffer Rules[a]	Best Usage Classification	Stream Impact by Alternative (feet)											
				1UE	1SB	11	12	31	32	35	36	51	52	63	65
S203	UT to Southwest Creek	Yes	C;Sw,NSW	--	215	--	--	--	--	--	--	--	--	--	--
S204	UT to Southwest Creek	No	C;Sw,NSW	--	129	--	--	--	--	--	--	--	--	--	--
S205	UT to Southwest Creek	Yes	C;Sw,NSW	--	1,353	--	--	--	--	--	--	--	--	--	--
S206	UT to Neuse River	Yes	C;NSW	--	--	448	449	448	448	--	--	--	--	448	448
S207	UT to Neuse River	Yes	C;NSW	--	--	--	--	--	--	129	129	240	240	--	--
S208	UT to Southwest Creek	Yes	C;Sw,NSW	--	--	--	--	--	--	384	384	--	--	--	--
S209	UT to Neuse River	Yes	C;NSW	479	--	--	--	--	--	--	--	--	--	--	--
S210	UT to Neuse River	Yes	C;NSW	875	875	875	875	--	--	60	60	60	60	--	--
S211	UT to Neuse River	Yes	C;NSW	928	--	--	--	--	--	--	--	--	--	--	--
S212	UT to Falling Creek	Yes	C;Sw,NSW	--	--	162	162	--	--	--	--	--	--	190	190
S213	UT to Neuse River	Yes	C;NSW	--	--	--	--	--	--	--	--	--	--	432	432
S214	UT to Neuse River	Yes	C;NSW	532	532	532	532	--	--	--	--	--	--	--	--

Stream ID	Stream Name	Subject to Buffer Rules[a]	Best Usage Classification	Stream Impact by Alternative (feet)											
				1UE	1SB	11	12	31	32	35	36	51	52	63	65
S215	UT to Neuse River	Yes	C;NSW	182	--	--	--	--	--	--	--	--	--	--	--
S216	UT to Neuse River	Yes	C;NSW	--	--	--	--	--	--	--	--	--	--	55	55
S217	UT to Neuse River	Yes	C;NSW	--	201	--	--	--	--	--	--	--	--	--	--
S218	UT to Neuse River	Yes	C;NSW	714	--	--	--	--	--	--	--	--	--	--	--
S219	UT to Falling Creek	Yes	C;Sw,NSW	--	38	--	--	--	--	--	--	--	--	--	--
S220	UT to Neuse River	Yes	C;NSW	182	--	--	--	--	--	--	--	--	--	--	--
S221	UT to Peter Creek	Yes	C;Sw,NSW	--	38	--	--	--	--	--	--	--	--	--	--
S222	UT to Neuse River	Yes	C;NSW	--	221	--	--	--	--	--	--	--	--	--	--
S223	UT to Neuse River	Yes	C;NSW	--	63	--	--	--	--	--	--	--	--	--	--
S224	UT to Southwest Creek	No	C;Sw,NSW	--	124	--	--	--	--	--	--	--	--	--	--

UT-Unnamed tributary

[a] Determination of the applicability of Neuse River Buffer Rules was based solely on their presence or absence on 24,000 USGS topographic mapping. NRCS soils mapping was not consulted for these determinations. Potential impacts to protected stream buffers will be determined once formal stream delineations have been performed.

Note: Impact calculations presented have been calculated using the construction slope stake limits plus a 40-foot buffer of the functional designs.

