

PRELIMINARY FINDINGS REPORT

Widening of NC 241 From NC 24 North to SR 1151 (Bob Stroud Road)

Duplin and Lenoir Counties

FS-1202A

I. INTRODUCTION

This preliminary findings report provides an initial review of the proposed widening of NC 241 in Beulaville from NC 24 in Duplin County north to SR 1151 (Bob Stroud Road) in Pink Hill, Lenoir County, a distance of approximately seven miles not including the proposed bypasses of Beulaville and Pink Hill. Once traffic data is received for the study project, the alternatives will be refined based upon the traffic analysis and presented in a feasibility study. Both the preliminary findings report and feasibility study are initial steps in the planning and design process for this project and are not the product of exhaustive environmental or design investigations. The purpose of these studies is to describe the proposed project, including cost, and to identify potential issues that may require consideration in the planning and design phases and help to determine the feasibility of the project.

For this report, a study area was developed to delineate the limits of the environmental constraints that may have a potential impact to the project. This study area or "feasibility study area" includes the limits of the design concepts and varies in width from approximately 10,775 feet wide near Kennedy Lane/Church Road, widening to 29,880 feet and 15,250 feet near Beulaville (along NC 24) and Pink Hill, respectively. **Figure 1** shows the general project location and feasibility study area.

II. PURPOSE AND NEED

The primary need of the proposed project includes the following:

- Lack of connectivity in Eastern North Carolina:

Camp Lejeune and I-95:

Marine Corps Base Camp Lejeune is a 246 square mile United State military training facility in Jacksonville, NC. The base's 14 miles of beaches make it a major area for amphibious assault training and its location between two deep water ports (Wilmington and Morehead City) allows for fast deployments. The Base Realignment and Closure (BRAC) Commission, an agency of the US federal government, disposes of unnecessary US Department of Defense (DoD) real estate, increasing efficiency in line

with DoD objectives. Duplin County is centrally located among seven major military bases in eastern North Carolina, including Camp Lejeune Marine Corps Base, New River Marine Corps Air Station, Cherry Point Marine Corps Air Station and Naval Aviation Depot, Ft. Bragg, and Seymour Johnson Air Force Base, which comprise approximately 10 percent of the area's economy. Road improvements are badly needed in eastern North Carolina and strategic planning efforts are underway by the military. Facility traffic is expected to increase with shared training requirements between Ft. Bragg and Camp Lejeune, especially as troops return to North Carolina. A more direct north-south route is needed to provide improved movement of troops, both on and off duty.

Global TransPark and I-40:

The North Carolina Global TransPark (GTP) is a 2,500-acre industrial/airport site situated strategically in Eastern North Carolina, between the Raleigh-Durham area and the coastal region. The GTP includes an airport with an 11,500 x 150 foot runway and is located near several major military installations, as well as two deep water ports. The GTP includes 5,775 acres environmentally permitted for development and industrial sites that are shovel ready with electric, natural gas, water and sewer utilities. Road improvements between the GTP and I-40 are needed as the State of North Carolina and the North Carolina Global TransPark Authority are committed to recruitment and growth of business and industry at the GTP. A more direct north-south route is needed to enhance potential employment opportunities at the Global TransPark.

The primary purpose of the proposed project includes the following:

- Improve connectivity in Eastern North Carolina

Connectivity among the traveled routes – NC 241, NC 24, and NC 41 - in close proximity to Beulaville, Pink Hill, and EastPark (an industrial center located west of Beulaville) is lacking. Local use mixing with through traffic, including military traffic, on NC 241 and NC 24 causes motorists to experience delays, specifically through the Towns of Beulaville and Pink Hill. Access in eastern North Carolina, including between Camp Lejeune and I-95, as well as the Global TransPark and I-40 is limited. Additionally, access to the deep-water port via I-40 located in Wilmington in eastern North Carolina is limited. Duplin County is served by I-40, US 117, NC 11, NC 24, NC 50, NC 403 and NC 903; however, the county lacks full control of access routes that access the I-40 and I-95 corridors. Lack of a supporting link to both I-40 and I-95 west of Beulaville hinders the movement of goods in the area.

Additionally, Pink Hill sits strategically on the southern corner of Lenoir County and the northern corner of Duplin County with portions of its Town in both counties. Lack of a multi-lane facility into Pink Hill limits Duplin County residents from accessing the services in Pink Hill, a shared community between the two counties.

III. EXISTING CONDITIONS

Existing Land Use

Existing land uses along NC 241 in the feasibility study area are rural in nature, and include predominantly residential, agriculture, and undeveloped forested land uses. The land use along NC 24 through Beulaville is a mix of commercial and residential, including predominantly single family homes. Development to the west and north of Beulaville is limited by Limestone Creek. There is residential development clustered along NC 241 and at intersecting roads along NC 241, as well as linear residential development mixed with agricultural uses. NC 241 through Pink Hill includes residential and commercial development. Existing NC 11 north of Pink Hill varies from scattered residential and undeveloped forested land uses to more dense linear residential development and agricultural use with scattered commercial development. Decisions regarding future land use within the feasibility study area are guided by Duplin County Strategic Plan 2007-2012 and Lenoir County's Future Land Use Plan (Revised Draft May 17, 2001). A Comprehensive Land Use Plan for Duplin County is anticipated to be developed. Several land use related ordinances have been adopted for Duplin County, including the Voluntary Agriculture District (VAD) Ordinance to identify and protect the agricultural interest of the County and the Flood Damage Prevention Ordinance to allow directed/limited development within the 100-year floodplain, among others. It is anticipated that these ordinances, among others, would be included in the review process of Duplin County's Legal Department scheduled for Spring 2013. In addition, Beulaville has a Town of Beulaville North Carolina Land Use Plan – 2030 that was approved in July 2007.

Other Planned Transportation Projects

Based on the North Carolina Department of Transportation (NCDOT) Draft 2012-2020 State Transportation Improvement Program (STIP), there are two projects in the vicinity of the FS-1202A study area. They are listed in Table 1.

Table 1
Projects in the Vicinity of NC 241
(2012 – 2020 STIP)

Project Number	Description	Project Improvement	Projected Schedule
B-4502	SR 1704 (Kitty Noecker Road), Duplin County	Replace Bridge No. 144 over Panther Creek	Right-of-way acquisition scheduled to begin in fiscal year 2018; construction to begin in fiscal year 2019
B-5534	NC 111, Duplin County	Replace Bridge No. 82 over Burnt Coat Creek	Right-of-way acquisition scheduled to begin in fiscal year 2019; construction to begin in fiscal year 2020

Functional Classification

Through the feasibility study area, NC 241 and NC 11 are classified as major collectors in the NCDOT functional classification system. NC 24 through the feasibility study area is classified as a principal arterial in the NCDOT functional classification system and is included by the state as Strategic Highway Corridor 47 as an expressway (connecting Fayetteville to Morehead City, via NC 24 and US 70). In addition, NC 11 through the feasibility study area is included by the state as Strategic Highway Corridor 53 as a freeway (connecting Wilmington to Norfolk, VA, via I-40, NC 24, NC 11, and US 13). The primary purpose of the Strategic Highway Corridors initiative (which includes 55 listed corridors) is to provide a network of high-speed, safe, reliable highways throughout North Carolina. The initiative also seeks to create a consensus towards the development of a genuine vision for each corridor (NCDOT, 2012).

Both NC 11/NC 903 and US 258 in the project area are included by the state as Strategic Highway Corridors. NC 11/NC 903 is proposed to be a freeway in the vicinity of the feasibility study area from Kenansville to Pink Hill and US 258 is proposed as an expressway to be widened to multi-lanes from Jacksonville, through Richlands, to Kinston. As an option to upgrading NC 11/NC 903 and US 258, Duplin and Lenoir County officials recommend widening NC 241 between Beulaville and Pink Hill. The local officials and Metropolitan Planning Organization suggest designating NC 241 as a Strategic Highway Corridor, as a freeway facility rather than NC 11/NC 903 (freeway) and US 258 (expressway).

Study Area Roadways

NC 241 within the feasibility study area is generally two lanes with grassed shoulders. Near the southern project terminus, existing NC 241 widens to accommodate turn lanes at the NC 41/NC 111 intersection. NC 241 includes curb and gutter through the Town of Pink Hill. NC 241 serves residential properties and connects NC 24 and NC 11. Currently, NC 241 has a speed limit of 55 miles per hour (mph).

NC 24 within the feasibility study area west of NC 241 is a four-lane divided roadway with a grassed median. East of Miller Road, NC 24 transitions to five-lanes with a center turn lane and paved shoulders. As NC 24 approaches Beulaville from the west, it widens to accommodate turn lanes at its intersections with Sandlin Road, Turkey Branch Road, and NC 241. Through the Town of Beulaville, NC 24 includes curb and gutter. East of Lyman Road, near Beulaville Elementary School, NC 24 transitions to a four-lane divided roadway with a grassed median. NC 24 has numerous driveways through the Town of Beulaville serving commercial, residential, and retail properties. There are also several restaurants located along NC 24 through town. NC 24 connects I-40 via Kenansville and US 258 and eventually travels around Jacksonville to the North Carolina coast. Currently, NC 24 has a speed limit of 55 mph.

NC 11 within the feasibility study area west of NC 241 is generally two lanes with grassed shoulders. Near its intersection with NC 241, NC 11 widens to three lanes to accommodate a left-turn lane. NC 11 then narrows to two lanes with grassed shoulders, until it approaches Burncoat Road, where it widens to three lanes with a center turn lane to accommodate the

development in that area. The center turn lane is carried through to the intersection of NC 11 and Bob Stroud Road, where NC 11 widens to a four-lane median divided facility to the north. South of NC 241, NC 11 serves scattered residential properties. Through the Town of Pink Hill and north of town, NC 11 has several driveways serving commercial and residential properties. There are also a few restaurants located along NC 11 north of town. NC 11 connects NC 241 and US 258. Currently, NC 11 has a speed limit of 55 mph.

NC 41 lies east of NC 241 and is generally two lanes with grassed shoulders within the feasibility study area. Near its intersection with NC 241, existing NC 41 has several driveways serving commercial properties with scattered residential properties located along NC 41 northeast of Beulaville. Currently, NC 41 has a speed limit of 55 mph.

NC 111 lies west of NC 241 and is generally two lanes with grassed shoulders within the feasibility study area. Near its intersection with NC 241, NC 111 widens to accommodate turn lanes. NC 111 widens to three lanes with additional turn lanes as it approaches East Duplin High School. NC 111 has numerous driveways serving residential development. NC 111 travels roughly southeast-northwest, connecting NC 241 with NC 11. Currently, the speed limit along NC 111 is 55 mph.

Sarecta Road within the feasibility study area is two lanes with grassed shoulders. It is an east-west route crossing NC 241 and connecting NC 41 and NC 111. Sarecta Road serves scattered residential development. Currently, the speed limit along Sarecta Road is 55 mph.

Business Park

There are several business parks located in Duplin County; however, only one is located within the feasibility study area. Duplin County is working to attract businesses for its 40-acre EastPark site located just west of the Town of Beulaville. EastPark is situated on the south side of NC 24 across from Turkey Branch Road. Water and wastewater are provided to this parcel by the Town of Beulaville.