APPENDIX G: HAZARD MITIGATION

Table G-1: Hazardous materials sites

Site Number	Type	Location	Property Name	Anticipated Impacts	Anticipated Risk
1	SQG	4758 Washington Street, La Grange	Cooper Interconnect/Crouse-Hinds Molded Products	Low	Low
2	UST	7903 Highway 70 West	Grange Central Station	Low	Low
3	UST	7851 Highway 70 West	Hasty Mart 31	Low	Low
4	Auto salvage	7514 Highway 70 West	Vacant Site with Billboard	Low	Low
5	Auto salvage	7135 Highway 70 West	Foss Enterprises Inc.	Low	Low
6	Auto salvage	7067 Highway 70 West	Foss Jimmie Carr Jr	Low	Low
7	UST	6844 Highway 70 West	Singleton's Grocery	Low	Low
8	UST	Highway 70 West	Farm Stand	Low	Low
9	UST	6130 Highway 70 West	Mallard Food Shop No. 19	Low	Low
10	UST	5744 Highway 70 West	Falling Creed Service Center	Low	Low
11	SQG	1028 Innovation Way	Pharmaceutical Services	Low	Low
12	UST	Vernon Avenue	Coca Cola Warehouse	Low	Low
13	UST	4050 West Vernon Avenue	Kinston Suzuki	Low	Low
14	UST	3800 West Vernon Avenue	66 Mini-Mart/Speedway 8229	Low	Low
15	UST	Highway 70 West	Davis Tire	Low	Low
16	UST	3601 West Vernon Avenue	C-Mart 9 Pure	Low	Low
17	UST	2697 Highway 258 North	Carolina Ice Company	Low	Low

Site Number	Type	Location	Property Name	Anticipated Impacts	Anticipated Risk
18	Auto salvage	Highway 70	Auto Salvage	Low	Low
19	Auto salvage	1601 West New Bern Road	Auto Salvage	Low	Low
20	UST	1100 West New Bern Road	Stroud's Exxon	Low	Low
21	UST	1101 West New Bern Road	Fuel Warehouse	Low	Low
22	UST	1020 East New Bern Road	Circle B 9	Low	Low
23	UST	1005 South New Bern Road	Kinston Quick Stop/Scotchman #78	Low	Low
24	UST	1050 New Bern Road	Minuteman Foodmart 35	Low	Low
25	Landfill	Lake Street and US 70	Carter's Refuse Disposal	Low	Low
26	UST	Highway 70/258 South	NCDOT Weigh Station	Low	Low
27	UST	225 East New Bern Road	Neuse Sports Shop	Low	Low
28	UST	310 East New Bern Avenue	The Pantry #3181 (Former)	Low	Low
29	UST	303 East New Bern Road	Scotchman 185	Low	Low
30	UST	509 East New Bern Road	Circle K 2723472	Low	Low
31	UST	606 East New Bern Road	Barrus Property	Low	Low
32	UST	700 East New Bern Road	The Pantry #3076	Low	Low
33	UST	US Highway 70 east	Former Montgomery-Green Facility	Low	Low
34	UST	US Highway 70 East	Oh! Do Drop In (Former)	Low	Low
35	UST	Highway 70 East	Marr's Automotive, LLC	Low	Low
36	UST	6041 Highway 70	Mallard Oil Company	Low	Low

Site Number	Type	Location	Property Name	Anticipated Impacts	Anticipated Risk
37	Auto salvage	5763 Highway 70 East	Auto Salvage	Low	Low
38	UST	136 Dover Road	Auto Service Center	Low	Low
39	UST	2777 Highway 55 West	Lighthouse Food Mart #110	Low	Low
40	UST	159 Highway 11 South	Southeast-Ern Freight Lines, Inc.	Low	Low
41	UST	1702 Old Pink Hill Road	The Pantry #905	Low	Low
42	UST	1559 Highway 11/55	Vacant Lot	Low	Low

Source: Box 2013

APPENDIX H: NOTICE OF INTENT

2011 workforce of approximately 39,000.

(2) The Full Implementation Alternative (the Preferred Alternative) would implement the revised RPMP and all short-term and long-term projects. If the proposed short-term projects were completed as proposed under this alternative, approximately 5,000 employees would be added to the post's workforce by 2017. If the long-term development projects were completed as proposed under this alternative, an additional 12,000 employees would be added, bringing the total 2030 workforce to approximately 56,000.