IV. DESCRIPTION OF ALTERNATIVES

Design Criteria

Design criteria are established standards and procedures that guide the establishment of roadway layouts, alignments, geometry, and dimensions. Detailed design criteria for the Build Alternatives are listed in Table 2. They were developed in accordance with the American Association of State Highway and Transportation Officials' (AASHTO) *A Policy of Geometric Design of Highways and Streets* (AASHTO, 2011) and the NCDOT Roadway Design Standards Manual. The design criteria are influenced by the type of roadway required to fulfill the purpose and need of the project.

Table 2
Summary of Design Criteria

Criteria	NC 241 Mainline
Terrain Type	Level
Design Speed	70 mph
Posted Speed	65 mph
Control of Access	Full
Typical Section Type	4-lane divided
Lane Width	12 ft
Median Width	46 ft
Median Protection	Guardrail
Shoulder Width (total)	
Median (ft)	6 ft
Outside w/o Guardrail (ft)	12 ft
Outside w/ Guardrail (ft)	15 ft
Paved Shoulder	
Outside Total / FDPS (ft) *	10 ft
Median Total / FDPS (ft) *	4 ft

Note: * FDPS represents full depth paved shoulder

Typical Section

The proposed improvements for this project consist of widening NC 241 from a two-lane arterial roadway to a four-lane divided freeway, utilizing shoulders between Pink Hill and Beulaville and bypasses of Pink Hill and Beulaville. **Figure 2** presents the typical mainline cross section for the four-lane divided section. The roadway typical section proposed for NC 241 includes full control of access with a 46-foot wide grass median with 12-foot travel lanes.

The proposed project includes some realignment of intersecting roads, such as Sarecta Road and Kennedy Lane/Church Road as they cross NC 241. These intersecting road realignments are proposed to bridge over NC 241. NC 241 is proposed as a full control of access facility as part of this project; therefore, all intersecting roads must be converted to overpasses, underpasses, interchanges, or reconfigured to not intersect with NC 241.

Right of Way and Access Control

The proposed right-of-way width varies along NC 241 but is approximately 300 feet along most of the project. However, at the interchanges along NC 241, the right-of-way width widens to accommodate the interchange footprint. The width of the service road right-of-way is approximately 150 feet. The service road right-of-way is in addition to the 300-foot mainline right-of-way.

Full control of access was studied along NC 241 the entire length of the project. Connections to NC 241 would be provided only via ramps at interchanges, as all cross-streets would be

grade-separated. No private driveway connections would be allowed. A control of access fence would be placed along the roadway (with the exception of ramp entrances and exits) and at a minimum of 1,000 feet beyond the ramp intersections on the cross-streets (Y lines), if possible.

Description of Alternatives

NC 241 is proposed to be widened in Beulaville from NC 24 in Duplin County north to SR 1151 (Bob Stroud Road) in Pink Hill, Lenoir County. Mapping was created that highlighted man-made and natural features that make one particular area less desirable than another for roadway construction. These features included community facilities (churches, cemeteries, schools, emergency facilities, and residential communities), known historic architectural and archaeological sites, streams, and wetlands (based on the wetland mapping developed by the North Carolina Division of Coastal Management). For evaluation purposes, the project was divided into segments.

Initially, the design concepts developed included a bypass of Beulaville on the west side of town between NC 24 and NC 241, north of Limestone Creek. The design concepts in Pink Hill included a bypass on the west side of town and a widening scenario through Pink Hill. These design concepts were presented to local officials at a scoping meeting on August 16, 2012. After review and discussion, the following changes were made to the design concepts.

- Two Northern bypasses of Beulaville are being studied – one closer to town (inner loop) and one further away from town (outer loop);
- Eastern and western bypasses of Pink Hill are being studied; and
- Widening NC 241 to freeway standards, including interchanges, overpasses, and service roads is being studied and NC 241 as a four-lane arterial was eliminated.

The design concepts were revised to reflect the design changes discussed at the scoping meeting held on August 16, 2012 (summary included in Appendix A) and functional designs were prepared. **Figure 3** depicts the design concepts associated with the widening of NC 241 and bypasses of Beulaville and Pink Hill. A description of each design concept is discussed below.

Beulaville Inner Loop

The Beulaville Inner Loop is located on the north side of NC 24 between Limestone Creek and the Town of Beulaville. It runs from NC 24 in a northeastern direction parallel to and north of Turkey Branch Road, crossing NC 241, and runs parallel to and south of Penny Road back to NC 24. The inner loop includes trumpet interchanges at both locations along NC 24 and includes an interchange with NC 241. The provision of the inner loop would include a realignment of and interchange with Sarecta Road, as well as grade separations with NC 111 and NC 41. The inner loop does not include a crossing of Limestone Creek, but may cross tributaries of Limestone Creek. The relocations estimated to occur within this segment include: 125 residences, 22 businesses, one church, one cemetery with 30 graves, and one cell tower (Table 9). This segment also includes the relocation of 20 mini-storage units and two vineyards.

One of the business relocations is a hog farm with an open pit lagoon and surrounding spray field. This segment may also require the relocation of a pump station.

Beulaville Outer Loop

The Beulaville Outer Loop is also located on the north side of NC 24; however, it is located north and west of Limestone Creek. It runs from NC 24 in a northerly direction parallel to and west of Miller Road, crossing NC 111, NC 241, and NC 41, also running parallel to and south of Penny Road back to NC 24. The outer loop includes trumpet interchanges at both locations along NC 24 and includes an interchange with NC 111, NC 241, and NC 41. The provision of the outer loop would also include a realignment of Sarecta Road which would bridge NC 241, as well as grade separations with Ottis Miller Road and Miller Road. The outer loop includes a major crossing of Limestone Creek, as well as crossings of tributaries of Limestone Creek. The relocations estimated to occur within this segment include: 78 residences, 16 businesses, one church, and 50 graves, including one cemetery (Table 9). One of the business relocations is a hog farm with an open pit lagoon and surrounding spray field. Additional hog farms, lagoons, and spray fields, as well as turkey houses may be acquired.

Mainline and Service Roads

NC 241 would be widened to a four-lane median divided facility beginning north of Beulaville at the Beulaville loops to south of Pink Hill at the Pink Hill Bypass. NC 241 will have a trumpet interchange at the Pink Hill Bypass and a fully directional interchange at the Beulaville loops. Widening NC 241 to freeway standards would include providing an overpass for Sumner Road over NC 241 and realigning Kennedy Lane/Church Road to provide an interchange with NC 241. In addition, W. Pleasant Hill Road would be realigned to tie into Howard Family Road. The relocations estimated to occur along the mainline (NC 241) include: 138 residences, 26 businesses, five churches, and 1 cemetery with 40 graves (Table 9). This segment also includes the relocation of one golf course.

Service roads would be provided along both sides of existing NC 241 beginning at the realigned Sarecta Road. The service road along the west side of NC 241 would parallel NC 241 to the west until it crosses Parker Heath Road where it turns west tying into Tapp Farm Road. The service road along the east side of NC 241 would parallel NC 241 and tie into Sumner Road. The east side service road was not extended the length of the project because there are existing roadways in the feasibility study area that provide connectivity north of Sumner Road. These service roads would provide access from the improved NC 241 to properties located along and off of existing NC 241 from north of Beulaville to south of Pink Hill. The relocations estimated to occur with construction of the service roads include: 10 residences (Table 9).

Pink Hill Western Bypass

The Pink Hill Western Bypass extends west from NC 241 at Howard Family Road, crosses over Tapp Farm Road where it turns north as it crosses Kitty Noecker Road and NC 11. The Western Bypass then turns east, crosses Bill Sutton Road, and continues around the north side of Pink Hill, tying in to NC 11 north of Pink Hill. The Western Bypass includes trumpet interchanges at NC 241 south of Pink Hill and NC 11 north of Pink Hill and includes an interchange with NC 11

west of Pink Hill. The provision of the western bypass would also include grade separations with Tapp Farm Road, Kitty Noecker Road, Lester Turner Road, Bill Sutton Road, and Old Pink Hill Road. The relocations estimated to occur within this segment include: 78 residences, 52 businesses, and one church (Table 9). This segment may also require the relocation of a pump station.

Pink Hill Eastern Bypass

The Pink Hill Eastern Bypass extends east from NC 241 beginning south of W. Pleasant Hill Road and parallels W. Pleasant Hill Road for a short time before it turns north. The Eastern Bypass crosses Howard Family Road, Potters Hill Road, W. Pleasant Hill Road, and Earl Howard Road, tying into NC 11 north of Pink Hill. The Eastern Bypass includes trumpet interchanges at NC 241 south of Pink Hill and NC 11 north of Pink Hill, and includes an interchange with W. Pleasant Hill Road. The provision of the eastern bypass would also include grade separations to carry Howard Family Road, Potters Hill Road, and Earl Howard Road over the bypass. This alternative also includes the realignment of several intersecting roads, including Howard Family Road, Earl Howard Road, and W. Pleasant Hill Road. The relocations estimated to occur within this segment include: 83 residences, 41 businesses, 1 church, and 1 cemetery with 50 graves (Table 9). This segment may also require the relocation of a pump station and a hog farm.

At this stage, the design alternatives presented in this study do not depict the exact location of the project, but provide a reasonable location with which to provide a cost estimate and evaluate environmental constraints.

Cost Estimates

Preliminary construction and right-of-way cost estimates for each of the design concepts are presented in Table 3. Because of the number of segments with more than one construction alternative, the total construction cost ranges from \$ 226,000,000 which includes the Beulaville Inner Loop/NC 241 Mainline/Service Roads/Pink Hill Western Bypass to \$ 287,000,000 which includes the Beulaville Outer Loop/NC 241 Mainline/Service Roads/Pink Hill Eastern Bypass. The primary differences between the bypass construction costs are length, number of interchanges, and provision of grade separations to accommodate freeway standards.

Table 3
Cost Estimates for Design Concepts

Segment	Length (miles)	Construction Cost	Right-of-Way Cost	Total Cost*
Beulaville Inner Loop	3.9	\$ 88,000,000	\$ 38,000,000	\$ 126,000,000
Beulaville Outer Loop	6.6	\$ 125,000,000	\$ 27,200,000	\$ 152,200,000
NC 241 Mainline	5.8	\$ 59,000,000	\$ 30,000,000	\$ 89,000,000
Service Roads (East & West)	10.2	\$ 19,000,000	\$ 3,700,000	\$ 22,700,000
Pink Hill Western Bypass	4.1	\$ 60,000,000	\$ 41,400,000	\$ 101,400,000
Pink Hill Eastern Bypass	5.5	\$ 84,000,000	\$ 52,200,000	\$ 136,200,000

Note: * denotes utility cost is not included in the total cost.

The segments with more than one construction alternative combine to form four alternatives, Alternatives 1, 2, 3, and 4, presented in Table 4. The total cost for these alternatives ranges from \$ 339,100,000 which includes the Beulaville Inner Loop/NC 241 Mainline/Service Roads/Pink Hill Western Bypass to \$ 400,100,000 which includes the Beulaville Outer Loop/NC 241 Mainline/Service Roads/Pink Hill Eastern Bypass.