(3) The Modified Long-Term Alternative proposes implementing the revised RPMP, all but two short-term projects proposed under the Full Implementation Alternative, and all but one of the long-term projects proposed under the Full Implementation Alternative. A proposed secure administrative campus on the Fort Belvoir North Area would not be built. Two of the short-term projects would be delayed to 2018 or later. Under this alternative, the total 2030 workforce would be approximately 50,000.

(4) The Modified Short-Term Alternative proposes implementing the revised RPMP, most of the short-term projects, and all of the long-term projects but most short-term projects would be delayed until after 2017. Under this alternative, the total 2030 workforce would be approximately 55,000.

Following issuance of the EIS Notice of Intent in September 2012, ''Short-Range Projects'' in the EIS title changed to ''Short-Term Projects'' to align with Unified Facilities Criteria 2–100–01,Installation Master Planning.

The DEIS evaluates the impacts of the alternatives on land use; socioeconomics, community facilities, and environmental justice; cultural resources; transportation and traffic; air quality; noise; geology, topography, and soils; water resources; biological resources; hazardous materials; utilities; and energy use and sustainability. The only resource that would sustain significant adverse impacts is transportation and traffic; impacts would be significant under all three action alternatives. Mitigation is identified for traffic impacts on Fort Belvoir and roadways in the vicinity of Fort Belvoir. While no significant adverse impacts are expected to biological resources, mitigations are proposed for tree removal.

All government agencies, special interest groups, and individuals are invited to attend the public meeting and/or submit their comments in writing. Information on the date, time and location of the public meeting will be published locally.

Copies of the DEIS are available at the: Van Noy Library, Fort Belvoir; John Marshall Library, Alexandria, VA; Sherwood Regional Library, Alexandria, VA; Chinn Park Library, Woodbridge, VA; Kingstowne Library, Alexandria, VA; and Lorton Library, Lorton, VA. The DEIS can also be viewed at the following Web site: *https://www.belvoir.army.mil/environdocssection9.asp*.

Brenda S. Bowen,

Army Federal Register Liaison Officer.

[FR Doc. 2014–21663 Filed 9–10–14; 8:45 am]

BILLING CODE 3710–08–P

DEPARTMENT OF DEFENSE

Department of the Army; Corps of Engineers

Notice of Intent To Prepare a Draft Environmental Impact Statement in Cooperation With the North Carolina Department of Transportation for Improvements to the US 70 Corridor Between the Town of LaGrange, Lenoir County and the Town of Dover, Jones County, NC, the Proposed Project Would Ultimately Serve as a Bypass to the Town of Kinston, NC

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of Intent.

SUMMARY: The U.S. Army Corps of Engineers (COE), Wilmington District, Wilmington Regulatory Division is issuing this notice to advise the public that a State of North Carolina funded Draft Environmental Impact Statement (DEIS) will be prepared for improvements to the transportation system starting near the intersection of US 70 and NC 903 near the Town of LaGrange, Lenoir County, heading east near the intersection of US 70 and Old US 70 (NCSR–1005) near the Town of Dover, Jones County, NC.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and DEIS can be directed to Mr. Tom Steffens, Regulatory Project Manager, Washington Regulatory Field Office, 2407 West 5th Street, Washington, NC 27889; telephone: (910) 251–4615 or Mr. Bob Deaton, Project Development Engineer, North Carolina Department of Transportation, 1548 Mail Service Center, Raleigh, NC 27699–1548, Telephone: (919) 707–6017.

SUPPLEMENTARY INFORMATION: The COE in cooperation with the North Carolina Department of Transportation (NCDOT) will prepare an Environmental Impact Statement (EIS) on a proposal to make transportation improvements to the US 70 corridor between the Town of LaGrange, Lenoir County and the Town of Dover, Jones County, NC. The North Carolina Department of Transportation Improvement Program (TIP R–2553 US 70 Kinston Bypass) project will serve as a Geographic Information System (GIS) pilot project to test and evaluate streamlining the project development process by utilizing GIS data for alternative development, alternative analysis, and selection of the Least Environmentally Damaging Practicable Alternative (LEDPA).

The purpose of the US 70 Kinston Bypass project is to improve regional mobility, connectivity and capacity deficiencies on US 70 between LaGrange and Dover. The project study area is roughly bounded on the west by NC–903 and US 70 near LaGrange, on the north by the Lenoir/Greene County line, to the east near Dover and to the south at the Duplin/Lenoir County line.

This project is being reviewed through the Merger 01 process designed to streamline the project development and permitting processes, agreed to by the COE, North Carolina Department of Environment and Natural Resources (Division of Water Resources, Division of Coastal Management), Federal Highway Administration (for this project not applicable), North Carolina Department of Transportation and supported by other stakeholder agencies and local units of government. The other partnering agencies include: U.S. Environmental Protection Agency; U.S. Fish and Wildlife Service; N.C. Wildlife Resources Commission; N.C. Department of Cultural Resources; and the Eastern Carolina Rural Planning Organization. The Merger process provides a forum for appropriate agency representatives to discuss and reach consensus on ways to facilitate meeting the regulatory requirements of Section 404 of the Clean Water Act during the NEPA/SEPA decision-making phase of transportation projects.

In June 2010 the project was presented to Federal and State Resource and Regulatory Agencies to gain concurrence on the purpose and need for the project. The aforementioned purpose and need of the project was agreed upon by participating agencies in October of 2010. In November 2011, the project was again presented to participating agencies regarding the preliminary corridor screening process in an attempt to decide which alternatives would be carried forward for detailed analysis. Multiple meetings throughout 2012 and 2013 revised the initial number of alternatives carried

forward for detailed analysis down to a reasonable range. In January of 2014, the final alternatives to carry forward were decided. Since 2011, the Corps has been working closely with NCDOT and its representatives to identify jurisdictional resources within the alternatives carried forward. This effort should be complete sometime in summer of 2014.

Three citizen informational workshops were held in Kinston for the US 70 Kinston Bypass project between 2010 and 2012. The February 23 and 25, 2010 meeting presented the overall project, the project team and project decision process. A total of 291 participants signed in, with 67 written comments received via general question survey. The September 20 and 21, 2011 meeting presented the potential route options to the public. A total of 172 participants signed in and 48 comments were received via general question survey. The May 15 and 17, 2012 meeting presented the alternatives selected for detailed study to the public. A total of 185 participants signed in and 54 comments were received via general question survey. There was no clear support or opposition to the project noted as a result of the surveys.

Environmental consequences: CEQ regulations (40 CFR 1502.16) state the EIS will include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. The EIS will assess a reasonable number of alternatives and identify and disclose the direct impacts of the proposed project on the following: Topography, geology, soils, climate, biotic communities, wetlands, fish and wildlife resources, endangered and threatened species, hydrology, water resources and water quality, floodplains, hazardous materials, air quality, noise, aesthetics, recreational resources, historical and cultural resources, socioeconomics, land use, public health and safety, energy requirements and conservation, natural or non-renewable resources, drinking waters, and environmental justice.

Secondary and cumulative environmental impacts: Cumulative impacts result from the incremental impact of the proposed action when added to past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the action. Geographic Information System (GIS) data and mapping will be used to evaluate and quantify secondary and cumulative impacts of the proposed Project with particular emphasis given to wetlands and surface/groundwater resources.

Mitigation: CEQ regulations (40 CFR 1502.14, 1502.16, and 1508.20) require the EIS to include appropriate mitigation measures. The USACE has adopted, through the CEQ, a mitigation policy which embraces the concepts of ''no net loss of wetlands'' and project sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of ''Waters of the United States,'' specifically wetlands. Mitigation of wetland impacts has been defined by the CEQ to include: avoidance of impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20). Each of these aspects (avoidance, minimization, and compensatory mitigation) must be considered in sequential order. As part of the EIS, the applicant will develop a compensatory mitigation plan detailing the methodology and approach to compensate for unavoidable impacts to waters of the U.S. including streams and wetlands.