Table 4
Cost Estimates for Combined Design Concepts

Alternative	Segments	Length (miles)	Total Cost
1	Beulaville Inner Loop/NC 241 Mainline/ Service Roads/Pink Hill Western Bypass	24.0	\$ 339,100,000
2	Beulaville Inner Loop/NC 241 Mainline/ Service Roads/Pink Hill Eastern Bypass	25.4	\$ 373,900,000
3	Beulaville Outer Loop/NC 241 Mainline/ Service Roads/Pink Hill Western Bypass	26.7	\$ 365,300,000
4	Beulaville Outer Loop/NC 241 Mainline/ Service Roads/Pink Hill Eastern Bypass	28.1	\$ 400,100,000

V. ENVIRONMENTAL SCREENING

The following is a preliminary review of environmental constraints that may have a potential affect on the project. The information obtained for the environmental screening is from readily available sources. No survey work other than a field inspection was prepared for this study. The environmental screening is not a substitute for the project planning / environmental documentation process. The purpose of environmental screening is to identify potential

environmental constraints early in the process. For the purpose of this study, potential environmental constraints were identified within the feasibility study area.

The feasibility study area is rural in nature, and includes predominantly residential, agriculture, and undeveloped forested land uses. There are multiple bypasses being assessed within the feasibility study area around Beulaville and Pink Hill.

Rivers and Streams

The proposed project is predominantly located in Duplin County which lies within the Cape Fear River Basin. However, the northern project terminus is located north of Pink Hill in Lenoir County, which lies within the Neuse River Basin. There are several streams and unnamed tributaries to streams located within the feasibility study area, including Limestone Creek, Cabin Creek, Persimmon Branch, Gum Swamp, Little Limestone Creek, Panther Creek, Beaverdam Creek, Tuckahoe Swamp, and Cherrytree Branch (**Figure 4**). All of these streams are classified as Class C Swamp Waters (Sw), with the exception of Cabin Creek which is classified as Class B Swamp Waters (Sw). Class C water resources are used for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Class B water resources are used for primary recreation and other uses suitable for Class C. The Sw supplemental classification is intended to recognize those waters which are topographically located so as to generally have low velocities. In addition, Beaverdam Creek, Tuckahoe Swamp, and Cherrytree Branch are classified as nutrient sensitive waters (NSW). The NSW supplemental classification is intended for waters needing additional nutrient management due to their being subject to excessive growth of microscopic or macroscopic vegetation. (NCDENR, 2012)

The number of stream crossings varies depending on the design concept. Based upon map interpretations, the Beulaville Outer Loop may have new crossings of Limestone Creek and unnamed tributaries to Limestone Creek, Gum Branch, and Cabin Creek. The Beulaville Inner Loop may have new crossings of unnamed tributaries to Limestone Creek. The realignment of Sarecta Road may have new crossings of unnamed tributaries to Limestone Creek. The Pink Hill Eastern Bypass may have two new crossings of Tuckahoe Swamp and an unnamed tributary to Tuckahoe Swamp. The Pink Hill Western Bypass may have a new crossing of Cherrytree Branch and Panther Creek. The service roads may also require new crossings of streams adjacent to NC 241. It should be noted that the field interpretations should only be used for planning purposes. These water bodies will likely need to be surveyed and have the appropriate coordination with the North Carolina Department of Environment and Natural Resources (NCDENR) and the U.S. Army Corps of Engineers (USACE) during any environmental document study.

Water Quality

Muddy Creek south of the feasibility study area is listed on the 2012 North Carolina 303(d) list of impaired waters (from source to Northeast Cape Fear River) for aquatic life because of a fair bioclassification and impairments to benthos. Aquatic habitat was good at the site, suggesting that the water quality is degraded. There are 41 animal operations and one NPDES wastewater

discharger in the watershed that may be the sources of the degraded water quality. The most recent sampling of Muddy Creek occurred in 2003. Muddy Creek was originally listed on the North Carolina 303(d) list in 2000. (NCDENR, 2005 and 2012)

While Cabin Creek and Limestone Creek are not impaired, notable water quality concerns have been documented. Cabin Creek from its source to Limestone Creek yielded samples that exceeded the water quality standard. In addition, nutrient levels in the water were extremely elevated. Limestone Creek through the feasibility study area is supporting aquatic life because of a Good-Fair benthic community rating south of the feasibility study area. The creek had an Excellent benthic community rating in 1993 that fell to Poor after a chicken waste spill in 1995. As of 2005, Limestone Creek had not fully recovered because of the habitat problems.

Point Source Dischargers

The National Pollution Discharge Elimination System (NPDES) was established by the federal government to control wastewater that discharges directly into surface waters. The NC Division of Water Quality is responsible for administering North Carolina's NPDES Program. There is one minor discharger in close proximity to the feasibility study area. The Town of Beulaville operates a Wastewater Treatment Plant (Permit No. NC0026018) south of the feasibility study area. (NCDENR, 2012)

Wetlands and Floodplains

The NCDENR Division of Coastal Management (DCM) developed digital wetland data by combining three layers of data and extracting the most pertinent information from each layer. The digital data layers used were the US Fish & Wildlife National Wetlands Inventory (NWI), the County Soil Surveys, and 30 meter Thematic Mapper™ Satellite Imagery. In addition, DCM performed field verification to develop the most accurate data. The wetland data was downloaded from DCM and reviewed to determine whether the proposed project impacts any wetlands. There are wetlands associated with the streams, including Limestone Creek and Tuckahoe Swamp, located in the feasibility study area; however, numerous wetlands are scattered throughout the feasibility study area, as well. The wetlands are shown on **Figure 4**. No delineation of jurisdictional resources or agency coordination was conducted as part of this study. During the preparation of any environmental documentation, it is recommended that these wetlands be surveyed and delineated. Proper permitting from the USACE will be obtained before construction of the project and appropriate mitigation measures will be taken.

Duplin and Lenoir Counties are participants in the National Flood Insurance Program. Digital Federal Emergency Management Agency (FEMA) floodplain maps were obtained from the North Carolina Floodplain Mapping Program and reviewed to determine whether the proposed project would cross the 100-year floodplain. The crossings at Limestone Creek, Cabin Creek, Little Limestone Creek, Panther Creek, and Tuckahoe Swamp are designated as special flood hazard areas within the 100-year floodplain (Zone AE, meaning that base flood elevations have been determined for these streams). In addition, Tuckahoe Swamp has a floodway area in Zone AE. The largest floodplain area will be associated with Limestone Creek, located in the southern

portion of the feasibility study area. **Figure 5** shows the floodplains and floodways in the feasibility study area. When constructing this project, local and state regulations regarding the 100-year floodplain will be followed.

FEMA Issues

There are no known Federal Emergency Management Agency (FEMA) buyout properties located within the feasibility study area. According to the Duplin County Planner / Section Manager and former FEMA Buyout Staff Project Manager for Duplin County, there are no FEMA buyout properties located within the feasibility study area in Duplin County (Tyndall, 2012).

Historic Properties and Archaeology

As part of the environmental screening process, existing GIS and the NC State Historic Preservation Office webpage were reviewed for the presence of any known historic properties within the project area. Table 5 lists the properties in the vicinity of the proposed project that are listed on the National Register of Historic Places (NRHP), determined eligible for listing on the NRHP, or on the state study list. These resources are shown on **Figure 5**. None of the following properties are within the proposed corridors. Should this project be programmed into the STIP, it is recommended that a survey of the corridor be conducted by an architectural historian to identify other potentially eligible properties.

**TABLE 5
HISTORIC RESOURCES**

Property	Location	County
Listed in the NRHP		
Hebron Presbyterian Church and cemetery	West of feasibility study area; north of NC 11 along Burncoat Road	Duplin
Eligible for Listing in the NRHP		
Beulaville Elementary School	Within feasibility study area; Downtown Beulaville	Duplin
John Maxwell House	West of feasibility study area; north of and along NC 11	Duplin
Eligible for Listing in the NRHP and State Study List		
Pink Hill Historic District	Within feasibility study area; Downtown Pink Hill	Lenoir
James Maxwell House	Along western edge of feasibility study area; north of NC 11 along Mill Branch	Duplin
State Study List		
Melvin Jones House (Gone)	Within feasibility study area; east of NC 241 along W. Pleasant Hill Road	Lenoir
Leary-Stroud House	Along northern edge of feasibility study area; along Jonestown Road	Lenoir

Source: NC State Historic Preservation Office (2012)

Mapping was reviewed at the North Carolina Office of State Archaeology (OSA) on December 1, 2012 to determine if any archaeology sites were located within the project area. According to the OSA mapping, ten known archaeological sites were initially identified within the feasibility study area. After further review of the OSA files, additional test excavations were recommended at one known archaeology site. Site 31DP86 is a woodland and early archaic site located west of Beulaville along NC 24 in the vicinity of where the Beulaville Outer Loop intersects NC 24. Should this project be programmed into the STIP, it is recommended that a survey of the corridors be conducted by an archaeologist to assess this site and identify other potential sites.

Threatened and Endangered Species

A review of the US Fish and Wildlife Service (USFWS) lists species under federal protection for Duplin (2 species) and Lenoir (3 species) counties as of October 3, 2012. These species are listed in Table 6.

TABLE 6
Species under Federal Protection

Scientific Name	Common Name	County	Status*
Vertebrates			
<i>Alligator mississippiensis</i>	American alligator	Duplin	T (S/A)
<i>Picoides borealis</i>	Red-cockaded woodpecker	Duplin / Lenoir	E
<i>Haliaeetus leucocephalus</i>	Bald eagle	Lenoir	BGPA
Vascular Plant			
<i>Aeschynomene virginica</i>	Sensitive joint-vetch	Lenoir	T

Notes:

- * E Endangered denotes a species in danger of extinction throughout all or a significant portion of its range.
- T Threatened denotes a species likely to become endangered in the foreseeable future throughout all or a significant portion of its range.
- S/A Similarity of appearance denotes a species that closely resembles in appearance to an endangered or threatened species that enforcement personnel would have substantial difficulty in differentiating between the listed and unlisted species.
- BGPA The bald eagle was declared recovered and removed (de-listed) from the Federal List of Threatened and Endangered wildlife in the July 9, 2007 Federal Register. After de-listing, the Bald and Golden Eagle Protection Act becomes the primary law protecting bald eagles.

Source: United States Fish and Wildlife Service, 2012 (Last updated September 22, 2010)

Federal Species of Concern (FSC) are not legally protected under the Endangered Species Act and are not subject to any of its provisions until they are formally proposed or listed as Threatened or Endangered. Table 7 includes FSC species listed for Duplin and Lenoir Counties and their state classifications. Organisms that are listed as Endangered, Threatened, or Special Concern (SC) on the NHP list of Rare Plant and Animal Species are afforded state protection under the State Endangered Species Act of 1987 and the North Carolina Plant Protection and Conservation Act of 1979. State listed species are not afforded the protections of the Act on NCDOT projects.