NEPA/SEPA Preparation and Permitting: Because the proposed project requires approvals from federal and state agencies under both the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA), a joint Federal and State Environmental Impact Statement (EIS) will be prepared. The U.S. Army Corps of Engineers will serve as the lead agency for the process. The EIS will serve as the NEPA document for the Corps of Engineers (404 permit) and as the SEPA document for the State of North Carolina (401 permit).

Based on the size, complexity, and potential impacts of the proposed project, the Applicant has been advised by the U.S. Army Corps of Engineers to identify and disclose the environmental impacts of the proposed project in an Environmental Impact Statement (EIS). Within the EIS, the Applicant will conduct a thorough environmental review, including an evaluation of a reasonable number of alternatives. After distribution and review of the Draft EIS and Final EIS, the Applicant understands that the U.S. Army Corps of Engineers in coordination with the North Carolina Department of Transportation will issue a Record of Decision (ROD) for the project. The ROD will document the completion of the EIS process and will serve as a basis for permitting decisions by federal and state agencies.

To ensure that the full range of issues related to this proposed action are addressed and all significant issues identified, comments and suggestions are invited from all interested parties. Comments or questions concerning this proposed action and the EIS should be directed to the US Army Corps of Engineers at the address provided above. The Wilmington District will periodically issue Public Notices soliciting public and agency comment on the proposed action and alternatives to the proposed action as they are developed.

Henry M. Wicker, Jr.,

Deputy Chief, Regulatory Division.

[FR Doc. 2014–21664 Filed 9–10–14; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF EDUCATION

[Docket No. ED–2014–ICCD–0073]

Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; Comment Request; Case Studies of the Implementation of Kindergarten Entry Assessments

AGENCY: Evaluation and Policy Development (OPEPD), Office of Planning, Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing a new information collection.

DATES: Interested persons are invited to submit comments on or before October 14, 2014.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2014–ICCD–0073 or via postal mail, commercial delivery, or hand delivery. If the regulations.gov site is not available to the public for any reason, ED will temporarily accept comments at *ICDocketMgr@ed.gov*. Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted; ED will only accept comments during the comment period in this mailbox when the regulations.gov site is not available. Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the

APPENDIX I: DISCLOSURE STATEMENTS

DISCLOSURE STATEMENT

40 CFR § 1506.5(c)

We, AECOM Technical Services of North Carolina, Inc., do hereby certify that we have not entered into and, during the lifetime of the EIS preparation, will not enter into any agreement affording us or any Subcontractors that we may hire with any direct or indirect financial interest in the planning, design, construction or operation of the US 70- Kinston Bypass project, (Action Identification #SAW-2009-01603, located in Craven, Jones and Lenoir Counties, North Carolina), except with regard to the preparation of the EIS. In making this certification, we acknowledge that we have read, considered, and are in compliance with the provisions of 40 CFR § 1506.5(c), and the Council on Environmental Quality (CEQ) Forty Questions, Questions 16 & 17 (copies attached). We further certify that we will, in the Draft EIS, make a full disclosure of the scope and extent of the firm's prior involvement in the Kinston Bypass project.

AECOM Technical Services of North Carolina, Inc.

Sreekanth Nandagiri

By: Sreekanth "Sunny" Nandagiri, PE, PMP

Title: Vice President

Date: January 19, 2017

DISCLOSURE STATEMENT

40 CFR § 1506.5(c)

We, The Louis Berger Group, Inc. -North Carolina , do hereby certify that we have not entered into and, during the lifetime of the EIS preparation, will not enter into any agreement affording us or any Subcontractors that we may hire with any direct or indirect financial interest in the planning, design, construction or operation of the US 70- Kinston Bypass project, (Action Identification #SAW-2009-01603, located in Craven, Jones and Lenoir Counties, North Carolina), except with regard to the preparation of the EIS. In making this certification, we acknowledge that we have read, considered, and are in compliance with the provisions of 40 CFR § 1506.5(c), and the Council on Environmental Quality (CEQ) Forty Questions, Questions 16 & 17 (copies attached). We further certify that we will, in the Draft EIS, make a full disclosure of the scope and extent of the firm's prior involvement in the Kinston Bypass project.

The Louis Berger Group, Inc. – North Carolina

By: Lawrence Pesesky

Title: Senior Vice President

Date: January 26, 2017

DISCLOSURE STATEMENT

40 CFR § 1506.5(c)

We, O. R. Colan Associates, LLC, do hereby certify that we have not entered into and, during the lifetime of the EIS preparation, will not enter into any agreement affording us or any Subcontractors that we may hire with any direct or indirect financial interest in the planning, design, construction or operation of the US 70- Kinston Bypass project, (Action Identification #SAW-2009-01603, located in Craven, Jones and Lenoir Counties, North Carolina), except with regard to the preparation of the EIS. In making this certification, we acknowledge that we have read, considered, and are in compliance with the provisions of 40 CFR § 1506.5(c), and the Council on Environmental Quality (CEQ) Forty Questions, Questions 16 & 17 (copies attached). We further certify that we will, in the Draft EIS, make a full disclosure of the scope and extent of the firm's prior involvement in the Kinston Bypass project.

O. R. Colan Associates, LLC

Stephen Toth

By: Stephen Toth

Title: Chief Operating Officer

Date: 1/5/2018

DISCLOSURE STATEMENT

40 CFR § 1506.5(c)

We, URS Corporation-North Carolina , do hereby certify that we have not entered into and, during the lifetime of the EIS preparation, will not enter into any agreement affording us or any Subcontractors that we may hire with any direct or indirect financial interest in the planning, design, construction or operation of the US 70- Kinston Bypass project, (Action Identification #SAW-2009-01603, located in Craven, Jones and Lenoir Counties, North Carolina), except with regard to the preparation of the EIS. In making this certification, we acknowledge that we have read, considered, and are in compliance with the provisions of 40 CFR § 1506.5(c), and the Council on Environmental Quality (CEQ) Forty Questions, Questions 16 & 17 (copies attached). We further certify that we will, in the Draft EIS, make a full disclosure of the scope and extent of the firm's prior involvement in the Kinston Bypass project.

URS Corporation – North Carolina

By: David A. Griffin

Title: Vice President

Date: July 28, 2014

DISCLOSURE STATEMENT

40 CFR § 1506.5(c)

We, E.L. Robinson Engineering Company, do hereby certify that we have not entered into and, during the lifetime of the EIS preparation, will not enter into any agreement affording us or any Subcontractors that we may hire with any direct or indirect financial interest in the planning, design, construction or operation of the Kinston Bypass project, Action identification number SAW-2009-01603, located in Craven, Jones and Lenoir Counties, North Carolina, except with regard to the preparation of the EIS. In making this certification, we acknowledge that we have read, considered, and are in compliance with the provisions of 40 CFR § 1506.5(c), and the Council on Environmental Quality (CEQ) Forty Questions, Questions 16 & 17 (copies attached). We further certify that we will, in the Draft EIS, make a full disclosure of the scope and extent of the firm's prior involvement in the Kinston Bypass project.

E.L. Robinson Engineering Company

By: Dean Hatfield

Title: Vice President

Date: May 9, 2019

DISCLOSURE STATEMENT

40 CFR § 1506.5(c)

We, Planning Communities, LLC , do hereby certify that we have not entered into and, during the lifetime of the EIS preparation, will not enter into any agreement affording us or any Subcontractors that we may hire with any direct or indirect financial interest in the planning, design, construction or operation of the US 70- Kinston Bypass project, (Action Identification #SAW-2009-01603, located in Craven, Jones and Lenoir Counties, North Carolina), except with regard to the preparation of the EIS. In making this certification, we acknowledge that we have read, considered, and are in compliance with the provisions of 40 CFR § 1506.5(c), and the Council on Environmental Quality (CEQ) Forty Questions, Questions 16 & 17 (copies attached). We further certify that we will, in the Draft EIS, make a full disclosure of the scope and extent of the firm's prior involvement in the Kinston Bypass project.

Planning Communities, LLC

Ann Steedly

By: Ann Steedly, P.E.