TABLE 7
Federal Species of Concern

Scientific Name	Common Name	County	NC Status*
Vertebrates			
<i>Corynorhinus rafinesquii macrotis</i>	Rafinesque's Big-eared Bat (Coastal Plain subspecies)	Duplin	SC
<i>Heterodon simus</i>	Southern Hognose Snake	Duplin	SC
<i>Noturus sp. 2</i>	Broadtail Madtom	Duplin	SC
<i>Noturus furiosus</i>	Carolina Madtom	Lenoir	T
<i>Trichechus manatus</i>	West Indian Manatee	Lenoir	E
Vascular Plant			
<i>Dionaea muscipula</i>	Venus flytrap	Duplin, Lenoir	SC-V
<i>Ludwigia ravenii</i>	Raven's Seedbox	Duplin	T
<i>Sagittaria weatherbiana</i>	Grassleaf Arrowhead	Duplin	E
<i>Solidago verna</i>	Spring-flowering Goldenrod	Duplin	SR-O
<i>Amorpha georgiana</i>	Georgia Indigo-bush	Lenoir	E
Invertebrates			
<i>Elliptio lanceolata</i>	Yellow Lance	Duplin	E

Notes:

- * E Endangered denotes a species whose continued existence as a viable component of the state's flora or fauna is in jeopardy.
- T Threatened denotes any native or once native species that is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the State's Endangered Species Act of 1987.
- SC Special Concern denotes a species that requires monitoring but may be taken or collected and sold under regulations adopted under the provisions of Article 25 of Chapter 113 of the General Statutes (animals) and the Plant Protection and Conservation Act (plants).
- SC-V Special Concern Vulnerable denotes a species which is likely to become a Threatened species within the foreseeable future.
- SR-O Significantly Rare Other denotes a species for which the range is sporadic or cannot be described by the other Significantly Rare categories.

Source: North Carolina Natural Heritage Program, 2012 (Last updated September 19, 2012)

The North Carolina Natural Heritage Program (NHP) database was queried to determine the presence of protected species within the feasibility study area. The most recent search of the NHP database of rare species and unique habitats, conducted on October 26, 2012, listed an occurrence of the American Alligator within two miles of the feasibility study area. Additional FSC species with listings within two miles of the feasibility study area include Broadtail Madtom, Raven's Seedbox, and Venus Flytrap (NHP, 2012). Surveys for these species, as well as the federally protected and FSC species, may need to be completed during preparation of any environmental documentation.

Hazardous Materials

The NCDENR Division of Waste Management (DWM) databases were reviewed because of the liability associated with purchasing properties containing hazardous materials. Based on the existing databases, there are ten underground storage tank (UST) registered tanks located within or adjacent to the feasibility study area. These properties are listed in Table 8 and shown on Figure 6. The E-Z Shop #18 is the only UST registered tank located near the proposed project. The E-Z Shop #18 is located on the north side of Beulaville near the Beulaville Inner Loop terminus along NC 241. (NCDENR, 2012)

TABLE 8
Underground Storage Tank Registered Tanks

Facility ID	Property Name	Property Address	County
0-035279	Beulaville Elementary School	183 Lyman Road, Beulaville	Duplin
0-035256	Trade – Wilco 1844	110 S. Jackson Street, Beulaville	Duplin
0-024587	E-Z Shop #18	201 Jackson Street, Beulaville	Duplin
0-034124	Mom & Pops Country Store	2168 E. Hwy 24, Beulaville	Duplin
0-030263	East Duplin High School	394 North NC 111, Beulaville	Duplin
0-029317	Pink Hill Elementary School	202 South Central Avenue, Pink Hill	Lenoir
0-013698	Short Stop 20	Highway 241, Pink Hill	Lenoir
0-026628	C-Mart 13	Front Street, Pink Hill	Lenoir
0-034894	Jarmans Service Center	107 Kinston Blvd, Pink Hill	Lenoir
0-035945	Woodrow Sumner Garage Service	100 South Kinston Blvd, Pink Hill	Lenoir

Source: NCDENR DWM - GIS Maps, 2012

After a review of the US Environmental Protection Superfund Site Information, there are no Superfund sites located within or in close proximity to the feasibility study area. (USEPA, 2012)

Other Significant Findings

Agriculture in Duplin County is an important local industry providing nearly \$1.2 billion in sales for the County's 1,159 farms. (Duplin County Agricultural Protection Plan, 2010) Duplin County is an important producer of commodity crops ranking in the top ten counties in the United States in hogs/pigs and poultry and in the top ten in the State in small grains, tobacco, vegetables, fruits, hay, poultry, cattle, and hogs/pigs. Of the \$1.2 billion in sales, 94 percent was generated from livestock sales demonstrating the significant influence of this sector which is driven by pigs and hogs which represent 65 percent of farm output. There are numerous swine farms located within or adjacent to the feasibility study area, predominantly on the west side of NC 241. However, there are a few swine farms also located on the north side of NC 24 in the vicinity of Beulaville. (NCDENR, 2012)

Due to the nature of the area (i.e. low elevation, significant water features and extensive wetlands), it is anticipated that there will be significant hydraulic design challenges with this

project. Bridges have been proposed in the design concepts when crossing major water features. Additional study and design of hydraulic structures are needed should this project be programmed.

VI. SOCIAL AND ECONOMIC EFFECTS

Relocations

Potential residential and business relocation impacts associated with each of the design concepts are presented in Table 9. These estimates were appended from the right-of-way cost estimate and are based on functional designs.

Table 9
Estimated Relocations by Segment

Segment	Residential Relocations	Business Relocations	Churches Displaced	Cemetery / Graves Displaced	Cell Tower
Beulaville Inner Loop	125	22	1	1 / 30	1
Beulaville Outer Loop	78	16	1	1 / 50*	0
NC 241 Mainline	138	26	5	1 / 40	0
Service Roads (East & West)	10	0	0	0	0
Pink Hill Western Bypass	78	52	1	0	0
Pink Hill Eastern Bypass	83	41	1	1 / 50	0

Note: * denotes graves located within two cemeteries

Public Facilities and Services

Churches and Cemeteries

The churches and cemeteries located in the vicinity of the feasibility study area based on a review of existing GIS data and Google Earth are listed in Table 10 and shown on **Figure 7**. As part of the study, a review of the Duplin County, NCGENWEB website revealed additional cemeteries located in or near the feasibility study area. These cemeteries were identified as part of the NC Lost Souls Genealogy Project and include all transcribed cemeteries in Duplin County. The cemeteries identified in this online search are listed in the table below and noted with an asterisk (*).

TABLE 10
CHURCHES AND CEMETERIES IN THE VICINITY OF THE FEASIBILITY STUDY AREA

Segment	Public Facility	Location
Duplin County		
---	Beulaville Free Will Baptist	South of NC 24; downtown Beulaville
---	Beulaville Baptist Church	North of NC 24, downtown Beulaville
---	Beulaville Presbyterian Church	North of NC 24; downtown Beulaville
---	Piney Grove PFWB Church	East of NC 241; north of NC 24 near Penny Road
Beulaville Inner Loop	Beulaville United Methodist	West of NC 241 near intersection with NC 111
---	Grace Covenant Church	East of NC 241 near NC 41 / NC 111 intersection
---	Beulaville PFWB Church	East of NC 241; north of NC 41
---	Cemetery	North of NC 24; east of Beulaville; outside feasibility study area
Beulaville Inner / Outer	James Robert Kennedy Cemetery*	North of NC 24; east of Beulaville
---	William Cemetery*	North of NC 24; east of Beulaville
Beulaville Outer Loop	Miller Cemetery*	North of NC 24 near Ottis Miller Road; west of Beulaville
Beulaville Inner / Outer	Horne-Carter Cemetery*	East of NC 41 near Penny Road
---	Thomas Gresham Cemetery*	South of Turkey Branch Road near NC 111
Beulaville Inner Loop	Sumner Cemetery*	North of Turkey Branch Road near NC 111
---	Cemetery	East of NC 241; south of NC 41; adjacent to feasibility study area
Beulaville Inner / Outer	Ivey F. Houston Cemetery*	East of NC 241; north of Sarecta Road
Beulaville Inner / Outer	Gum Branch Church	West of NC 241; north of Sarecta Road
Beulaville Inner / Outer	Cemetery*	West of NC 241; south of Sarecta Road
---	J. T. Kennedy Cemetery*	West of NC 241; north of Sarecta Road
---	Cabin F.W.B. Church and Cemetery	West of NC 241; north of Sarecta Road at NC 111 intersection

Segment	Public Facility	Location
---	John W. Mercer Cemetery*	West of NC 241; south of Sarecta Road; adjacent to feasibility study area
---	Cabin Missionary Baptist Church	West of NC 241; along Sarecta Road; adjacent to feasibility study area
Service Roads	Cemetery	West of NC 241; north of Baker Road
---	Whaley Cemetery*	West of NC 241; north of Baker Road
Mainline	Sandy Plain Free Will Baptist Church and Cemetery	West side of NC 241; north of Baker Road
Service Roads	Sumner Cemetery*	West of NC 241; south of Kennedy Lane
---	Perry Sumner Cemetery*	West of NC 241; south of Kennedy Lane; adjacent to feasibility study area
---	Senus Carter Cemetery*	East of NC 241; west of Howard Family Road
---	Stanley Cemetery*	West of NC 241; south of Kitty Noecker Road near Panther Creek; adjacent to feasibility study area
Pink Hill Western Bypass	Branch Cemetery*	West of NC 241; south of NC 11
Pink Hill Western Bypass	New Salem Chapel Free Will Baptist	West of NC 241; south side of NC 11
---	Oak Ridge Memorial Park Cemetery	West of NC 241; north of NC 11; adjacent to feasibility study area
---	Hebron Church and Cemetery	West of NC 241; north of NC 11; along Burncoat Road; adjacent to feasibility study area
Pink Hill Western Bypass	Amos Branch Cemetery*	West of NC 241; north of NC 11 along Mill Branch
---	Friendship Free Will Baptist Church	Northwest of Pink Hill; East side of Bill Sutton Road; north of Burncoat Road
Lenoir County		
Pink Hill Eastern Bypass	Cemetery	East of NC 241; east of Howard Family Road

Segment	Public Facility	Location
Pink Hill Western Bypass	Mt. Zion Pentecostal Free Will Baptist Church	East side of NC 241 near Howard Family Road
Mainline	Smith's Chapel	East side of NC 241 in Pink Hill
---	Silo Christian Church	East of NC 241; along Potters Hill Road in Pink Hill
---	Cemetery	East of NC 241 near Earl Howard Road/Potters Hill Road intersection in Pink Hill
---	Pink Hill United Methodist Church	West of NC 241; south of NC 11 in downtown Pink Hill
---	Pink Hill Presbyterian Church	West of NC 241; south of NC 11 in downtown Pink Hill
---	Turning Point Assembly	West of NC 241; south of NC 11 in downtown Pink Hill
Pink Hill Western Bypass	Church of God	East side of NC 11; north of Pink Hill
---	Cemetery	East side of NC 11 near Jonestown Road
---	Cemetery	East of NC 11; east of Bob Stroud Road

Notes: * denotes cemetery identified on Duplin NCGenWeb Site
 --- denotes church or cemetery is outside feasibility study area and not adjacent to the design concept

Sources: Existing GIS Data and Google Earth
 Duplin NCGenWeb Site (2012); Duplin County, 2012; Lenoir County; 2012

Community Centers

There are no known community centers located in Beulaville or Pink Hill. However, the former Beulaville Elementary School is being partially renovated to accommodate a 109-seat assembly room, including a kitchen area and restrooms. The former Pink Hill Elementary School is now utilized as a multi-purpose facility that includes the former gymnasium utilized as an events and local discussion venue. Additionally, East Duplin High School in Beulaville has a 600-seat Fine Arts Building that is used for meetings and events, including theatrical events.

Public Schools

Beulaville Elementary School is located at the intersection of NC 24 and Lyman Road in Beulaville, south of NC 24 in Duplin County and serves grades kindergarten - 8. The former Beulaville Elementary School is adjacent to the existing elementary school along NC 24. The former Beulaville Elementary School is being partially renovated as a Beulaville Community Building to include a 109-seat assembly room, kitchen area, restrooms, and hallway corridors. This Phase I renovation is anticipated to be completed by June 2013. Future planned phases for the former Beulaville Elementary School will include a Beulaville Town Hall, Police Department,

and general office space. East Duplin High School is located immediately north of Beulaville, along NC 111 west of NC 241 and serves grades 9 - 12. Pink Hill Elementary School is located north of Pink Hill and west of NC 11 off of H.C. Turner Road near Bob Stroud Road in Lenoir County and serves grades kindergarten - 5. The former Pink Hill Elementary School is located in downtown Pink Hill along S. Central Avenue west of NC 241. The former Pink Hill Elementary School is utilized as a multi-purpose facility housing a Health, Wellness, and Fitness facility, providing classroom extensions for Lenoir Community College, and the former gymnasium is used as an events and local discussion venue. South Lenoir High School is located north of Pink Hill on Old Highway 11 off of NC 11 in Lenoir County and serves grades 9 - 12. East Duplin High School is located in close proximity to where the Beulaville Inner Loop crosses NC 111 and Pink Hill Elementary School is located in close proximity to where the Pink Hill Eastern Bypass intersects NC 11, north of Pink Hill.

Public Safety

The Duplin County Sheriff's Office, located in Kenansville, provides service to all of the citizens of Duplin County. The Sheriff's Office employs 65 full-time personnel working in eleven divisions to provide patrol and investigative services to citizens of the county. Beulaville is served by volunteer fire and rescue departments, as well as the Beulaville Police Department which includes four full-time policemen and county deputies. (Duplin County, 2012) The Lenoir County Sheriff's Office, located in Kinston, provides law enforcement within Lenoir County. The Sheriff's Office consists of 108 members, including 67 sworn officers and 34 detention officers. (Lenoir County, 2012)

There are twenty county fire departments and five out-of-county fire departments that cover the districts inside Duplin County. The Duplin County volunteer fire departments (VFD) located near the project area include Sarecta VFD, Beulaville VFD, Albertson VFD, Potters Hill VFD, and Lyman VFD. The Duplin County Fire Marshall is located in Kenansville. The Lenoir County Fire Marshall's Office is responsible for fire inspections and investigations throughout Lenoir County and serves as a liaison for the eight in-county and two out of county volunteer fire departments. The Lenoir County VFD's located near the project area include Deep Run VFD and Pink Hill VFD.

The Duplin County Emergency Services Department is made up of two divisions: Emergency Management and the Fire Marshall's Office. The Emergency Services Department works closely with the various fire departments and EMS squads to provide the best emergency services to the citizens of Duplin County. The Duplin County Emergency Medical Services (DCEMS) is a countywide EMS system operating eight paramedic ambulances that provide coverage 24-hours a day every day. DCEMS has eight primary response districts, including one in Beulaville. The Lenoir County Department of Emergency Services consists of four divisions: 911 Communications, Emergency Management, Emergency Medical Services, and the Fire Marshall. Lenoir County is divided into several response districts with EMS stations located throughout the districts. The nearest EMS station to Pink Hill is located off NC 11 in Deep Run.

Health Services

Duplin General Hospital is a 101-bed not-for-profit community hospital located in Kenansville, approximately 12 miles west of the feasibility study area. Duplin County Health Department is also located in Kenansville. Goshen Medical Center, Inc. is a community health center with six locations, including one in Beulaville. In addition, the Senior Center in Duplin County operates five nutrition sites to provide food and health advice to senior citizens, including one in Beulaville. The Lenoir County Health Department provides local public health services and programs to county residents and is located in Kinston, approximately 18 miles northeast of Pink Hill, the northern project terminus. Of the health services mentioned above, the Goshen Medical Center, located north of Beulaville near the Beulaville Inner Loop terminus along NC 41, appears to be the only known health service located near the proposed project.

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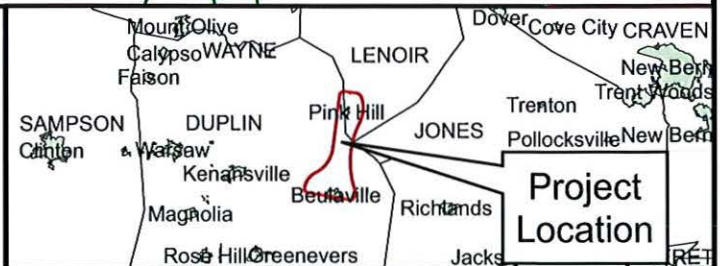
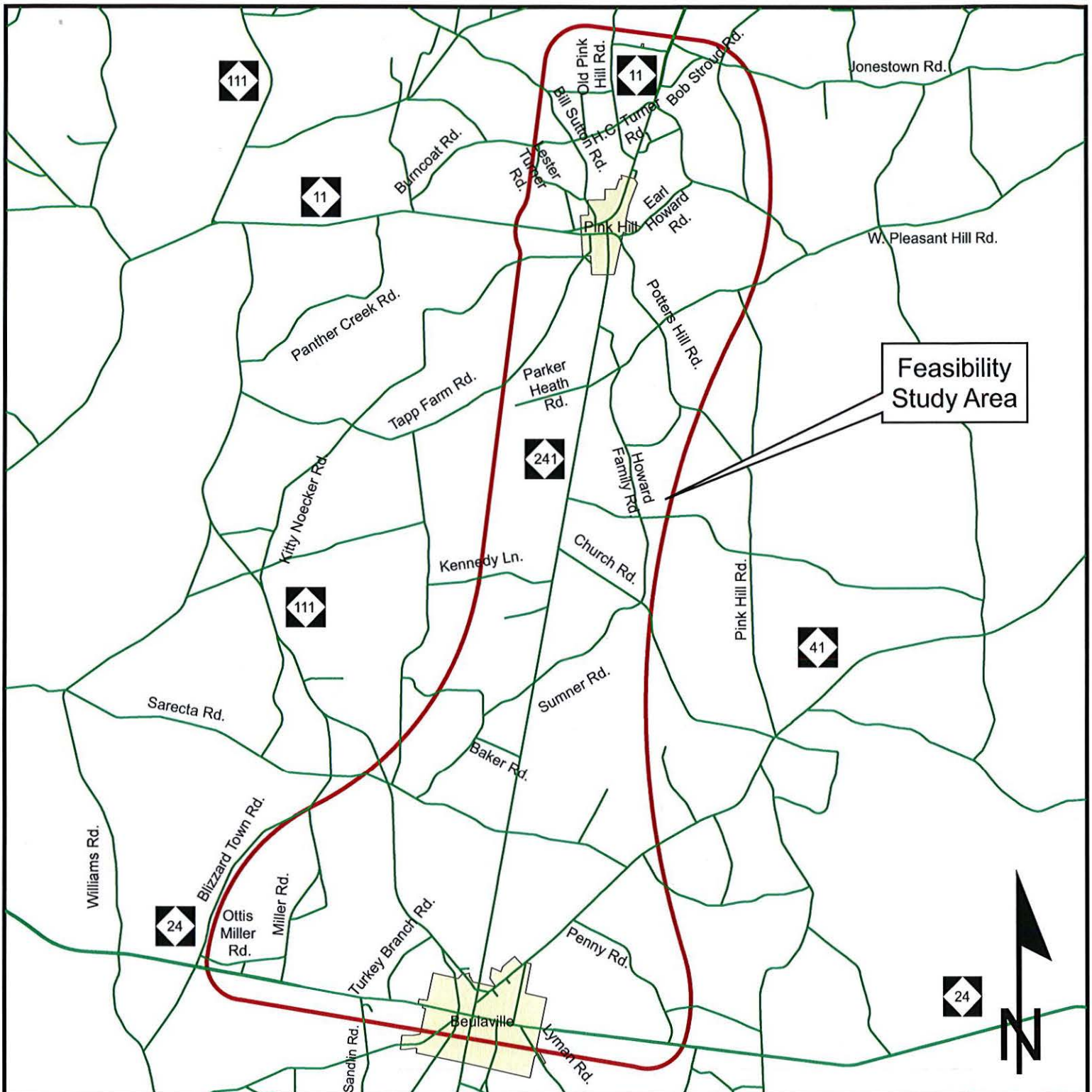
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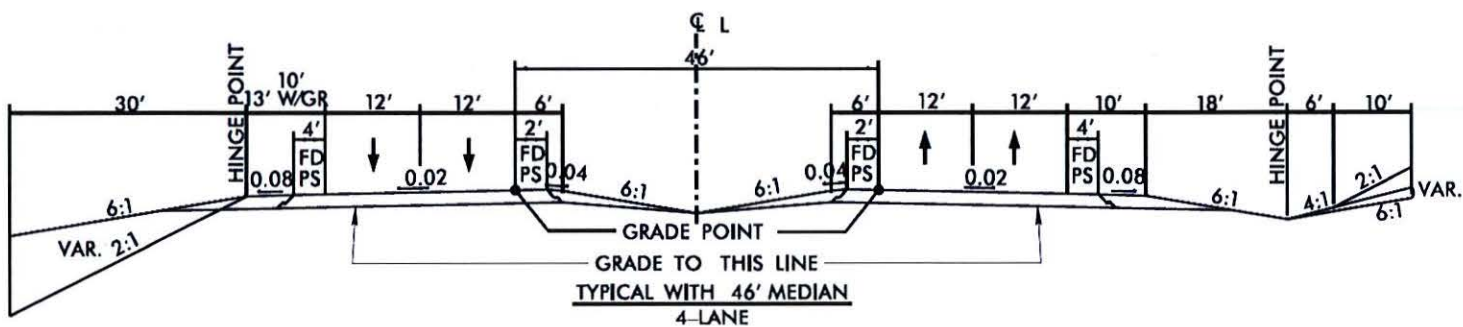
**Hatch Mott
MacDonald**



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROGRAM DEVELOPMENT BRANCH
FEASIBILITY STUDIES UNIT
Widening NC 241 From NC 24
In Duplin County To NC 11
In Lenoir County
FS-1202A

Project Location Map

Figure 1



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DEPARTMENT OF TRANSPORTATION
PROGRAM DEVELOPMENT BRANCH
FEASIBILITY STUDIES UNIT

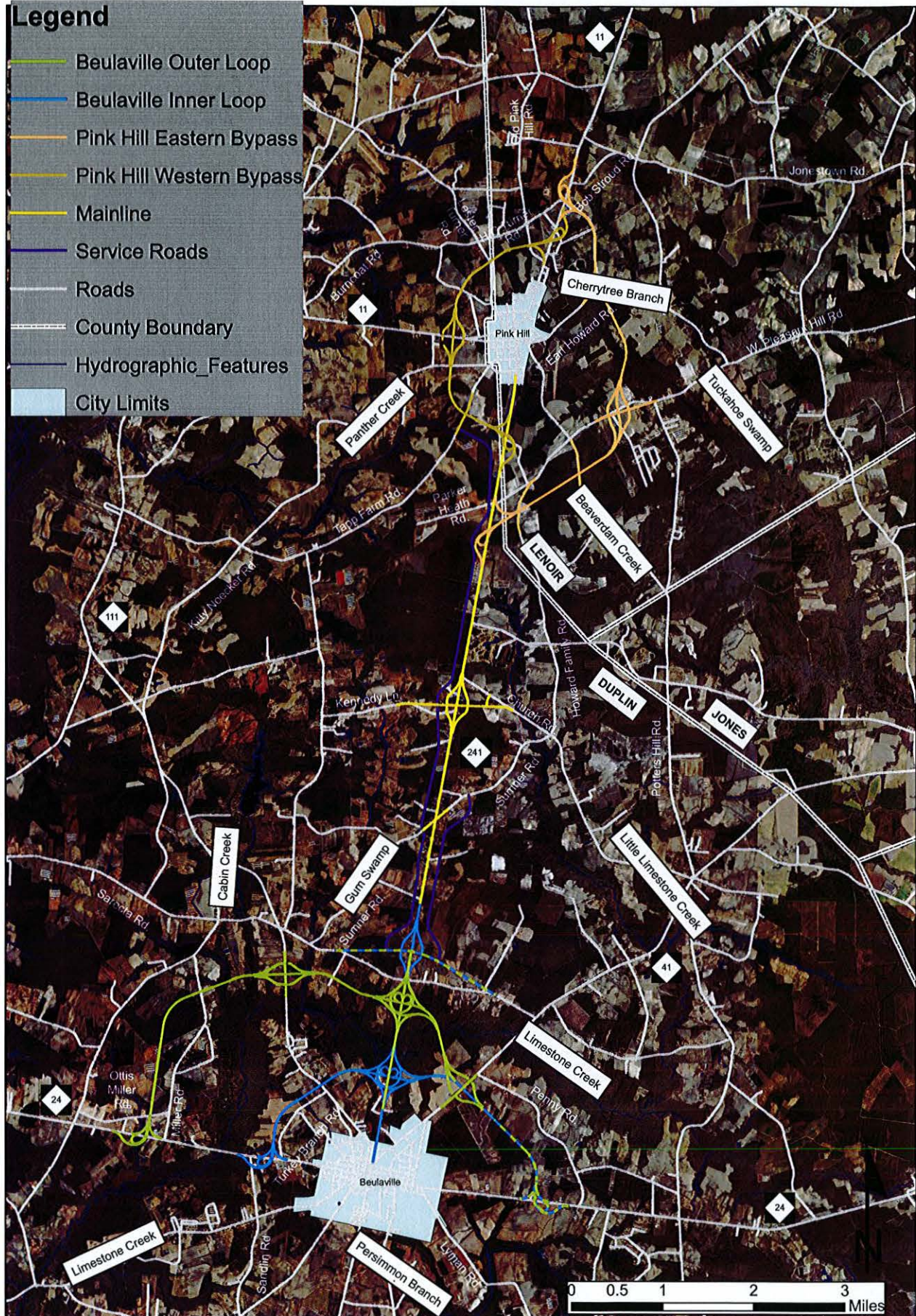
Widening NC 241 From NC 24
In Duplin County To NC 11
In Lenoir County
FS-1202A

Typical Roadway
Section

Figure 2

Legend

- Beulaville Outer Loop
- Beulaville Inner Loop
- Pink Hill Eastern Bypass
- Pink Hill Western Bypass
- Mainline
- Service Roads
- Roads
- County Boundary
- Hydrographic_Features
- City Limits



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MacDonald**

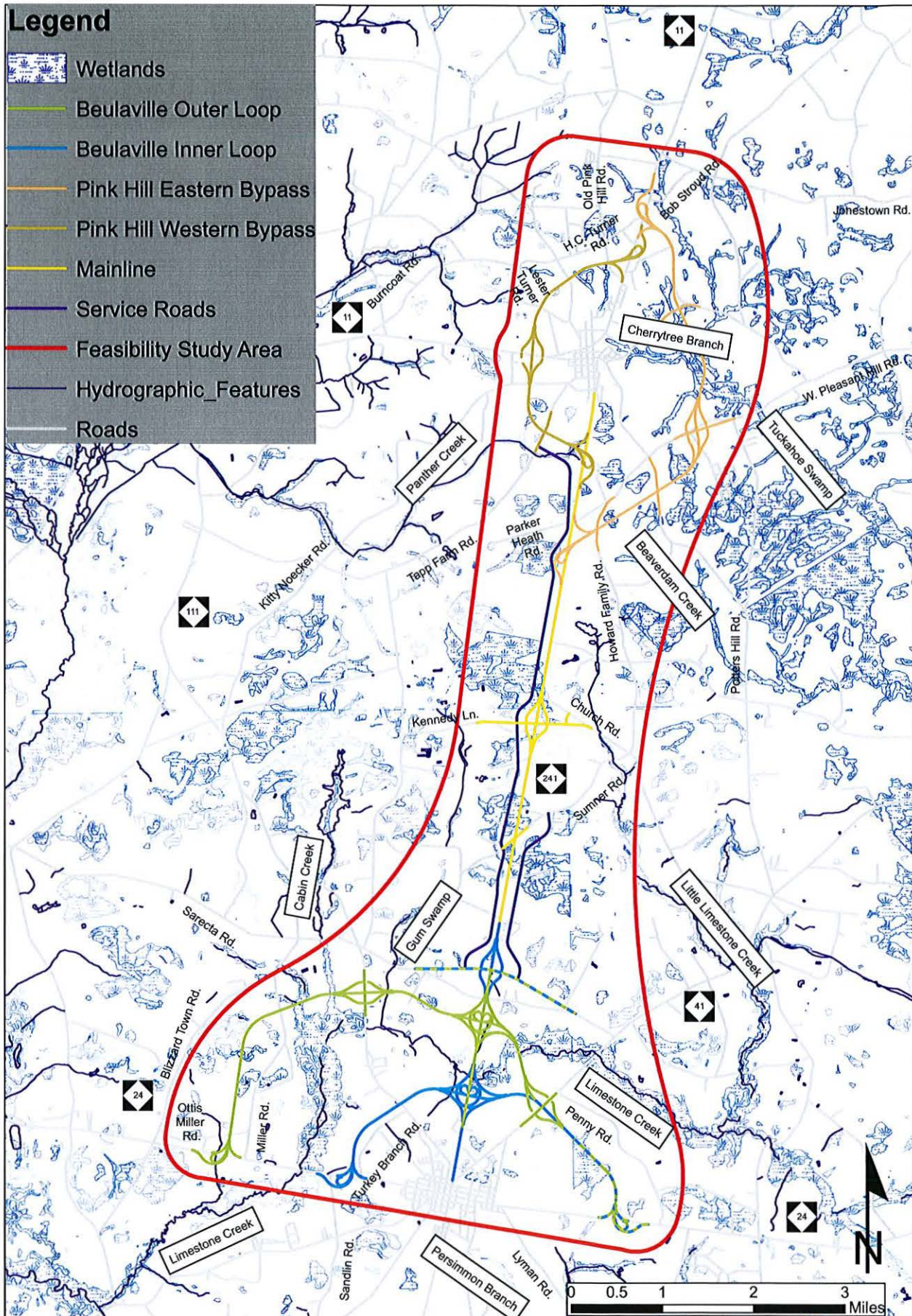


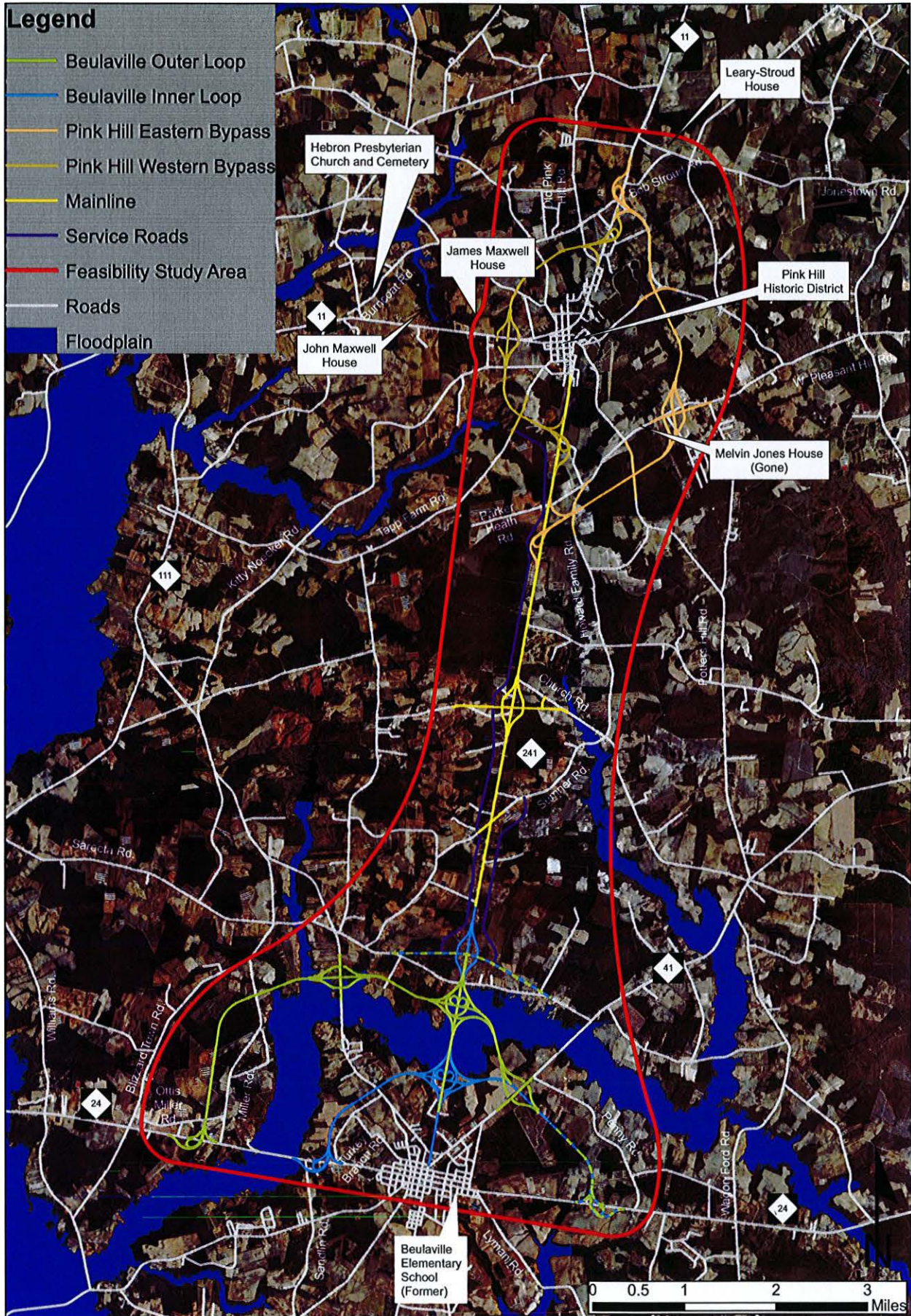
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Widening NC 241 From NC 24
In Duplin County To NC 11
In Lenoir County
FS-1202A

Design Concepts

Figure 3





**Hatch Mott
MacDonald**



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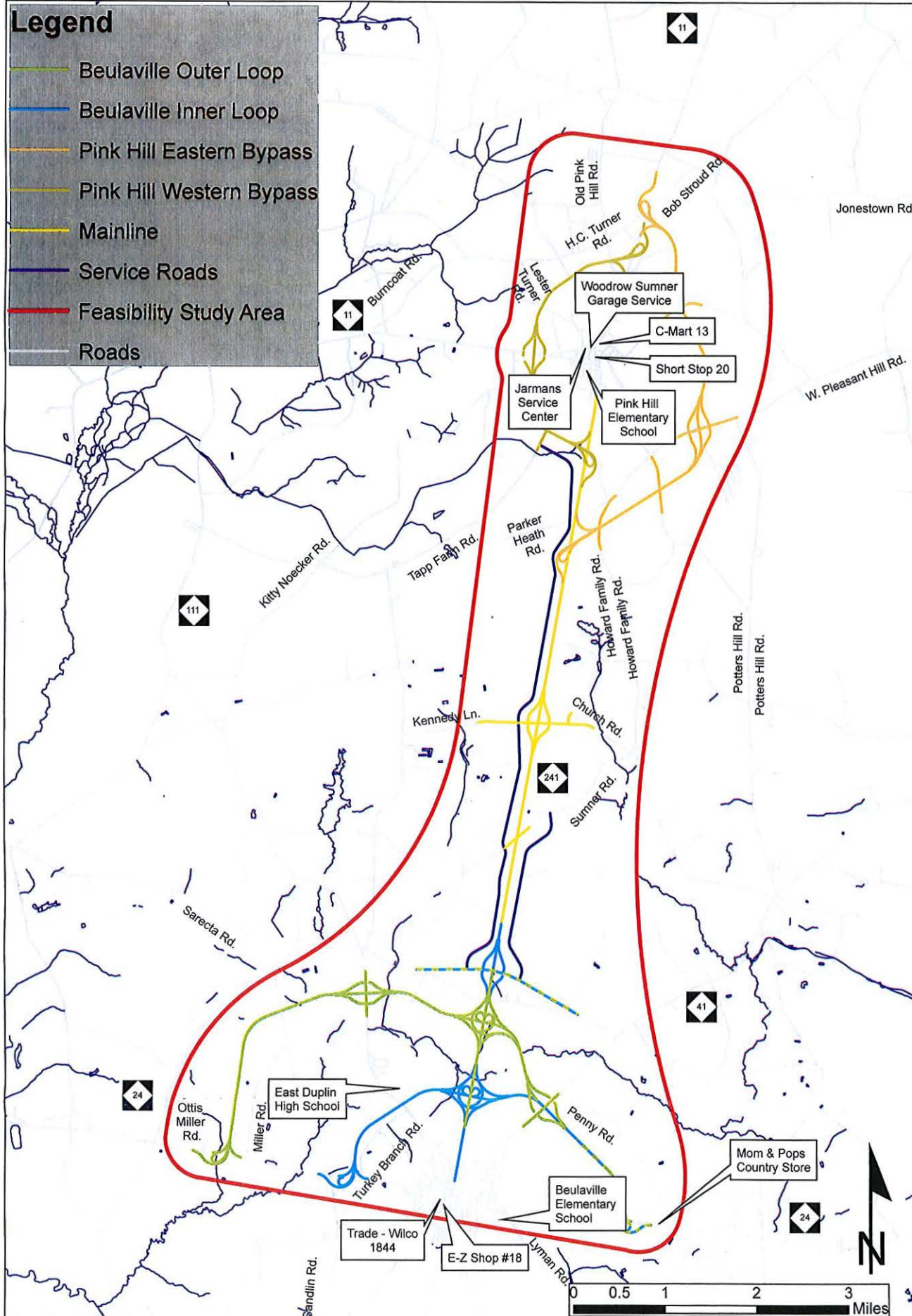
Widening NC 241 From NC 24
in Duplin County To NC 11
in Lenoir County
FS-1202A

**Floodplains
and
Cultural Resources**

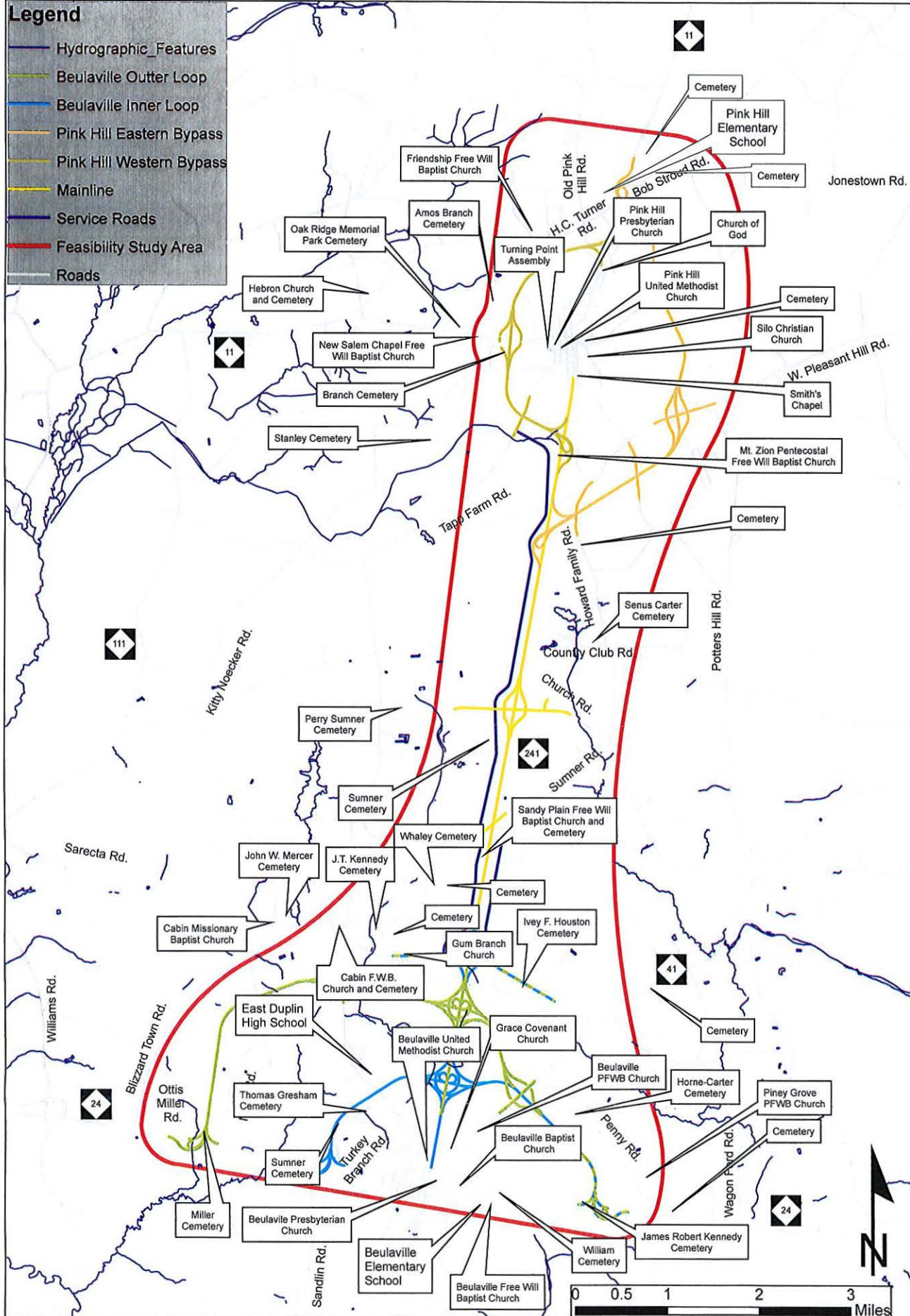
Figure 5

Legend

- Beulaville Outer Loop
- Beulaville Inner Loop
- Pink Hill Eastern Bypass
- Pink Hill Western Bypass
- Mainline
- Service Roads
- Feasibility Study Area
- Roads



- Hydrographic_Features
- Beulaville Outer Loop
- Beulaville Inner Loop
- Pink Hill Eastern Bypass
- Pink Hill Western Bypass
- Mainline
- Service Roads
- Feasibility Study Area
- Roads



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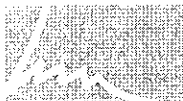
Widening NC 241 From NC 24
In Duplin County To NC 11
In Lenoir County
FS-1202A

COMMUNITY FACILITIES

Figure 7

APPENDIX A

SCOPING MEETING SUMMARY



Hatch Mott MacDonald

September 14, 2012

MEMORANDUM TO: Derrick Lewis, P.E.
Feasibility Studies Unit Head

FROM: Nathan Phillips, P.E.
Hatch Mott MacDonald

SUBJECT: August 16, 2012 Final Meeting Summary for
FS-1202A, Widening of NC 241 from NC 24 in Duplin County to
NC 11 in Lenoir County

A scoping meeting for the subject project was held on August 16, 2012, at 10:00 a.m. in the NCDOT Roadway Design Conference Room at the Century Center in Raleigh. The following people were in attendance:

Derrick Lewis	NCDOT - Feasibility Studies Unit
Rasay Abadilla	NCDOT - Feasibility Studies Unit
BenJetta Johnson	NCDOT - Congestion Management
James Upchurch	NCDOT - Transportation Planning Branch
Matthew Potter	NCDOT - Project Development & Environmental Analysis
Gary Lovering	NCDOT - Roadway Design Unit
Neil Lassiter	NCDOT - Division 2
Mac Daughety	Lenoir County Commissioner
Jack Best	RPO & Wayne County Commissioner
Alex Rickard	Eastern Carolina Council of Government
Kenneth Smith	Town of Beulaville
Scotty Summerlin	Town of Beulaville
Randall Tyndall	Duplin County Planning
Nathan Phillips	Hatch Mott MacDonald
Mike Pekarek	Hatch Mott MacDonald
Aileen Mayhew	Hatch Mott MacDonald

The purpose of the meeting was to discuss the scope of the project and review the preliminary alignments. Derrick Lewis began the meeting with introductions and a handout was distributed (attached). A map of the project area was shown depicting the proposed project, including a western bypass of Beulaville and Pink Hill. Widening NC 241 through Pink Hill was also shown on the map.

Nathan Phillips continued by giving a general description of the project and discussing the existing conditions along NC 241. The 2011 traffic volumes in the project area were discussed and the proposed improvements were identified.

Aileen Mayhew stated that environmental information shown on the map was based on available GIS data and included wetlands and streams obtained from the County, historic architecture, churches, and cemeteries.

Mike Pekarek stated that the alternative alignments were designed to avoid the environmental constraints in the project area to the extent possible. The alternative concepts were prepared in order to provide a cost estimate for the feasibility study.

Nathan Phillips discussed the project schedule, provided on the attached agenda, and opened up the meeting for questions. Discussions regarding the location of the shallow bypasses around Pink Hill and Beulaville, as well as background information for this project included the following comments:

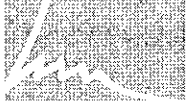
- Keep as much of the Pink Hill Bypass in Lenoir County, as possible, to avoid competing with projects funded in Brunswick County, Wilmington, and Jacksonville.
- No traffic signals desired along the proposed facility.
- Expand right-of-way at intersections for possible future interchanges.
- New GIS data for Duplin County will be available January 2013.
- Current right-of-way along NC 241:
 - 100-foot right-of-way between Pink Hill and the golf course
 - 60-foot right-of-way in the vicinity of the golf course extending south
 - Concerned about impacts to Sandy Plains Church
- NCDOT confirmed that this project will include the Beulaville Bypass of NC 24.
- There were concerns that the Beulaville Bypass shown on the map is too far from town.
- Local officials anticipate that widening NC 241 would replace the need to provide improvements to NC 11/NC 903 (west of Beulaville) and US 258 (east of Beulaville), as all of these routes serve a similar function.
- Need for the project:
 - Improved connectivity between the Global TransPark and I-40 needed.
 - Improved connectivity between Camp Lejeune and I-95 needed.
 - Defense Base Closure and Realignment Commission (BRAC) comprises approximately 9 to 10% of the area's economy.
 - BRAC is awaiting support from County – road improvements are badly needed and strategic planning efforts are underway by the military.
 - Shared training requirements between Ft. Bragg and Camp Lejeune – facility traffic expected to increase, especially as troops return to NC.
 - Need to be sensitive to all stakeholders.
 - Common overall goal is to improve connectivity in Eastern NC.

The following action items will be completed as next steps:

- Two east / west bypasses of Beulaville will be studied – one closer to town (inner loop) and one further away from town (outer loop). (Hatch Mott MacDonald (HMM))

- An east and west bypass of Pink Hill will be studied. Improvements to NC 241 through Pink Hill will not be studied. (HMM)
- Widening NC 241 to freeway standards, including interchanges, overpasses, and service roads will be studied. (HMM)
- Transportation Planning Branch (James Upchurch) will discuss strategic planning efforts from military with Paul Friday (Camp Lejeune) and Mark Sullivan.
- Project cost will be broken out such that the mainline and interchanges will be separate. (HMM/NCDOT)
- The Feasibility Study Unit will request additional traffic forecasts to include traffic from US 258 and NC 11/NC 903 and HMM will provide the Feasibility Studies Unit future interchange locations. James Upchurch will also assist with this coordination. This may delay the feasibility study schedule.
- HMM will continue with roadway design work on the location of the bypasses using typical interchange configurations; however, traffic forecasts will be needed to complete the roadway designs.
- HMM will prepare the capacity analysis upon receipt of the traffic forecasts.
- Feasibility Study Report to be completed by the end of 2013.

If you have any questions, please contact Nathan Phillips, Hatch Mott MacDonald, at 919.552.2253, or Derrick Lewis, NCDOT Feasibility Studies Unit, at 919.707.4663.



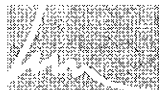
**Hatch Mott
MacDonald**

August 16, 2012

Scoping Meeting

**Feasibility Study (FS-1202A) for
NC 241 from NC 24 north to SR 1151 (Bob Stroud Road)
Duplin and Lenoir Counties**

1. Introductions
2. Project Description
3. Existing Conditions
4. Proposed Improvement
 - a. Typical Section/Facility Type
 - b. Design Criteria
 - c. Intersection Treatments
5. Environmental Information
6. Discuss Preliminary Scenarios
7. Schedule



Feasibility Study FS-1202A Scoping Meeting

*NC 241 from NC 24 north to SR 1151 (Bob Stroud Road)
Duplin and Lenoir Counties*

August 16, 2012

Project Description

FS-1202A proposes to widen NC 241 from NC 24 in Beulaville to the existing four-lane section of NC 11 north of Pink Hill near SR 1151 (Bob Stroud Road). The project will include shallow bypasses of Pink Hill and Beulaville along with an option to widen NC 241 through Pink Hill.

Existing Conditions

NC 241 is currently a two-lane facility within the study area and is proposed to be widened to a four-lane divided facility that will match the existing four-lane divided typical section along NC 11 north of Pink Hill. The study area is mostly rural in nature and agriculture is a primary land use. The 2011 AADT for NC 241 ranged from approximately 4,000 vehicles per day south of Pink Hill to 11,000 vehicles per day north of NC 24 in Beulaville. 2011 AADT in the study area is listed below:

<i>Route</i>	<i>Location</i>	<i>Year</i>	<i>AADT</i>
NC 11	North of Pink Hill	2011	6900
NC 11	Pink Hill, North of NC 241	2011	8000
NC 241	South of Pink Hill	2011	3900
NC 241	Near Church Road	2011	3800
NC 241	North of Beulaville	2011	5000
NC 241	North of NC 24	2011	11000
NC 241	South. of Beulaville	2011	6300
NC 241	Jackson Store Road	2011	4700

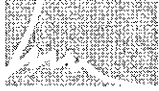
Proposed Improvements

Typical Section/Facility Type/Design Criteria

The proposed facility will be a four-lane divided arterial.

Intersection Treatments

Future traffic data is not available; therefore, a typical intersection configuration with left-turn lanes on the mainline will be utilized at all intersections.



Environmental Information

Environmental and historical information will be based on available GIS data.

Preliminary Scenarios

Several alternatives were considered initially; however, the favored are presented here. It should be noted at this stage, these scenarios do not depict the exact location of the project, but provide a reasonable location with which to provide a cost estimate and evaluate environmental constraints.

Schedule

NTP – June 18, 2012

Traffic Forecast Requested, due – Early 2013

Scoping Meeting – August 16, 2012

Preliminary Conceptual Drawings – Late September 2012

Cost Estimates requested – Late September 2012

Preliminary Findings Report (Costs and Impacts) – Late 2012

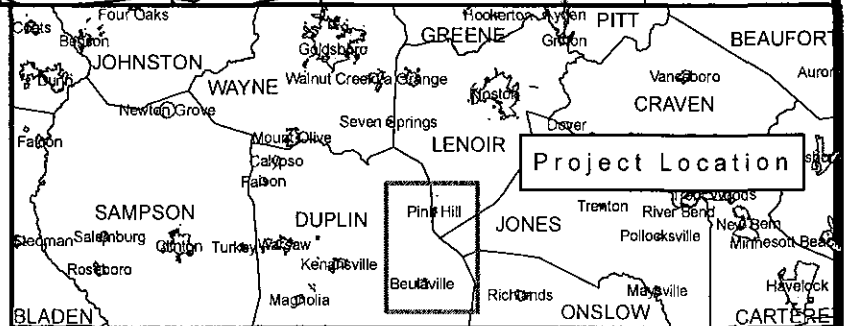
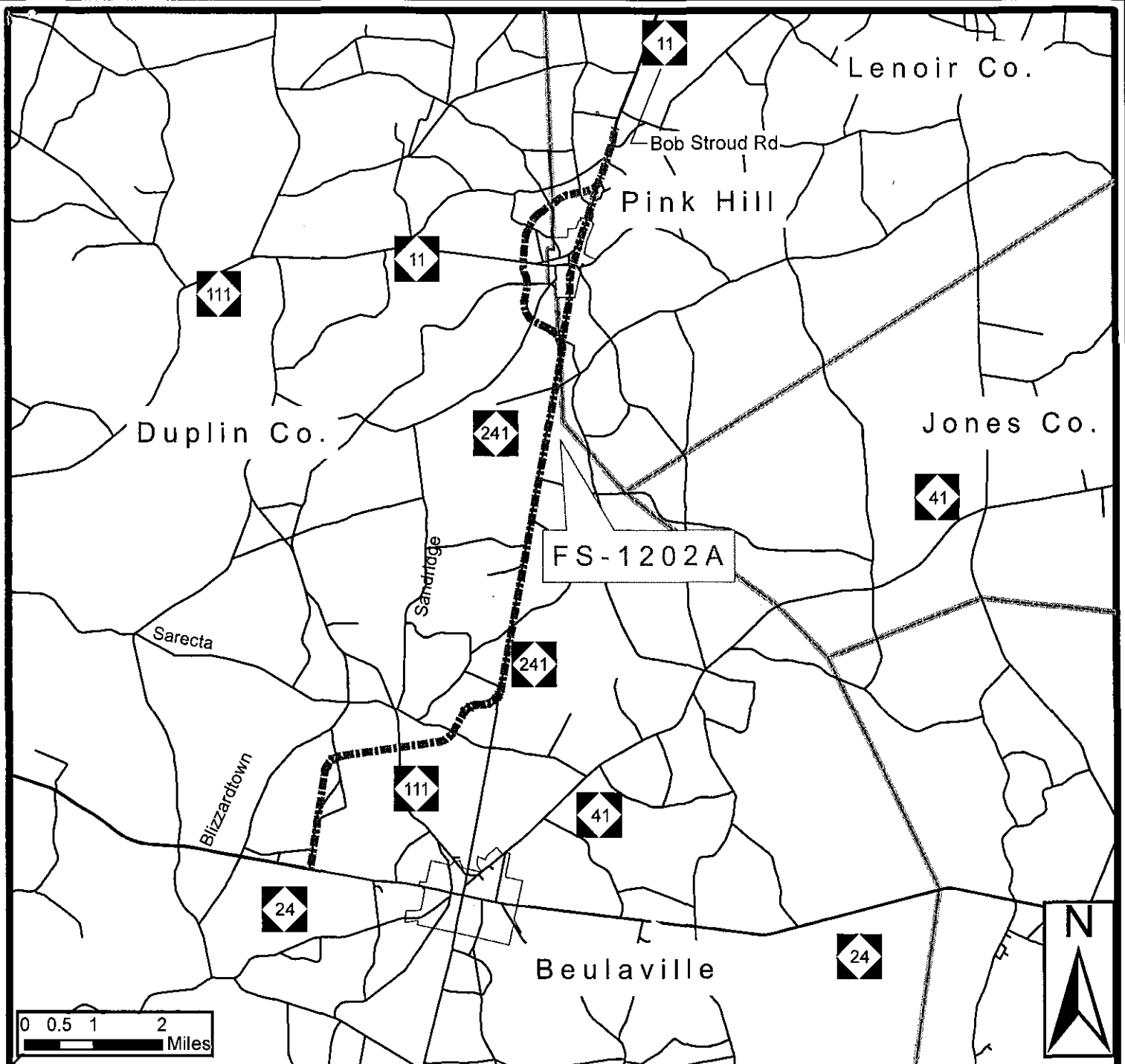
Capacity Analysis and Refine Conceptual Design – Spring 2013

Design Review/Local Officials Meeting – June 2013

Finalize Conceptual Design – July 2013

Draft Report – October 2013

Final Report – December 2013



Hatch Mott
MacDonald



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROGRAM DEVELOPMENT BRANCH
FEASIBILITY STUDIES UNIT

Widening NC 241 From NC 24
In Duplin County To NC 11
In Lenoir County
FS-1202A

Project Location Map

Figure 1

Country	1950	1955	1960	1965	1970	1975	1980	1985	1990
Japan	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0
Italy	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5
France	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
Germany	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
Spain	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
Sweden	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
Belgium	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
United Kingdom	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
Canada	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
United States	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5
China	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
India	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5
South Africa	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
South America	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
Sub-Saharan Africa	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Asia	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0

Date:	August 16, 2012
Sign In Sheet for:	FS-1202A Scoping Meeting
Location	Roadway Design Conference Room

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