Title: Chief Operations Officer

Date: July 28, 2014

DISCLOSURE STATEMENT

40 CFR § 1506.5(c)

We, East Carolina University, do hereby certify that, to the best of our knowledge, we have not entered into and, during the lifetime of the EIS preparation, will not enter into any agreement affording us or any Subcontractors that we may hire with any direct or indirect financial interest in the planning, design, construction or operation of the US 70- Kinston Bypass project, (Action Identification #SAW-2009-01603, located in Craven, Jones and Lenoir Counties, North Carolina), except with regard to the preparation of the EIS. In making this certification, we acknowledge that we have read, considered, and are in compliance with the provisions of 40 CFR § 1506.5(c), and the Council on Environmental Quality (CEQ) Forty Questions, Questions 16 & 17 (copies attached). We further certify that we will, in the Draft EIS, make a full disclosure of the scope and extent of the firm's prior involvement in the Kinston Bypass project.

East Carolina University

Barbara H. Gray

By: Barbara H. Gray

Title: Director, Sponsored Programs

Date: 07/29/2014

CEQ Forty Questions, Questions 16 & 17

All 40 questions can be found at: http://ceq.eh.doe.gov/nepa/regs/40/40p3.htm

Question 16. **Third Party Contracts.** What is meant by the term "third party contracts" in connection with the preparation of an EIS? See Section 1506.5(c). When can "third party contracts" be used?

A. As used by EPA and other agencies, the term "third party contract" refers to the preparation of EISs by contractors paid by the applicant. In the case of an EIS for a National Pollution Discharge Elimination System (NPDES) permit, the applicant, aware in the early planning stages of the proposed project of the need for an EIS, contracts directly with a consulting firm for its preparation. See 40 C.F.R. 6.604(g). The "third party" is EPA which, under Section 1506.5(c), must select the consulting firm, even though the applicant pays for the cost of preparing the EIS. The consulting firm is responsible to EPA for preparing an EIS that meets the requirements of the NEPA regulations and EPA's NEPA procedures. It is in the applicant's interest that the EIS comply with the law so that EPA can take prompt action on the NPDES permit application. The "third party contract" method under EPA's NEPA procedures is purely voluntary, though most applicants have found it helpful in expediting compliance with NEPA.

If a federal agency uses "third party contracting," the applicant may undertake the necessary paperwork for the solicitation of a field of candidates under the agency's direction, so long as the agency complies with Section 1506.5(c). Federal procurement requirements do not apply to the agency because it incurs no obligations or costs under the contract, nor does the agency procure anything under the contract.

Question 17a. **Disclosure Statement to Avoid Conflict of Interest.** If an EIS is prepared with the assistance of a consulting firm, the firm must execute a disclosure statement. What criteria must the firm follow in determining whether it has any "financial or other interest in the outcome of the project" which would cause a conflict of interest?

A. Section 1506.5(c), which specifies that a consulting firm preparing an EIS must execute a disclosure statement, does not define "financial or other interest in the outcome of the project." The Council interprets this term broadly to cover any known benefits other than general enhancement of professional reputation. This includes any financial benefit such as a promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients). For example, completion of a highway project may encourage construction of a shopping center or industrial park from which the consultant stands to benefit. If a consulting firm is aware that it has such an interest in the decision on the proposal, it should be disqualified from preparing the EIS, to preserve the objectivity and integrity of the NEPA process.

When a consulting firm has been involved in developing initial data and plans for the project, but does not have any financial or other interest in the outcome of the decision, it need not be disqualified from preparing the EIS. However, a disclosure statement in the draft EIS should clearly state the scope and extent of the firm's prior involvement to expose any potential conflicts of interest that may exist.

17b. If the firm in fact has no promise of future work or other interest in the outcome of the proposal, **may the firm later bid** in competition with others for future work on the project if the proposed action is approved?

A. Yes.

Connecting people, products, and places safely and efficiently with customer focus, accountability, and environmental sensitivity to enhance the economy and vitality of North Carolina.

AECOM

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION