Rockingham County
US 311
Bridge No. 67 over Little Beaver Island Creek and
Bridge No. 95 over Big Beaver Island Creek
Federal-Aid Project No. BRSTP-311(14)
State Project No. WBS 33594.1.1
T.I.P. No. B-4252

CATEGORICAL EXCLUSION

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

N.C. DEPARTMENT OF TRANSPORTATION

APPROVED:

12-21-06
DATE

for _____
Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development and Environmental Analysis Branch, NCDOT

1/5/07
DATE

for _____
John F. Sullivan III, P.E.
Division Administrator, FHWA

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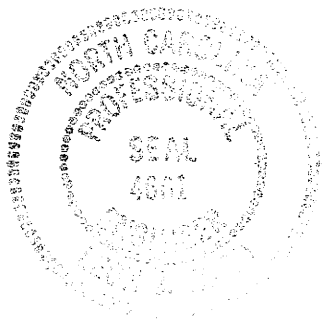
December 2006

Documentation Prepared By Ko & Associates, P.C.

L. J. Ward, P.E.
Project Manager



For North Carolina Department of Transportation

S. Wade Kirby, P.E., P.G.
Project Development Engineer

PROJECT COMMITMENTS

Rockingham County
US 311
Bridge No. 67 over Little Beaver Island Creek and
Bridge No. 95 over Big Beaver Island Creek
Federal-Aid Project No. BRSTP-311(14)
State Project No. WBS 33594.1.1
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In addition to the standard Section 404 Nationwide Permit #23 Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Protection of Surface Waters, and for Bridge Demolition and removal, and Section 401 Certification Conditions, the following special commitments have been agreed to by NCDOT:

None:

Rockingham County
US 311
Bridge No. 67 over Little Beaver Island Creek and
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INTRODUCTION: The replacement of Bridges No. 67 and 95 is included in the draft North Carolina Department of Transportation 2007-2013 Transportation Improvement Program and in the Federal-Aid Bridge Replacement Program. The location is shown in Figures 1A and 1B. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

Bridge Maintenance Unit records indicated Bridges Nos. 67 and 95 have sufficiency ratings of 47.9 and 44.0, respectively, out of a possible 100 for a new structure. The bridges were constructed in 1940 and are considered functionally obsolete. The latest Bridge Inspection Report (August 26, 2005) rated the overall general condition of these bridges as fair, ratings of 5-6 out of 9. The replacement of these inadequate structures will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge Nos. 67 and 95 are located on US 311 just west of the Towns of Madison and Mayodan. Bridge No. 95 is located on US 311 over Big Beaver Island Creek, 0.03 mile east of the junction of US 311 and SR 1169 (Island Drive). SR 1169 ends at its junction with US 311 between Bridge Nos. 95 and 67. SR 1169 serves as a major connecting roadway from US 311 west of the Town of Madison to NC 704 and the Town of Mayodan. Located along SR 1169 is a large textile facility and residential development. Bridge No. 67 is located on US 311 over Little Beaver Island Creek, 50 feet east of the junction of US 311 and SR 1138 (Lindsey Bridge Road). Bridge No. 67 is situated approximately 300 feet west of Bridge No. 95. SR 1138 serves several businesses including a brick plant and it is the only road that provides travel service across the Dan River in the southwest corner of Rockingham County west of US 220. Land in the proximity of the bridges consists of a mixture of businesses, residential, woodlands and fields. There are two local businesses adjacent to Bridge No. 95 in the southeast quadrant. US 311 is classified as a Rural Major Collector in the Statewide Functional Classification System.

US 311 has a current pavement width of 24 feet with 6-foot grass shoulders in the area of the bridges. The horizontal alignment through the bridge area is straight. The west approach to Bridge No. 67 is tangent. The tangent continues eastward across to Bridge No. 95. The east approach to Bridge No. 95 is tangent with a slight curve to the north approximately 450 feet east of the bridge. The sight distance through the project area is good. The vertical grades at both bridges and between the bridges are flat. The eastbound roadway approach to Bridge No. 67 is on a downgrade, while the westbound roadway approach to Bridge No. 95 is relatively flat.

Bridge No. 67, as shown in Figures 2A and 2B, has an overall length of 37 feet and a clear deck width of 25.9 feet. The existing two-lane bridge has a reinforced concrete deck on I-beams and reinforced abutments. The structure was constructed in 1940. The current posted weight limit is 32 tons for single unit vehicles and 38 tons for truck-tractor semi-trailer vehicles. The bridge has a sufficiency rating of 47.9 compared to a rating of 100 for a new structure and approaches. Bridge No. 67 has a bed-to-crown distance of approximately 18 feet.

Bridge No. 95, as shown in Figures 3A and 3B, has an overall length of 41 feet and a clear deck width of 25.9 feet. The existing two-lane bridge has a reinforced concrete deck on I-beams with cover plates and reinforced concrete abutments. The structure was constructed in 1940. The current posted weight limit is 30 tons for single unit vehicles and 33 tons for truck-tractor semi-trailer vehicles. The bridge has a sufficiency rating of 44.0 compared to a rating of 100 for a new structure and approaches. Bridge No. 95 has a bed-to-crown distance of approximately 18 feet.

Rockingham County is a current participant in the National Flood Insurance Regular Program. This crossing of the Little Beaver Island Creek and Big Beaver Island Creek is located in a designated flood hazard zone where a detailed flood study has been completed and published. Attached in the Appendix is a copy of the Flood Insurance Rate Map, on which the limits of the 100-year floodplain and floodway are delineated.

The current traffic volumes on US 311 are 13,500 vehicles per day (vpd) at Little Beaver Island Creek (Bridge No. 67) and 12,200 vpd at Big Beaver Island Creek (Bridge No. 95). The design year 2025 traffic volumes are estimated to be 19,600 vpd and 18,000 vpd, respectively at these same locations. The volumes include an estimated 1 percent truck-tractor semi-trailer (TTST) and 2 percent dual-tired (DT) vehicles. The posted speed limit is 45 mph in the vicinity of the bridges.

Twenty two crashes were reported in the vicinity of the bridge during the period from May 1, 2002 to April 30, 2005. The accident rate for the period is 751.80 accidents per 100 million vehicle miles (MVM) of travel as compared to the statewide average of 407.28 accidents per 100

MVM for urban US routes (two lanes undivided) for the three-year period 2002–2005. Ten (45%) of the accidents involved rear-end collisions. Most (17) crashes involved property damages only; however, one fatal accident has occurred recently.

A capacity analysis for US 311 through the project area using the HC2000 Software (Two-way Two-lane Highway Segment Analysis, release 4.1c) indicates that the roadway is currently functioning at a Level of Service (LOS) E during the peak traffic periods. During two field trips to the project area, considerable traffic flow was observed between SR 1169 and SR 1138. Currently there are no left-turn bays on US 311 serving traffic turning onto SR 1169 and SR 1138. With only 300 feet separating these two secondary roadways, traffic flow between SR 1138 and SR 1169 must enter US 311 and immediately slow and prepare to turn left. The combination of no left-turn bays on US 311 for SR 1138 and SR 1169 and the "offset" traffic flow pattern between SR 1138 and SR 1169, may be a contributing factor to the high number of rear-end collisions on US 311. A left-turn queuing analysis using Synchro5.0/SimTraffic Software and the traffic estimates for the year 2025 indicate that the spacing between SR 1138 and SR 1169 should be increased to approximately 1000 feet or the two roadways should be realigned to form a standard "four-leg" intersection. Either of these enhancements should provide for safer traffic operations through the project area but will not solve the overall roadway capacity problem.

Utility conflicts should be considered very heavy. Overhead utility lines parallel both sides of US 311 in the area of the bridges. A main gas line is located under the south side of US 311 and goes up on the east side of SR 1169. A sewer main runs north to south with an outlet along the north side of Bridge No. 95. A waterline is located on the west side of SR 1169. No utilities are attached to the bridge.

There are 16 school bus crossings daily over the bridges.

III. ALTERNATIVES

A. Project Description

NCDOT proposes to replace Bridges No. 95 and No. 67 with new bridges approximately 125 feet and 105 feet long, respectively with a clear roadway width of 52 feet. The eastern approach to Bridge No. 95 and the western approach to Bridge No. 67 will provide 12-foot travel lanes in each direction with 8-foot shoulders [4-foot paved] and the roadway between the bridges will include a 12-foot middle turning lane. The proposed cross sections are shown in Figures 4A and 4B. The design speed will be 50 mph.

B. Build Alternatives

The studied alternatives are:

(1) Replace Bridges No. 95 and 67 with three-lane structures at their existing locations while maintaining traffic with temporary structures and a detour on north side.

(2) Replace Bridges No. 95 and 67 using stage-construction to the north side and maintaining traffic on the existing structures as an on-site detour.

The bridge replacement alternatives are shown in Figures 5 and 6.

As part of the project, NCDOT is recommending Lindsey Bridge Road (SR 1138) be relocated to improve the safety and traffic operations on US 311 between the bridges. Three alternates have been investigated. Alternates A and B propose to relocate Lindsey Bridge Road westward to form a T-intersection with US 311 approximately 1000 feet and 700 feet respectively from its current location. Alternate C proposes to relocate Lindsey Bridge Road eastward to form a conventional four-legged intersection by aligning Lindsey Bridge Road with Island Drive (SR 1169). Either of the two bridge replacement alternates can be implemented using any of the three Lindsey Bridge Road relocation alternates. The SR 1138 relocation alternatives are shown in Figure 7.

Without relocating SR 1138 westward to create additional left-turn bay storage lengths or eastward to create a single four-legged intersection, it will be desirable to construct wider bridges to create separate, continuous left-turn lanes on US 311 from SR 1138 to SR 1169. Even with separate and continuous left-turn lanes between the bridges, the left-turn lane lengths will not be adequate to contain the traffic in the design year (2025).

It is not reasonable to utilize an off-site detour as an alternative because of the traffic served by US 311, SR 1138, and SR 1169. US 311 is a main route to Stokes County. SR 1169 is a connector between NC 704 and US 311. SR 1138 serves a brick manufacturing plant and provides the bridge crossing the Dan River for the southwest corner of Rockingham County. US 311 also serves traffic generated from a large textile facility on SR 1169 and a brick plant located on SR 1138. The Division Office concurred that no reasonable detour exists for the traffic served by US 311 in the project area other than an on-site detour.

C. Alternatives Eliminated from Further Study

The No-Build or "do-nothing" alternative was also considered but this alternative would eventually necessitate closure of the bridge. This is not a desirable alternative due to the traffic service provided by US 311.

Investigation of the existing structure by the NCDOT Bridge Maintenance Unit indicates that rehabilitation of Bridges No. 67 and 95 is not feasible due to their age and deteriorated conditions. The existing bridges are classified as structurally deficient.

D. Preferred Alternative

Alternate 2, replacing Bridge Nos. 95 and 67 using stage-construction to the north side and maintaining traffic on the existing structures as an on-site detour is the preferred alternative. Alternate 2 was selected because it is the most economical option that maintains traffic service on-site. The new structures for Bridge Nos. 95 and 67 will be 125 feet and 105 feet long, respectively, with a clear roadway width of 52 feet. The eastern approach to Bridge No. 95 and the western approach to Bridge No. 67 will provide 12-foot travel lanes in each direction with 8-foot shoulders [4-foot paved] and the roadway between the bridges will include a 12-foot middle turning lane. The design speed will be 50 mph. See Figures 4A and 4B for the typical sections for roadway approaches and bridges. The estimated cost for the recommended proposed bridge replacements is $3,402,000. It is also recommended that SR 1138 be relocated westward approximately 1000 feet (Alternate A in Figure 7) to create a T-intersection with US 311. The cost for relocating SR 1138 is $760,200. Alternate B was not recommended due to adverse impacts to the New Vision Fellowship Church property. Alternate C was not considered feasible due to the high cost of bridging the floodway. The total project cost for the bridge replacements and SR 1138 relocation is $4,162,000. The current estimated cost of the project, as shown in the draft NCDOT 2007-2013 Transportation Improvement Program, is $440,000 for right-of-way and $3,760,000 for construction and $250,000 prior years cost.

The Division Office concurs with the recommended improvements.

IV. ESTIMATED COST

The estimated costs of the bridge replacement alternatives studied are shown in Table 1 and the estimated costs of the SR 1138 relocation alternatives are shown in Table 2. All costs are based on 2006 prices.

Table 1. Estimated Costs of Replacing Bridges No. 95 and 67

	Alternate 1	Alternate 2
Structure Removal	$ 36,720	$ 36,720
Structures	$1,265,000	$1,210,000
Roadway Approaches	$ 379,410	$ 910,905
Mobilization and Miscellaneous	$ 366,870	$ 597,375
Engineering and Contingencies	$ 302,000	$ 445,000
Temporary Detour	$1,350,000	NA
SUBTOTAL	$3,700,000	$3,200,000
Right-of-Way/Const. Ease./Util.	$ 248,000	$ 202,000
TOTAL	$3,948,000	$3,402,000

Table 2. Estimated Costs of Relocating Lindsey Bridge Road

	Alternate A	Alternate B	Alternate C
Structure	NA	NA	$2,268,000
Roadway	$404,025	$ 583,950	$ 288,400
Mobilization and Miscellaneous	$181,975	$ 262,050	$ 470,600
Engineering and Contingencies	$ 89,000	$ 129,000	$ 473,000
SUBTOTAL	$675,000	$ 975,000	$3,500,000
Right-of-Way/Const. Ease./Util.	$ 85,200 [1.]	$ 120,750 [1.]	$ 82,500
TOTAL	$760,200	$1,095,750	$3,582,500

1. Right-of-way costs do not include any cost for impacts to the New Vision Fellowship Church currently under development in the southwest quadrant of the US 311 / Lindsey Bridge Road intersection.

The above estimates are based on functional design plans; therefore, 45 percent is included for miscellaneous items and contractor mobilization, and 15 percent for engineering and contingencies.

V. NATURAL RESOURCES

A. Methods

Materials and literature supporting this investigation have been derived from a number of sources including U.S. Geological Survey (USGS) topographic mapping (Mayodan, NC 7.5-minute quadrangle), U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping, Natural Resources Conservation Service (NRCS; formerly the Soils Conservation Service) soils mapping (SCS 1992), recent aerial photography, and preliminary project plans furnished by Ko and Associates.

Plant community descriptions are based on a classification system utilized by the N.C. Natural Heritage Program (NCNHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford et al. (1968) with adjustments for updated nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach following U.S. Army Corps of Engineers (USACE) delineation guidelines (Environmental Laboratory 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin et al. (1979) and/or the N.C. Division of Environmental Management (NCDEM) *Field Guide to North Carolina Wetlands* (1996). Aquatic and terrestrial wildlife habitat requirements and distributions were determined by supportive literature (Martof et al. 1980, Potter et al. 2006, Webster et al. 1985, Menhinick 1991, Palmer and Braswell 1995, and Rohde et al. 1994). Water quality information for area streams and tributaries was derived from available sources (NCDWQ 2004, NCDWQ 2006a-c). Quantitative sampling was not undertaken to support existing data.

The most current USFWS listing of federally protected species with ranges extending into Rockingham County (April 27, 2006 USFWS list) is considered in this report. In addition, NHP records documenting the presence of federally or state listed species were consulted before commencing field investigations.

The field work for this investigation was conducted on April 1, 2004 and July 25, 2006 by EcoScience Corporation biologists Elizabeth Scherrer, Scott Davis, and Layna Thrush. The project area was walked and visually surveyed for significant features. For purposes of this evaluation, the project area has been delineated by Ko and Associates. Special concerns evaluated in the field include: 1) potential protected species habitat; and 2) water quality protection of Big Beaver Island Creek and Little Beaver Island Creek.

A.1 Definitions of Area Terminology

Definitions for descriptions used in this report are as follows: Project Area describes a 300-foot wide corridor centered on US 311 and the new alignment of SR 1138 (Figure 8). It encompasses approximately 52.2 acres. Project Vicinity describes an area extending 0.5 mile on all sides of the project area; and Project Region is equivalent to an area represented by a 7.5 minute USGS topographic quadrangle map with the project occupying the central position.

B. PHYSICAL RESOURCES

B.1 Physiography and Soils

The project area is located within the Triassic Basin ecoregion of North Carolina. This ecoregion is characterized by a dissected irregular plain and low- to moderate-gradient streams with relatively wider floodplains than other Piedmont ecoregions (Griffith et al. 2002). The project area is located on the floodplain and terraces of a gently sloping floodplain valley. Elevations within the project area range from a high of approximately 620 feet National Geodetic Vertical Datum (NGVD) at the western end of the project area, to a low of approximately 560 feet NGVD along the stream channel. Land uses within and adjacent to the project area consist of woodlands, commercial and residential lots, and roadside shoulders.

Based on soil mapping for Rockingham County (SCS 1992), the project area is underlain by four soil series including Ayersville gravelly loam (*Typic Dystrudepts*), Congaree loam (*Oxyaquic Udifluvents*), Mayodan sandy loam (*Typic Hapludults*), and Udorthents. Within the project area, Congaree soils occur adjacent to the stream, and Ayersville, Mayodan, and Udorthents soils are found on slopes. None of the series are considered hydric soils by the NRCS (1997). The Congaree series is a nonhydric soil that may contain hydric inclusions of the Wehadkee series within depressions. However, no hydric soils were found within the project area.

The Ayersville series, with 4 to 15 percent slopes, consists of moderately deep, well drained to excessively drained, moderately permeable soils. This series occupies both ends of the project area on side slopes and floodplain terraces. Depth to bedrock ranges from 20 to 40 inches, and the seasonal high water table occurs at a depth greater than 6.0 feet.

The Congaree series, with 0 to 2 percent slopes, consists of well to moderately well drained, moderately permeable, nearly level soils found on floodplains. The Congaree series occurs on the channel and banks of Big and Little Beaver Island Creeks. Depth to bedrock is greater than 60 inches, and the seasonal high water table occurs at a depth of 2.5 to 4.0 feet. This soil is subject to frequent flooding.

The Mayodan series, with 2 to 15 percent slopes, is a well drained, moderately permeable soil found on convex side slopes. These soils occur on the western floodplain boundary and terrace within the project area. Depth to bedrock is greater than 72 inches. The seasonal high water table for the Mayodan soils occurs at a depth of more than 6.0 feet.

Udorthents are the soils of landfill or borrow areas. In the project area, Udorthents consist of a fill area on the west bank of Little Beaver Island Creek occupied by a car dealership. General statements about drainage, permeability, water table, etc. cannot be made about Udorthents soils.

B.2 Water Resources

The project area is located within subbasin 03-02-02 of the Roanoke River Basin (NCDWQ 2006a). This area is part of USGS Hydrologic Unit 03010103 of the South Atlantic/Gulf Region. The structures targeted for replacement span Big Beaver Island Creek and Little Beaver Island Creek and their adjacent floodways. Also within the project area, along the new alignment of SR 1138, is an unnamed tributary (UT) to Big Beaver Island Creek and a pond.

The portion of Big Beaver Island Creek and Little Beaver Island Creek that lie within the project area have been assigned Stream Index Number 22-29 and 22-29-1, respectively, by NCDWQ (2004). The UT to Big Beaver Creek has not been assigned a Stream Index Number. Big and Little Beaver Island Creeks converge approximately 430 stream feet south of US 311 and the UT converges with Big Beaver Creek approximately 1400 feet southwest of SR 1138. From there, Big Beaver Island Creek empties into the Dan River approximately 975 feet downstream.

Big Beaver Island Creek enters the project area as a well-defined, third-order, perennial stream with moderate flow over a gravel and sand substrate. In this area, Big Beaver Island Creek flows through the center of its floodplain, and its banks rise gently on both sides. At Bridge No. 95, Big Beaver Island Creek is approximately 24 feet wide, with banks 8 to 16 feet high. During the April 2004 field visit, water flow was clear, water depth ranged from 12 to 24 inches, and the bridge support beams were approximately 12 feet above the water surface. A few large log jams occurred in the stream channel, and several sandy point bars had formed near them.

Little Beaver Island Creek is a second-order perennial stream. At Bridge No. 67, its width is approximately 24 feet, and its banks are approximately 10 to 12 feet high. In this area, Little Beaver Island Creek flows along the toe of relatively steep slopes on its right bank. Moderate undercutting is occurring on this bank. The left bank slopes are gentle. The substrate is sand, gravel, and cobble. During the April 2004 field visit, flow was brisk and clear, water depth was 6 to 24 inches, and clearance to the bridge supports was approximately 12 feet.

The UT to Big Beaver Island Creek is a first-order, perennial stream flowing from the outfall of a pond located approximately 200 feet upstream from SR 1138. At the existing SR 1138 crossing the UT is approximately 5 feet wide and has bank heights ranging from 2 to 3 feet. The banks along this UT range from relatively steep near the SR 1138 crossing to fairly gentle

approximately 25 feet on either side of the crossing. The substrate is sand and gravel. During the July 2006 field visit, the flow was low and water depth was 6 to 12 inches.

The pond present in the project area is the source of the UT to Big Beaver Island Creek. This pond is approximately 2.5 acres in size, however only approximately 0.5 acre is within the project area. This pond occurs in the southern portion of the project area and is approximately 250 feet wide.

An additional stream, outside of the project study area, is approximately 3 to 4 feet wide and entrenched, with 10-foot banks. It has a silt substrate.

No persistent emergent aquatic vegetation was observed within any of the streams. Big Beaver Island Creek and Little Beaver Island Creek may provide good aquatic habitat for mussels and benthic macroinvertebrates due to little to no siltation within the streams and channel substrate composition. Opportunities for habitat within Big Beaver Island Creek, Little Beaver Island Creek, and the UT to Big Beaver Creek include overhanging trees, undercut banks, fallen logs, and leaf packs.

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. A Best Usage Classification of C has been assigned to the entire lengths of Big Beaver Island Creek and Little Beaver Island Creek. The UT to Big Beaver Island Creek has not been assigned a Best Usage Classification and therefore shares the classification of Big Beaver Island Creek. Class C waters are suitable for aquatic life propagation and protection, agriculture, and secondary recreation. Secondary recreation includes wading, boating, and other uses not involving human body contact with waters on an organized or frequent basis. No designated Outstanding Resource Waters (ORW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 1.0 mile of the project area. Reed Creek, designated WS-IV and WS-IV CA, flows into the Dan River approximately 1.8 miles upstream of the mouth of Big Beaver Island Creek. The Dan River is also rated WS-IV and WS-IV CA in this area, the designation extending to a point approximately 1.4 miles upstream of the Big Beaver Island Creek mouth, and approximately 1.8 stream miles from the project study area. From this point, for approximately 6.1 miles downstream, the Dan River is rated WS-V. WS-IV waters area protected as water supplies which are generally in moderately to highly developed watersheds. WS-V waters are protected as water supplies which are generally upstream and draining to Class WS-IV waters. CA (critical area) denotes land within 0.5 mile upstream and draining to a river intake, or within 0.5 mile and draining to the normal pool elevation of water supply reservoirs. The overland distance from the critical area to the project study area is approximately 0.5 mile.

The N.C. Division of Water Quality (NCDWQ) has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed project area is summarized in the draft *Roanoke River Basinwide Water Quality Plan* (NCDWQ 2006a). Big Beaver Island Creek is currently rated as Supporting its Best Usage Classification; however Little Island Beaver Creek and the UT to Big Beaver Island Creek are not rated (NCDWQ 2006a). No benthic macroinvertebrate monitoring stations are located within the project region.

Sub-basin 03-02-02 of the Roanoke River Basin supports ten permitted point source dischargers. One of the permitted dischargers (Town of Mayodan WWTP) is classified as a major discharger, with a 4.5 million gallon per day discharge. The nine remaining permitted dischargers are minor (NCDWQ 2006b). The closest discharge is the Mayodan WWTP, located 1.4 miles from the project study area on the Dan River. Major non-point sources of pollution within the Roanoke River Basin include sedimentation from land clearing, bank erosion, and channelization of streams; pollution from urban runoff; and turbidity in the Dan River from instream mining operations (NCDWQ 2006a).

The NCDWQ has assembled a list of impaired waterbodies according to the Clean Water Act Section 303(d) and 40 CFR 130.7, hereafter referred to as the draft N.C. 2002 Section 303(d) list. The list is a comprehensive public accounting of all impaired waterbodies. An impaired waterbody is one that does not meet water quality standards including designated uses, numeric and narrative criteria, and anti-degradation requirements defined in 40 CFR 131. The standards violation may be due to an individual pollutant, multiple pollutants, pollution, or an unknown cause of impairment. The impairment could be from point sources, nonpoint sources, and/or atmospheric deposition. Some sources of impairment exist across state lines. North Carolina's methodology is strongly based on the aquatic life use support guidelines available in the Section 305(b) guidelines (EPA-841-B-97-002A and -002B). Those streams attaining only Partially Supporting (PS) or Not Supporting (NS) status are listed on the draft N.C. 2002 Section 303(d) list. Streams are further categorized into one of six parts within the draft N.C. 2002 Section 303(d) list, according to source of impairment and degree of rehabilitation required for the stream to adequately support aquatic life. Within Parts 1, 4, 5, and 6 of the list, North Carolina has developed a priority ranking scheme (low, medium, high) that reflects the relative value and benefits those waterbodies provide to the State. Big Beaver Island Creek, Little Beaver Island Creek, and the UT to Big Beaver Island Creek are not listed on any section of the N.C. 2002 Section 303(d) list (NCDWQ 2002c).

Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of a stringent erosion control schedule and the use of Best Management Practices (BMPs).

The proposed bridge replacements will allow for continuation of pre-project stream flows in Big Beaver Island Creek and Little Beaver Island Creek, thereby protecting the integrity of these waterways. Long-term impacts resulting from construction are expected to be negligible. In order to minimize impacts to water resources, NCDOT *Best Management Practices for the Protection of Surface Waters* will be strictly enforced during the entire life of the project. NCDOT will coordinate with various resource agencies during project planning to ensure that all concerns regarding bridge demolition are resolved.

B.3 Summary of Potential Impacts to Water Resources

Impacts to water resources in the project area may result from activities associated with project construction. Activities that would result in impacts are clearing and grubbing on streambanks, riparian canopy removal, in-stream construction, fertilizers and pesticides used in revegetation, and pavement/culvert installation. The following impacts to surface water resources could result from the construction activities mentioned above.

- Increased sedimentation and siltation downstream of the crossing and increased erosion in the project area.
- Alteration of stream discharge due to silt loading and changes in surface and groundwater drainage patterns.
- Changes in light incidence and water clarity due to increased sedimentation and vegetation removal.
- Changes in and destabilization of water temperature due to vegetation removal.
- Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction.
- Increased nutrient loading during construction via runoff from exposed areas.
- Increased concentrations of toxic compounds in roadway runoff.
- Increased potential for release of toxic compounds such as fuel and oil from construction equipment and other vehicles.

C. BIOTIC RESOURCES

C.1 Terrestrial Communities

Four distinct plant communities were identified within the project area: disturbed/maintained land, agricultural land, Piedmont/Low Mountain Alluvial Forest, and Dry Oak-Hickory Forest (Figure 9). Plant community descriptions are based on a classification system utilized by the NCNHP (Schafale and Weakley 1990), where applicable. These communities are described below in order of their dominance within the project area.

Disturbed/maintained Land - Disturbed/maintained land includes roadside shoulders and commercial and residential lots. This is primarily a herbaceous plant community comprised of maintained lawns with a few canopy trees and shrubs present under cultivation. Woody plant species consist of ornamental plantings and a few sparse canopy and sapling trees including hickory (*Carya* sp.), eastern red cedar (*Juniperus virginiana*), Virginia pine (*Pinus virginiana*), and shortleaf pine (*P. echinata*). Herbs include cultivated and native grasses and weedy forbs such as dog-fennel (*Eupatorium capillifolium*), goldenrod (*Solidago* sp.), pokeweed (*Phytolacca americana*), wild onion (*Allium canadense*), vetch (*Vicia* sp.), and henbit (*Lamium amplexicaule*). Most of this area is maintained by mowing. This plant community occupies approximately 20.7 acres of the project area.

Open areas, such as maintained or agricultural land, in or near the project area may support red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), mourning dove (*Zenaida macroura*), chimney swift (*Chaetura pelagica*), eastern kingbird (*Tyrannus tyrannus*), barn swallow (*Hirundo rustica*), eastern bluebird (*Sialia sialis*), eastern meadowlark (*Sturnella magna*), common grackle (*Quiscalus quiscula*), brown-headed cowbird (*Molothrus ater*), and field sparrow (*Spizella pusilla*). Birds observed within or adjacent to these areas include American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), and American goldfinch (*Carduelis tristis*). Many mammal species occupy forests and the transitional areas at their edges. In the project area, these may include Virginia opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), white-footed mouse (*Peromyscus leucopus*), and eastern chipmunk (*Tamias striatus*). Reptile and amphibian species that might inhabit these disturbed areas include rat snake (*Elaphe obsoleta*), eastern hognose snake (*Heterodon platyrhinos*), and American toad (*Bufo americanus*).

Many of these wildlife species are very adaptable and can eat a wide variety of plant and animal material when the preferred food is absent. Migration between communities of the project area may be frequent based on the needs of each species for food, cover, protection from predators, and reproduction.

Agricultural Land – This community is represented by a pasture south of US 311 and adjacent to SR 1138, two hayfields or pastures north of US 311 and adjacent to SR 1169, and a large field in the central portion of the project area. Pasture and hayfield grasses include fescue (*Festuca* sp.), and are invaded by opportunistic herbs including wild onion, cranesbill (*Geranium carolinianum*), chickweed (*Stellaria media*), evening primrose (*Oenethora biennis*), goldenrod, agrimony (*Agrimonia parviflora*), bittercress (*Cardamine* sp.), and common blue violets (*Viola* sp.). Agricultural land comprises approximately 10.6 acres of the project area.

Many birds that inhabit disturbed/maintained lands are frequenters of agricultural land as well, including eastern meadowlark, common grackle, and field sparrow. Mammals which are more specialized to inhabit open fields in the project area are: least shrew (*Cryptotis parva*), meadow vole (*Microtus pennsylvanicus*), and eastern mole (*Scalopus aquaticus*). Reptile and amphibian species that might find suitable habitat in agricultural areas include eastern kingsnake (*Lampropeltis getulus*), black racer (*Coluber constritor*), and American toad.

Piedmont/Low Mountain Alluvial Forest – This community is described by Schafale and Weakley (1990) as occurring within river and stream floodplains in which separate fluvial landforms and associated vegetation zones are too small to distinguish. Flood-carried sediment provides nutrient input to this community and serves as a natural disturbance factor. The Piedmont/Low Mountain Alluvial Forest consists of floodplain areas adjacent to Big Beaver Island Creek, Little Beaver Island Creek, and the UT to Big Beaver Island Creek. The structure of this community includes a closed canopy, sparse shrub layer, and sparse herb layer except along sunny edges. This community supports a canopy vegetated by boxelder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), American beech (*Fagus grandifolia*), river birch (*Betula nigra*), hackberry (*Celtis laevigata*), black walnut (*Juglans nigra*), and sycamore (*Platanus occidentalis*). The sapling and shrub layers include those species within the canopy layer as well as flowering dogwood (*Cornus florida*), Chinese privet (*Ligustrum sinense*), multiflora rose (*Rosa multiflora*), paw paw (*Asimina triloba*), and spicebush (*Lindera benzoin*). Vines within this community include Japanese honeysuckle (*Lonicera japonica*), cross vine (*Bignonia capreolata*), and grape (*Vitis* sp.). In some areas, large swaths of ground ivy (*Glechoma hederacea*) cover the ground. Otherwise, the herb layer is sparse, but includes bedstraw (*Galium* sp.), chickweed, mayapple (*Podophyllum peltatum*), common blue violets, and buttercup (*Ranunculus abortivus*). Piedmont/Low Mountain Alluvial Forest comprises approximately 3.6 acres of the project area.

Bird species observed within or near alluvial forested areas during the field visits included white-throated sparrow (*Zonotrichia albicollis*) and eastern phoebe (*Sayornis phoebe*) along the edges of Big Beaver Island Creek, and rock dove (*Columba livia*) nesting under the bridge. Birds which are likely to inhabit wooded interiors, especially in bottomlands along water courses, are sharp-shinned hawk (*Accipiter striatus*), red-shouldered hawk (*Buteo lineatus*), American woodcock (*Scolopax minor*), barred owl (*Strix varia*), belted kingfisher (*Megaceryle alcyon*), northern parula (*Parula americana*), yellow-throated warbler (*Dendroica dominica*), Louisiana waterthrush (*Seiurus motacilla*), and hooded warbler (*Wilsonia citrina*). No terrestrial mammals were observed during the site visit, but many tracks of white-tailed deer (*Odocoileus virginianus*) and raccoon (*Procyon lotor*) were observed, especially along the wooded edges of streams. Woodchuck (*Marmota monax*) burrows were also observed in wooded areas.

No terrestrial reptile or amphibian species were observed during the site visit. Some terrestrial reptiles and amphibians which may occur within this community include eastern box turtle (*Terrapene carolina*), marbled salamander (*Ambystoma opacum*), two-lined salamander (*Eurycea bislineata*), American toad, Fowler's toad (*Bufo woodhousei*), northern cricket frog (*Acris crepitans*), gray treefrog (*Hyla versicolor*), spring peeper (*Pseudacris crucifer*), five-lined skink (*Eumeces fasciatus*), ground skink (*Scincella lateralis*), worm snake (*Carphophis amoenus*), ringneck snake (*Diadophis punctatus*), rat snake, eastern hognose snake, eastern kingsnake, eastern garter snake (*Thamnophis sirtalis*), and copperhead (*Agkistrodon contortrix*). Terrestrial reptiles and amphibians are expected to be much more common than in open or disturbed portions of the project area.

Dry-Mesic Oak-Hickory Forest – This community is described by Schafale and Weakley (1990) as occurring on mid slopes, low ridges, upland flats, and other dry-mesic upland areas on acidic soils. Under natural conditions these forests are uneven-aged, with a component of mature trees. The Dry-Mesic Oak Hickory Forest occurs on terraces at the eastern and western ends and the central portion of the project area. This community supports a canopy layer of southern red oak (*Quercus falcata*), white oak (*Q. alba*), hickory, white ash (*Fraxinus americana*), Virginia pine, shortleaf pine, American beech, and persimmon (*Diospyros virginiana*). Shrubs include sourwood (*Oxydendrum arboreum*), eastern red cedar, American holly (*Ilex opaca*), and black cherry (*Prunus serotina*). Vines within this community include Japanese honeysuckle (*Lonicera japonica*) and poison ivy (*Toxicodendron radicans*). The herbaceous layer within this community is sparsely vegetated by Christmas fern (*Polystichum acrostichoides*), wooly mullein (*Verbascum thapsis*), and wild onion. The Dry-Mesic Oak Hickory Forest community occupies approximately 6.5 acres

Many bird species frequent the edges between wooded areas and open fields or lawns. Some that may find such habitat in the project area include ruby-throated hummingbird (*Archilochus colubris*), downy woodpecker (*Picoides pubescens*), great crested flycatcher (*Myiarchus crinitus*), eastern wood-pewee (*Contopus virens*), Carolina chickadee (*Poecile carolinensis*), blue jay (*Cyanocitta cristata*), tufted titmouse (*Baeolophus bicolor*), white-breasted nuthatch (*Sitta carolinensis*), house wren (*Troglodytes aedon*), Carolina wren (*Thryothorus ludovicianus*), blue-gray gnatcatcher (*Polioptila caerulea*), northern cardinal (*Cardinalis cardinalis*), eastern towhee (*Pipilo erythrophthalmus*), and chipping sparrow (*Spizella passerina*). Other birds may inhabit wet or dry wooded areas, and include red-bellied woodpecker (*Melanerpes carolinus*), brown thrasher (*Toxostoma rufum*), wood thrush (*Hylocichla mustelina*), red-eyed vireo (*Vireo olivaceus*), American redstart (*Setophaga ruticilla*), and summer tanager (*Piranga rubra*).

No dense, unfragmented forests occur in or near the project area; however the open woods present may support little brown myotis (*Myotis lucifugus*), silver-haired bat (*Lasionycteris noctivagans*), red bat (*Lasiurus borealis*), and evening bat (*Nycticeius humeralis*), which forage along streams in fields, and sometimes among trees, and roost in wooded areas. Other mammals which are more specialized to inhabit wooded areas are southern flying squirrel (*Glaucomys volans*), gray fox (*Urocyon cinereoargenteus*), and long-tailed weasel (*Mustela frenata*).

C.2 Aquatic Communities

Section B.2 gives detailed physical information of Big Beaver Island Creek, Little Beaver Island Creek, the UT to Big Beaver Island Creek and the pond, which represent the only aquatic habitats present in the project area. No support bents are expected to be placed within Big and Little Beaver Island Creek during bridge demolition; therefore, no impacts to these aquatic resources are anticipated as a result of project construction. Impacts to the UT to Big Beaver Island Creek are expected to be minimal since the culvert is anticipated to only extend an extra 100 feet.

Limited investigations resulted in no observations of aquatic reptiles. Aquatic or semi-aquatic reptiles and amphibians expected to occur in or near forested streams and ponds, such as Big and Little Beaver Island Creek, the UT to Big Beaver Island Creek, and the pond within the project area include green frog (*Rana clamitans*), pickerel frog (*Rana palustris*), eastern musk turtle (*Sternotherus odoratus*), northern water snake (*Nerodia sipedon*), and queen snake (*Regina septemvittata*).

No sampling was undertaken in Big Beaver Island Creek, Little Beaver Island Creek, the UT to Big Beaver Island Creek, or the pond to determine fishery potential, and no fish species were observed during the field survey. Fish species that may be present in these reaches include rosyside dace (*Clinostomus funduloides*), satinfin shiner (*Cyprinella analostana*), bluehead chub (*Nocomis leptocephalus*), spottail shiner (*Notropis hudsonius*), creek chub (*Semotilus atromaculatus*), silver redhorse (*Moxostoma anisurum*), white catfish (*Ameiurus catus*), margined madtom (*Noturus insignis*), redbreast sunfish (*Lepomis auritus*), green sunfish (*Lepomis cyanellus*), and Roanoke darter (*Percina roanoka*). These species find suitable habitat in large streams with sand and gravel substrates and brisk, clear flow, which occur within the project area.

C.3 Summary of Anticipated Impacts

Plant communities were delineated to determine the approximate area and location of each within the project area. Proposed permanent impacts to plant communities are based on cut-and-

fill areas for Alternate 2. A summary of plant community impact areas for Alternates 1 and 2 is presented in Table 3.

Table 3. Terrestrial Community Impacts for Each Alternative. Areas are depicted in acres.

Plant Community	Area	Alternate 1			Alternate 2
		Temporary	Permanent	Total	Permanent
Disturbed/maintained land	20.7	1.34	3.25	4.59	3.92
Agricultural land	10.6	0.34	1.76	2.10	2.02
Piedmont/Mountain Alluvial Forest	3.6	0.51	0.03	0.54	0.39
Dry-Mesic Oak-Hickory Forest	6.5	0.33	1.18	1.51	1.72
TOTAL	41.4	2.51	6.22	8.74	8.05

The highest impacts for Alternate 2 are to disturbed/maintained land, since the majority of the project work is centered on the existing bridges and highway shoulders. Some habitat fragmentation is expected as a result of project activities, since a new alignment is proposed for SR 1138.

Construction noise and associated disturbances are anticipated to have short-term impacts on avifauna and migratory wildlife movement patterns.

Impacts associated with turbidity and suspended sediments resulting from bridge replacement will be minimized through the use of silt curtains and the implementation of stringent erosion control measures.

Potential downstream impacts to aquatic habitat are anticipated to be avoided by bridging Big and Little Beaver Island Creeks to maintain regular flow and stream integrity. The replacement of the culvert at the UT to Big Beaver Island Creek is expected to temporarily impact aquatic habitat. Short-term impacts associated with turbidity and suspended sediments may affect benthic populations. Temporary impacts to downstream habitat from increased sediment during construction will be minimized by the implementation of stringent erosion control measures.

D. JURISDICTIONAL TOPICS

D.1 Waters of the United States

Surface waters within the embankments of Big Beaver Island Creek, Little Beaver Island Creek,

and the UT to Big Beaver Island Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as waters of the United States (33 CFR Section 328.3) (Figure 10). At the project area, Big Beaver Island Creek exhibits characteristics of a well-defined, third-order, perennial stream with moderate flow over a gravel and sand substrate. Little Beaver Island Creek is a well-defined, second-order stream with a sand, gravel, and cobble substrate. The UT to Big Beaver Island Creek is a first-order stream with a sand and gravel substrate. Under the Cowardin classification (1979), Big Beaver Island Creek and Little Beaver Island Creek can both be classified as riverine, upper perennial with an unconsolidated bottom composed primarily of sand and gravel (R3UB1/2). The UT to Big Beaver Island Creek can be classified as a riverine, lower perennial system with an unconsolidated bottom composed primarily of sand and gravel (R2UB1/2).

Vegetated wetlands are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology at or near the surface for a portion (12.5 percent) of the growing season (Environmental Laboratory 1987). No vegetated wetlands occur in the project area.

One pond does exist within the project area (Figure 10). The pond is located just west of SR 1138 and is the source for the UT to Big Beaver Island Creek. This pond is approximately 2.5 acres; however only a small portion is within the project area. No portion of the pond occurs within the cut-fill limits of the proposed project. Under the Cowardin classification (1979), the pond is palustrine, with an unconsolidated bottom composed primarily of mud that is permanently flooded (PUB3H).

The existing bridges will be removed without dropping components into waters of the United States. Therefore, no potential fill is anticipated. NCDOT will continue coordinating with various resource agencies during project planning to ensure that all concerns regarding bridge demolition are resolved.

D.2 Permit Issues

D.2.1 Permits

Minimal impacts to jurisdictional areas are anticipated from the proposed project. No vegetated wetlands occur within the project area, and a pond within the project area is not proposed to be impacted. Big and Little Beaver Island Creeks are proposed to be completely bridged, and no bridge piers or bents are expected to be deposited in the stream bed. As a result, no impacts to Big or Little Beaver Island Creeks are anticipated. The UT to Big Beaver Island Creek currently flows through a 4-foot by 4-foot square concrete box culvert under SR 1138. The new alignment

of SR 1138 indicates approximately 100 feet of proposed impacts to the UT to Big Beaver Island Creek resulting from the replacement of this culvert with a 66-inch reinforced concrete pipe.

This project is being processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The USACE has made available Nationwide Permit (NWP) 23 (67 FR 2020, 2082; January 15, 2002) for CEs due to minimal impacts to Waters of the U.S. expected with bridge construction. NCDWQ has made available a General 401 Water Quality Certification for NWP 23 (GC 3403). If temporary structures are necessary for construction activities, access fills, or dewatering of the site, then a NWP 33 (67 FR 2020, 2087; January 15, 2002) permit and the associated General 401 Water Quality Certification (GC 3366) will be required. In the event that NWPs 23 and 33 will not suffice, impacts attributed to bridge replacement and associated approach improvements may qualify under General Bridge Permit (GP) 031 issued by the USACE Wilmington District. NCDWQ has made available a General 401 Water Quality Certification for GP 031 (GC 3404). Notification to the USACE Wilmington District office is required if this general permit is utilized.

D.2.2 Mitigation

The USACE has adopted through the Council on Environmental Quality (CEQ) a wetland mitigation policy which embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of waters of the United States, and specifically wetlands. Mitigation of wetland impacts has been defined by the CEQ to include: avoiding impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization, and compensatory mitigation) must be considered sequentially.

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

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the

footprint of the proposed project through the reduction of median widths, right-of-way widths, fill slopes, and/or road shoulder widths. All efforts will be made to decrease impacts to surface waters.

Compensatory mitigation is not normally considered until anticipated impacts to Waters of the United States have been avoided and minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. In accordance with 67 FR 2020, 2092; January 15, 2002, the USACE requires compensatory mitigation when necessary to ensure that adverse effects to the aquatic environment are minimal. The size and type of the proposed project impact and the function and value of the impacted aquatic resource are factors considered in determining acceptability of appropriate and practicable compensatory mitigation. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, preservation and enhancement, and creation of Waters of the United States. Such actions should be undertaken first in areas adjacent to or contiguous to the discharge site.

Mitigation for Section 404 jurisdictional areas may need to be proposed for this project due to potential project impacts. Utilization of BMPs is recommended in an effort to minimize secondary impacts. Temporary impacts to floodplains associated with construction activities could be mitigated by replanting disturbed areas with native riparian species and removal of temporary fill material upon project completion. A final determination regarding mitigation rests with the USACE and NCDWQ.

The existing bridges will be removed without dropping components into Waters of the United States. Therefore, no potential fill is anticipated. NCDOT will coordinate with various resource agencies during project planning to ensure that all concerns regarding bridge demolition are resolved.

In accordance with the "Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District" (MOA), July 22, 2003, the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP), will be requested to provide off-site mitigation, if necessary, to satisfy the federal CWA compensatory mitigation requirements for this project. Compensatory mitigation may be required for this project, although final determination rests with the USACE.

D.3 Protected Species

Species with the federal classification of Endangered, Threatened, or officially Proposed for such listing are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). The term "Endangered Species" is defined as "any species which is in danger of extinction throughout all or a significant portion of its range," and the term "Threatened Species" is defined as "any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532).

Two federally protected species are listed for Rockingham County (as of July 19, 2006): James spinymussel (*Pleurobema collina*) and smooth coneflower (*Echinacea laevigata*). Both species have a federal status of Endangered.

***Pleurobema collina* (James spinymussel)**
Endangered
Family: Unionidae
Date Listed: July 22, 1988

The James spinymussel is a small, subrhomboidal mussel, with an obliquely subtruncated posterior, that grows to approximately 1.5 inches in length. The external shell of the juveniles usually bear one to three short spines on each valve. The adult shells usually lack spines. The shell is smooth, straw-colored to brownish-black, with widely spaced concentric striations. Preferred habitat of the spiny mussel includes relatively fast-flowing, well-oxygenated, circumneutral water over a silt-free, noncompacted, gravel/coarse sand substrate. As of printing of the USFWS species recovery plan (USFWS 1990), this spinymussel was only known from 10 streams within the James River basin in Virginia and West Virginia.

In October 2000, an unidentified spinymussel was found in the Dan River in Stokes County, North Carolina during a survey conducted by personnel of NCDOT, the N.C. Wildlife Resources Commission (NCWRC), and the N.C. Division of Marine Fisheries (NCDMS). Subsequent surveys found several more individuals of spinymussel (personal communication, Tim Savidge, April 4, 2001). Spinymussels had not previously been identified within the Dan River basin. The mussels found in the Dan River have characteristics similar to the James spinymussel and the Tar spinymussel (*Elliptio steinstansanna*). Specimens of the recently found spinymussel are currently (as of April 2001) undergoing genetic analysis. The finding of this unidentified spinymussel has resulted in the USFWS listing James spinymussel in North Carolina counties that include tributaries of the Dan River basin (as of the July 19, 2006 list).

James spinymussel **Biological Conclusion:** **NO EFFECT**

Since Big Beaver Island Creek and Little Beaver Island Creek are within the Dan River basin a mussel screening of the streams was conducted on April 22, 2004 by NCDOT biologists. The Big Beaver Island Creek and Little Beaver Island Creek crossing at US 311 contained runs, riffles, and pools behind snags with normal and unconsolidated substrate compactness. The substrate above and below the bridge on US 311 consists of sand, silt, cobble and gravel with medium current. Surveys were conducted by wading using a batiscope 328 feet upstream from project crossing and 328 feet past the confluence of Big Beaver Island Creek and Little Beaver Island Creek. No freshwater mussels were found in 4.5 man-hours of survey time. There were Asian clams present in both streams that were surveyed. The NCNHP documents no occurrences of James spinymussel within 5 miles of the project area. This project will have no effect on James spinymussel.

***Echinacea laevigata* (smooth coneflower)**
Endangered
Family: Asteraceae
Date Listed: October 8, 1992

This species is a stiffly erect, rarely branched perennial that grows up to 5 feet tall. Basal and stem leaves are large, glabrous, lanceolate to narrowly ovate blades reaching 3 inches in length. This coneflower blooms from late May to July, producing solitary heads of small purplish disk flowers with long drooping pink to purplish ray flowers (Kral 1983). This species occurs on calcareous, basic, or circumneutral soils on roadsides, clearcuts, or power line right-of-ways where there is abundant light and little herbaceous competition (Gaddy 1991). Fire-maintained woodlands also appear to provide potential habitat for the coneflower.

Smooth coneflower Biological Conclusion: NO EFFECT

Suitable habitat for smooth coneflower exists within the project area. The approximately 10 acres of woodlands have open understories and a high proportion of maintained edge habitat. The NCNHP does not record any occurrences of smooth coneflower within 5 miles of the project area. Detailed surveys for smooth coneflower were conducted on August 18, 2004 and July 25, 2006. No specimens of smooth coneflower were found. This project will have no effect on smooth coneflower.

Federal Species of Concern - The July 19, 2006 USFWS list also includes a category of species designated as "Federal Species of Concern" (FSC). A species with this designation is one that may or may not be listed in the future (formerly C2 candidate species or species under

consideration for listing for which there is insufficient information to support listing). The FSC designation provides no federal protection under the ESA for the species listed. FSC species listed for Rockingham County are presented in Table 4.

NCNHP files list an occurrence of green floater approximately 4.3 miles southeast of the project area (6.9 miles upstream in the Dan River). No FSC were observed during field investigations.

Table 4. Federal Species of Concern

Common Name	Scientific Name	*Potential* Habitat	*State* Status*
Green floater	*Lasmigona subviridis*	No	E
Prairie birdsfoot-trefoil	Lotus unifoliolatus var. helleri	Yes	SR-T

*State Status: E = Endangered; T = Threatened; SR = Significantly Rare; -T = throughout (these species are rare throughout their ranges [fewer than 100 populations total]) (Franklin and Finnegan 2004; LeGrand et al. 2004).

VI. CULTURAL RESOURCES

A. Compliance Guidelines

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

B. Historic Architecture

In a memorandum dated March 10, 2004, the North Carolina State Historic Preservation Office (HPO) determined that the project would not affect any historic structures. Accordingly, NCDOT architectural historians did not initiate a survey of the project area. A copy of the memorandum is included in the Appendix.

C. Archaeology

There are no known archaeological sites in the area of the bridge. The State Historic Preservation Officer (SHPO), in a memorandum dated March 10, 2004, recommended that no archaeological investigation be conducted in connection with the bridge project, but recommended that "if the

selected alternative for the replacement of these bridges includes the relocation of SR 1138 eastward, we recommend that the area of potential effect for the project be subjected to an archaeology survey." An archaeological survey was conducted by Legacy Research Associates, Inc. and no prehistoric or historic archaeological sites were located within the project area. Legacy Research Associates, Inc. recommended and SHPO concurred in a memorandum dated January 4, 2005, that no further archaeological investigated be conducted. Copies of the SHPO memorandums are included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact by replacing a potentially unsafe bridge.

The project is considered a Federal "Categorical Exclusion" due to its limited scope and environmental consequences.

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of current NCDOT standards and specifications.

The project is not in conflict with any plan, existing land use, or zoning regulations. No significant change in land use is expected to result from replacement of the bridge.

The studied route does not contain any bicycle accommodations, nor is it a designated bicycle route; therefore, no bicycle accommodations have been included as part of this project.

No residential or business relocatees are anticipated as a result of the proposed project.

No adverse impact on families or communities is anticipated. The majority of area residents support the replacement of these bridges, based on comments received at the Citizens Informational Workshop and discussions with representatives of the New Vision Fellowship Church. Since there will be an on-site detour and minimal disruptions to area businesses, citizens in the community agree this project will improve traffic and safety in the area.

No adverse effect on public facilities or services is anticipated. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

This project is fully contained in the Madison urban area and does not come under the requirement of the Farmland Protection Policy Act of 1981 (7 CFR Part 658) as administered by the US Department of Agriculture, Natural Resources Conservation Service (USDA).

There are no publicly owned parks, recreational facilities, or wildlife and waterfowl refuges of National, state, or local significance in the vicinity of the project.

The purpose of this project is to replace Bridge No. 67 and Bridge No. 95 by constructing new structures. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs.

EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. FHWA predicts MSATs will decline in the range of 57 to 87 percent, from 2000 to 2020, based on regulations now in effect, even with a projected 64 percent increase in vehicle miles traveled (VMT). Therefore, both the background level of MSATs and the possibility of even minor MSAT emissions from this project will be reduced.

Rockingham County is a current participant in the National Flood Insurance Regular Program. This crossing of Little Beaver Island Creek and Big Beaver Island Creek is located in a designated flood hazard zone where a detailed flood study has been completed and published. A copy of the Flood Insurance Rate Map, on which the limits of the 100-year floodplain and floodway are delineated is included in the Appendix. The upstream flood plain is primarily comprised of pasture and woods. There are no buildings with floor elevation below the 100-year level observed in the project vicinity. The proposed bridge replacements will provide equivalent or improved conveyance compared to that of the existing bridges; therefore, the project will not have any significant adverse impact on the existing floodplain or on the associated flood hazard to the adjacent properties and buildings. However, a map revision or floodway modification may be required for work within the 100-year floodplain.

The results from a pre-scoping geotechnical and geoenvironmental investigation performed by the NCDOT Geotechnical Engineering Unit showed that no underground storage tank sites or hazardous waste sites or apparent landfills were identified within the project limits. The geotechnical pre-scoping report is included in the appendix.

On the basis of the above discussion, it is concluded that no significant adverse environmental effects will result from implementation of the project.

VIII. Public Involvement

A "start of study" letter was distributed to local officials and agencies requesting information and concerns relative to the proposed study alternates. Also, a newsletter was mailed to local property owners as determined from property tax records. A Citizen Informational Workshop for the project was held from 4:30 to 6:30 p.m. on December 2, 2004, at the Madison Town Hall Board Room.

It is estimated that 50-60 members of the community (32 signed the attendance sheet) came to the workshop to review the project plans and comment on their concerns and interest in the replacement of the bridges.

Most of the citizens in the community agreed that the bridges need to be replaced and that a safe alternative for routing traffic through the area should be put into place. The majority of the citizen's comments were in support of Alternative 2 for the bridge replacements. For the Lindsey Bridge Road (SR 1138) relocation, Alternative C was preferred.

Most citizens believe Alternative C for the Lindsey Bridge Road relocation would be the best traffic/safety option. The citizens in this area would like to include a traffic signal at the intersection of Academy St. (US 311) and Island Drive (SR 1169).

Many in the community were opposed to Alternative A (NCDOT preferred alternative) and Alternative B for the Lindsey Bridge Road relocation because of impacts to the property owned by New Vision Fellowship Church.

As a result of comments received at the workshop, NCDOT representatives held a follow up meeting with representatives of New Vision Fellowship Church on May 15, 2006 to further discuss the proposed project. At this meeting, NCDOT explained the safety and capacity concerns that justify the relocation of Lindsey Bridge Road along the west side of the Church property. The costs and environmental impact factors making Alternative C not feasible were also explained.

Church representatives discussed their concerns about the impacts the road relocation would have on their development plans. The main concerns were child safety, ability to use remaining property to meet their future needs, revisions to the current plans and that the property remaining on the west side of relocated Lindsey Bridge Road would not be of use to the Church. The New Vision Fellowship Church representatives agreed to review NCDOT's proposal and provide comments. The Church later commented that "Preferably, we would like for our property to be left undisturbed due to concerns regarding future use of the property made by New Vision

Fellowship, however, we agree at this time to be open to proceeding with the next step." Minutes of the meeting and subsequent comments from the Church are included in the Appendix.

IX. Agency Coordination

Letters requesting comments and environmental input were sent to the following agencies:

*US Army Corps of Engineers- Wilmington District
*US Fish and Wildlife Service
State Clearinghouse
*NC Department of Cultural Resources
NC Department of Public Instruction
NC Department of Environment and Natural Resources
*NC Wildlife Resources Commission
*NC Division of Water Quality
County Manager, Rockingham County
Chairman, Rockingham County Commissioners
*Town of Madison
*Superintendent, Rockingham County Public Schools
Rockingham County Emergency Management Services
Sheriff, Rockingham County

Asterisks (*) indicate agencies from which written comments were received.

REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS -79/31. Fish and Wildlife Service, U.S. Department of the Interior, Washington, DC. 103 pp.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. 169 pp.

Franklin, M.A. and J.T. Finnegan. 2004. Natural Heritage Program List of the Rare Plant Species of North Carolina. North Carolina Natural Heritage Program, Division of Parks and Recreation, N.C. Department of Environment, Health and Natural Resources, Raleigh.

Gaddy, L.L. 1991. The status of *Echinacea laevigata* N.C. Department of Environment, Health, and Natural Resources (DEHNR): Natural Heritage Program, Raleigh, NC.

Griffith, G.E., J.M. Omernik, J.A. Comstock, M.P. Schafale, W.H. McNab, D.R. Lenat, T.F. MacPherson, J.B. Glover, and V.B. Shelbourne. 2002. Ecoregions of North Carolina and South Carolina (color poster with map, descriptive text, summary table, and photographs). U.S. Geological Survey, Reston, Virginia.

Kartesz, J. 1998. A Synonymized Checklist of the Vascular Flora of the United States, Puerto Rico, and the Virgin Islands. Biota of North America Program.

Kral, R. 1983. A Report on Some Rare, Threatened, or Endangered Forest-related Vascular Plants of the South. U.S. Department of Agriculture, Forest Service, Technical Publication R8J-TP 2. 1305 pp.

LeGrand, H.E., S.E. McRae, S.P. Hall, and J.T. Finnegan. 2004. Natural Heritage Program List of the Rare Animal Species of North Carolina. North Carolina Natural Heritage Program, Division of Parks and Recreation, N.C. Department of Environment, Health, and Natural Resources, Raleigh.

Martof, B.S., W.M. Palmer, J.R. Bailey, and J.R. Harrison III. 1980. Amphibians and Reptiles of the Carolinas and Virginia. The University of North Carolina Press, Chapel Hill, NC. 264 pp.

Menhinick, E.F. 1991. The Freshwater Fishes of North Carolina. North Carolina Wildlife Resources Commission, Raleigh. 227 pp.

Natural Resources Conservation Service (NRCS). 1997. U.S. Department of Agriculture. Hydric Soils, Rockingham County, N.C. Technical Guide, Section II-A-2.

N.C. Division of Environmental Management (NCDEM). 1996. A Field Guide to North Carolina Wetlands. North Carolina Department of Environment, Health, and Natural Resources, Raleigh.

North Carolina Division of Water Quality (NCDWQ). 2004. Basinwide Information Management System (online). Available: http://h2o.enr.state.nc.us/bims/reports/reports.html [April 4, 2004]. North Carolina Department of Environment and Natural Resources, Raleigh.

North Carolina Division of Water Quality (NCDWQ). 2006a. Draft Roanoke River Basinwide Water Quality Plan. North Carolina Department of Environment and Natural Resources, Raleigh.

North Carolina Division of Water Quality (NCDWQ). 2006b. List of Active Permits (online). Available: http://h2o.enr.state.nc.us/NPDES/documents/BIMS_052705.xls North Carolina Department of Environment and Natural Resources, Raleigh, NC.

North Carolina Division of Water Quality (NCDWQ). 2006c. Water Quality Assessment and Impaired Waters List (online). Available: http://h2o.enr.state.nc.us/tmdl/General_303d.htm. North Carolina Department of Environment and Natural Resources, Raleigh.

Palmer, W.M. and A.L. Braswell. 1995. Reptiles of North Carolina. The University of North Carolina Press, Chapel Hill, NC. 412 pp.

Potter, E.F., J.F. Parnell, R.P. Teulings, and R. Davis. 2006. Birds of the Carolinas. The University of North Carolina Press, Chapel Hill, NC. 467 pp.

Radford, A.E., H.E. Ahles, and C.R. Bell. 1968. Manual of the Vascular Flora of the Carolinas. The University of North Carolina Press, Chapel Hill, NC. 1183 pp.

Rohde, F.C., R.G. Arndt, D.G. Lindquist, and J.F. Parnell. 1994. Freshwater Fishes of the Carolinas, Virginia, Maryland, and Delaware. The University of North Carolina Press, Chapel Hill, N.C. 222 pp.

Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina: Third Approximation. Natural Heritage Program, Division of Parks and Recreation, N.C. Department of Environment, Health, and Natural Resources. Raleigh. 325 pp.

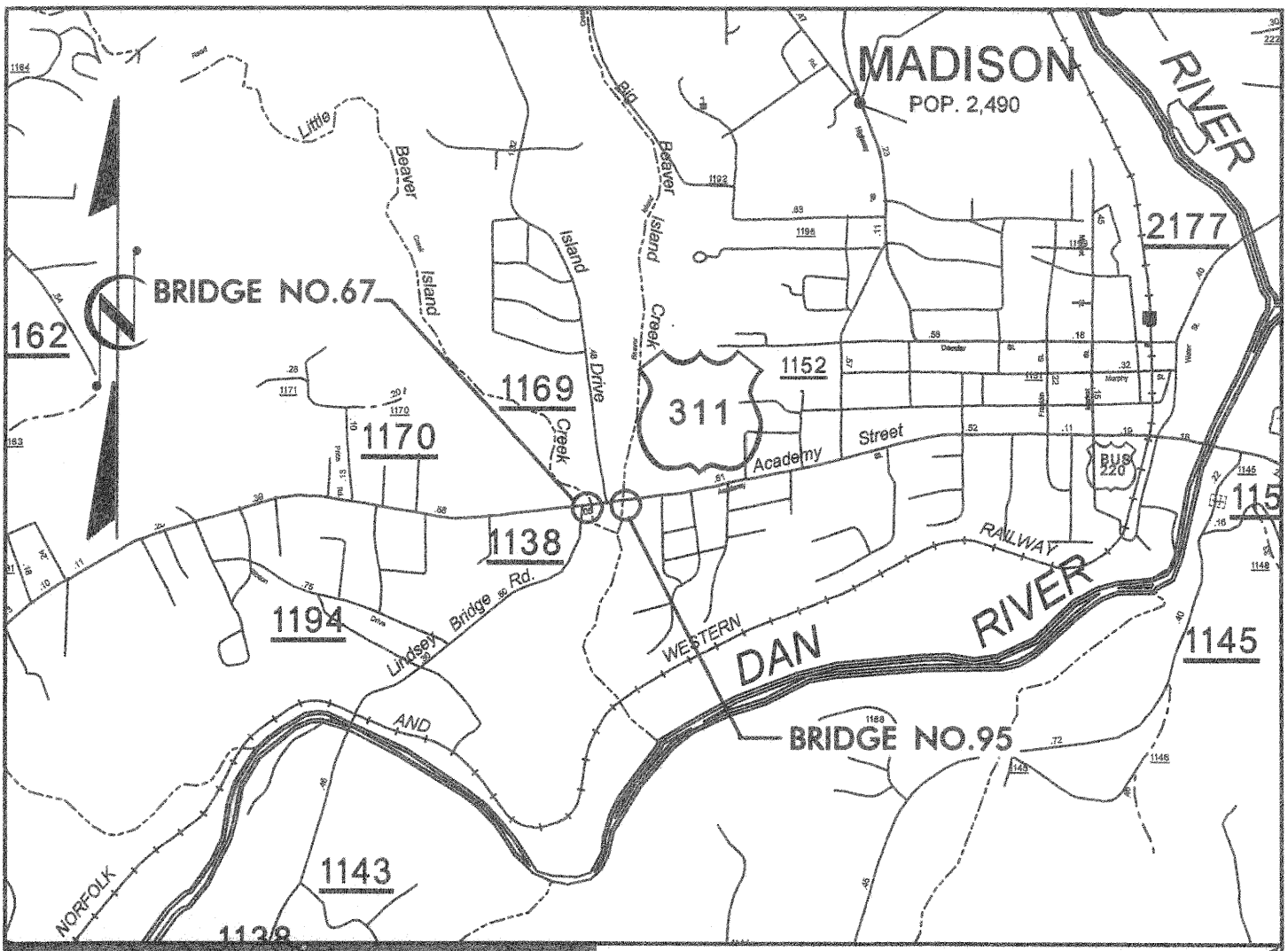
Soil Conservation Service (SCS). 1992. Soil Survey of Rockingham County, North Carolina, USDA National Cooperative Soil Survey.

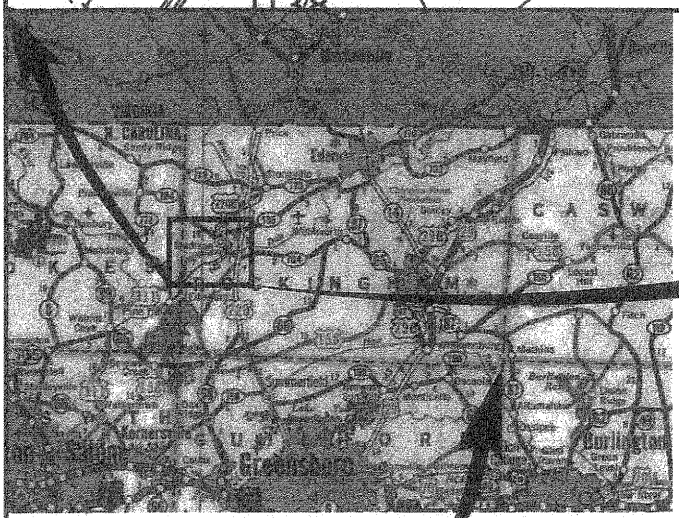
United States Fish and Wildlife Service (USFWS). 1990. James Spinymussel (*Pleurobema collina*) Recovery Plan. U.S. Department of the Interior, Annapolis Field Office (Region 5). Annapolis, MD. 35 pp.

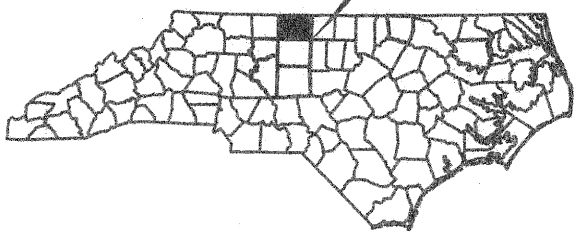
United States Fish and Wildlife Service (USFWS). 2006. Rockingham County Endangered Species, Threatened Species, and Federal Species of Concern (online). Available: http://nc-es.fws.gov/es/cntylist/Rockingham.html [July 19, 2006]. U.S. Fish and Wildlife Service.

Webster, W.D., J.F. Parnell, and W.C. Biggs, Jr. 1985. Mammals of the Carolinas, Virginia, and Maryland. The University of North Carolina Press, Chapel Hill, NC. 255 pp.

Figures







NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Project Development and Environmental Analysis Branch

BRIDGE NO. 95 and BRIDGE NO. 67

US 311 OVER BIG BEAVER ISLAND CREEK & LITTLE BEAVER ISLAND CREEK

ROCKINGHAM COUNTY

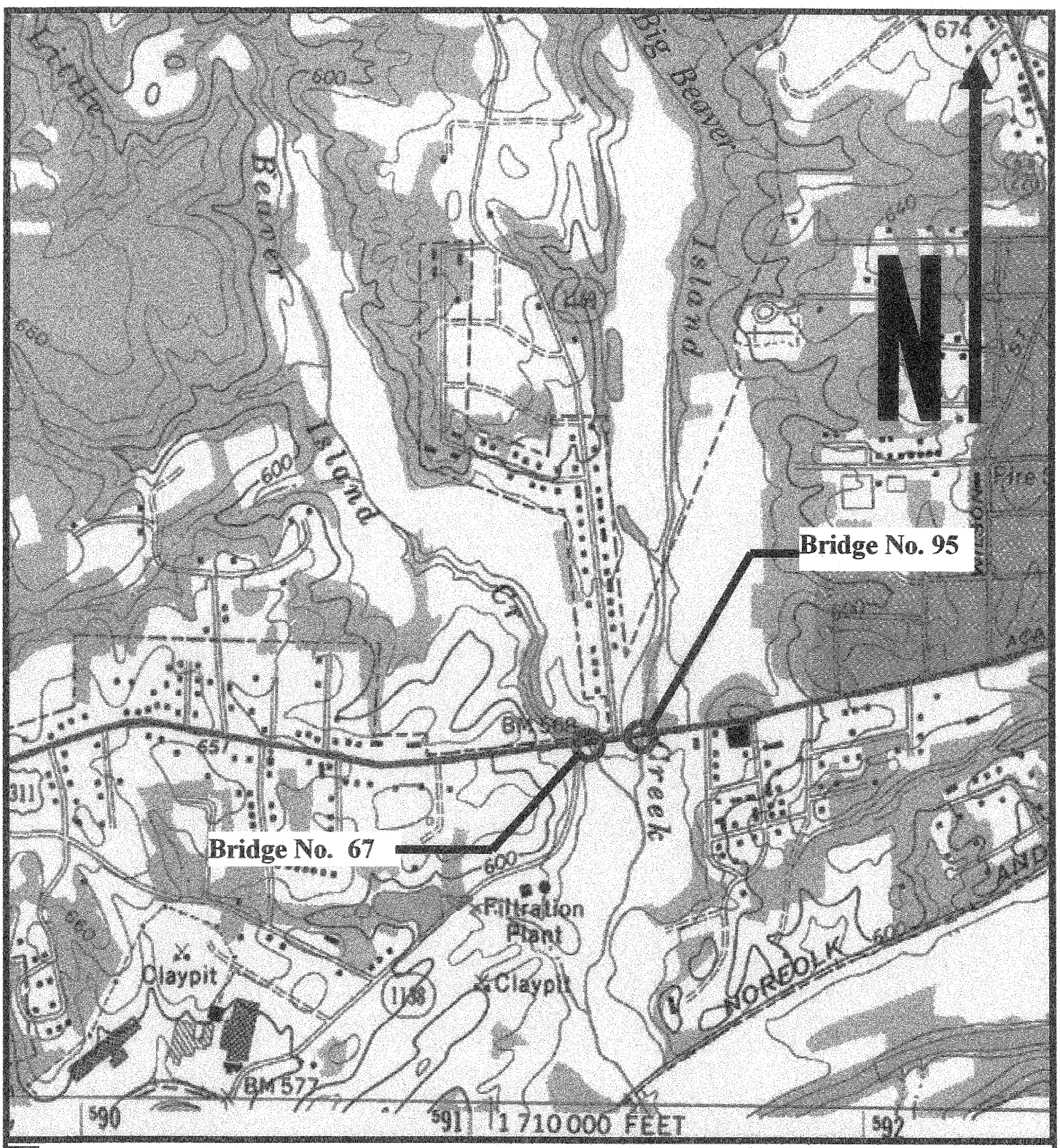
B-4252

VICINITY MAP

0 0.5

GRAPHIC SCALE (MILES)

FIGURE 1A



North Carolina Department of Transportation

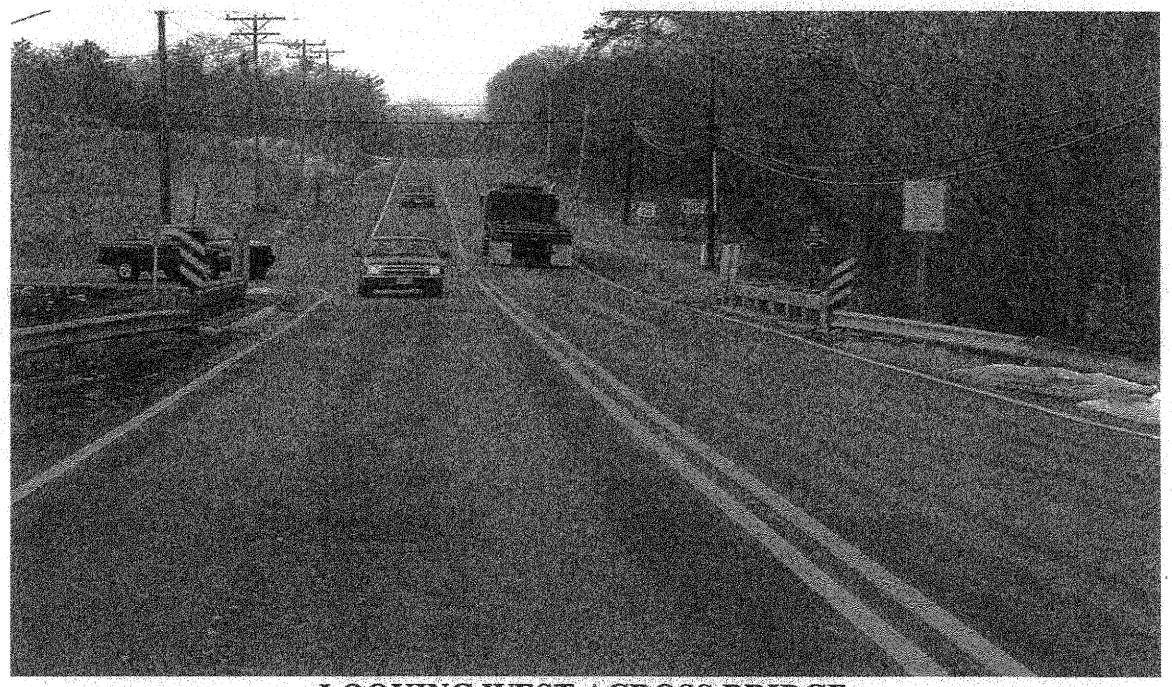
Project Development and Environmental Analysis Branch

T.I.P. B-4252
Bridge # 95 Over Big Beaver Island Creek
and Bridge # 67 Over Little Beaver Island Creek
On US 311 - Rockingham County, N.C.

Quad. Map: Mayodan

Figure 1B

LOOKING EAST ACROSS BRIDGE



LOOKING WEST ACROSS BRIDGE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

BRIDGE NO. 67

ON US 311 OVER LITTLE BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FIGURE 2A

STRUCTURE PROFILE, LOOKING SOUTH & DOWNSTREAM

STRUCTURE PROFILE, LOOKING NORTH & UPSTREAM

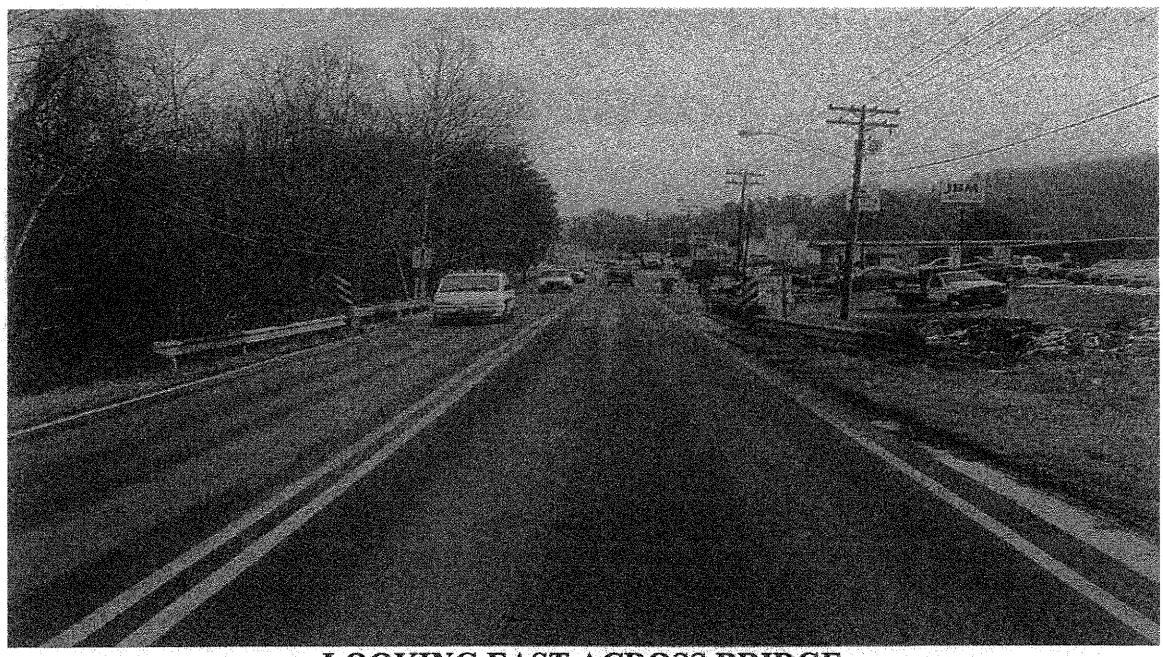
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

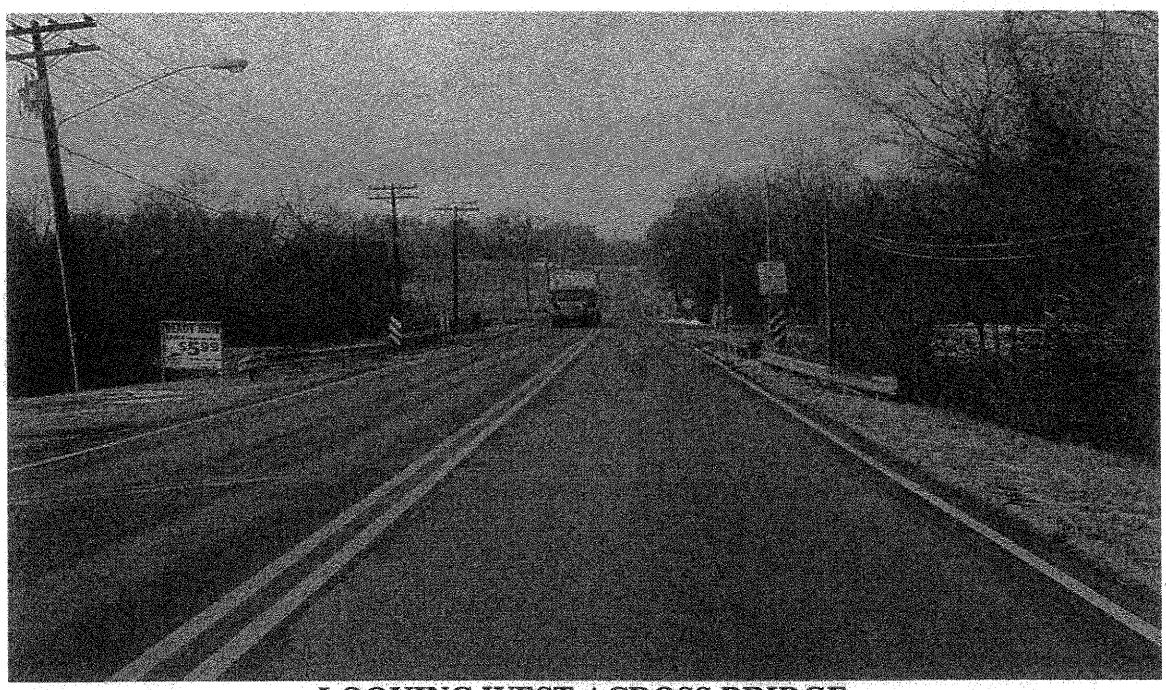
BRIDGE NO. 67

ON US 311 OVER LITTLE BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FIGURE 2B



LOOKING EAST ACROSS BRIDGE



LOOKING WEST ACROSS BRIDGE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

BRIDGE NO. 95

ON US 311 OVER BIG BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FIGURE 3A

STRUCTURE PROFILE, LOOKING SOUTH & DOWNSTREAM

STRUCTURE PROFILE, LOOKING NORTH & UPSTREAM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

BRIDGE NO. 95

ON US 311 OVER BIG BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FIGURE 3B

PROPOSED DESIGN CRITERIA

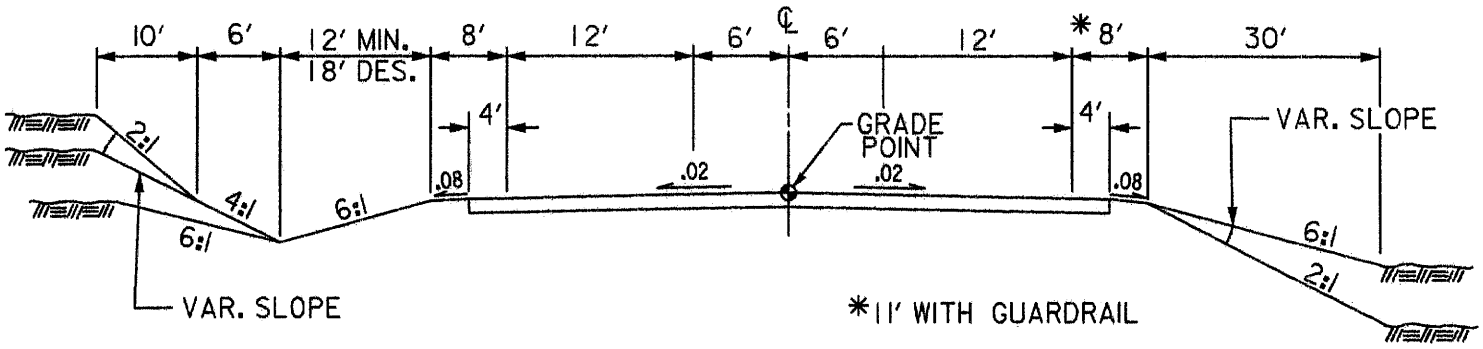
FIGURE 4A

REPLACE BRIDGE NO. 95 & NO. 67 ON US 311
OVER BIG BEAVER ISLAND CREEK & LITTLE BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

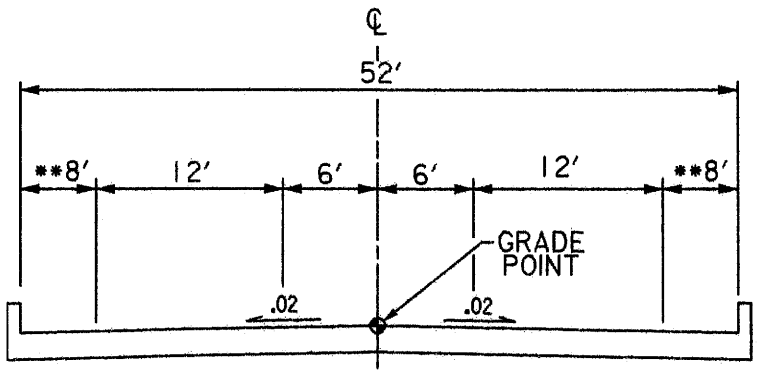
FUNCTIONAL CLASSIFICATION: RURAL MAJOR COLLECTOR
POSTED SPEED: 45 MPH
ESTIMATED ADT:

2006 ADT	=	13,500
2025 ADT	=	19,600
TTST	=	1%
DUAL	=	2%
DHV	=	10%
DIR	=	65%

DESIGN SPEED: 50 MPH
MAXIMUM RATE OF SUPERELEVATION: 0.08 ft/ft (USE .06 MAX. ON BRIDGE)
MAXIMUM DEGREE OF CURVE: 7°30' (3°40' ON BRIDGE)
MAXIMUM GRADE: 7%
MINIMUM DESIRABLE K FACTORS: Ksag = 96 Kcrest = 84
SHOULDER WIDTH & TYPE : 4.0 ft FDPS 8.0 ft TOTAL (11.0ft WITH GUARDRAIL)
LANE WIDTHS: 12.0 ft
BRIDGE DECK WIDTH: 52.0ft CLEAR
BRIDGE LENGTH: 105.0 ft & 125.0 ft



APPROACH ROADWAY TYPICAL SECTION



BRIDGE TYPICAL SECTION

** WIDTH TO BE DETERMINED BASED ON BRIDGE LENGTH AND INTERSECTION SIGHT DISTANCE

PREPARED BY: KO & ASSOC. DATE: 02-04-04
REVISED BY: KO & ASSOC. DATE: 02-24-04
APPROVED BY: _____ DATE: _____

PROPOSED DETOUR CRITERIA

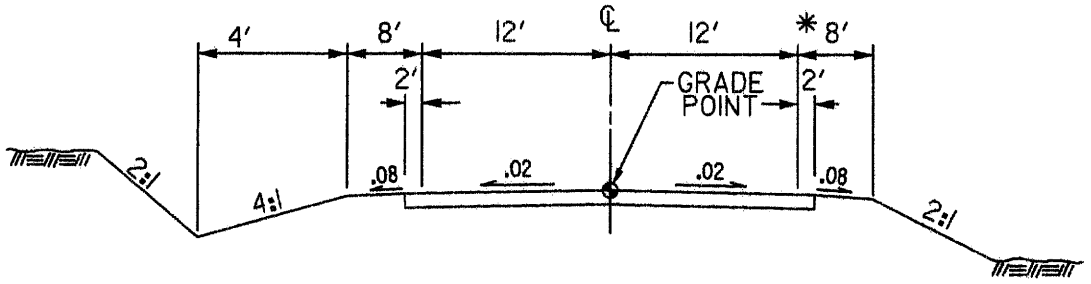
FIGURE 4B

REPLACE BRIDGE NO. 95 & NO. 67 ON US 311
OVER BIG BEAVER ISLAND CREEK & LITTLE BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FUNCTIONAL CLASSIFICATION: RURAL MAJOR COLLECTOR
POSTED SPEED: 45 MPH
ESTIMATED ADT:

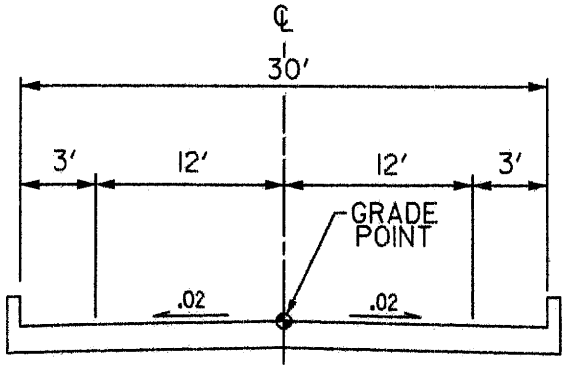
2006 ADT	=	13,500
2025 ADT	=	19,600
TTST	=	1%
DUAL	=	2%
DHV	=	10%
DIR	=	65%

DESIGN SPEED: 35 MPH
MAXIMUM RATE OF SUPERELEVATION: 0.08 ft/ft (USE .06 MAX. ON BRIDGE)
MAXIMUM DEGREE OF CURVE: 16°20' (7°30' ON BRIDGE)
NO SPIRAL REQUIRED
MAXIMUM GRADE: 12%
MINIMUM DESIRABLE K FACTORS: Ksag = 49 Kcrest = 29
SHOULDER WIDTH & TYPE : 2.0 ft FDPS 8.0 ft TOTAL (11.0ft WITH GUARDRAIL)
LANE WIDTHS: 12.0 ft
BRIDGE DECK WIDTH: 30.0ft CLEAR
BRIDGE LENGTH: 90.0 ft & 110.0 ft



*11' WITH GUARDRAIL

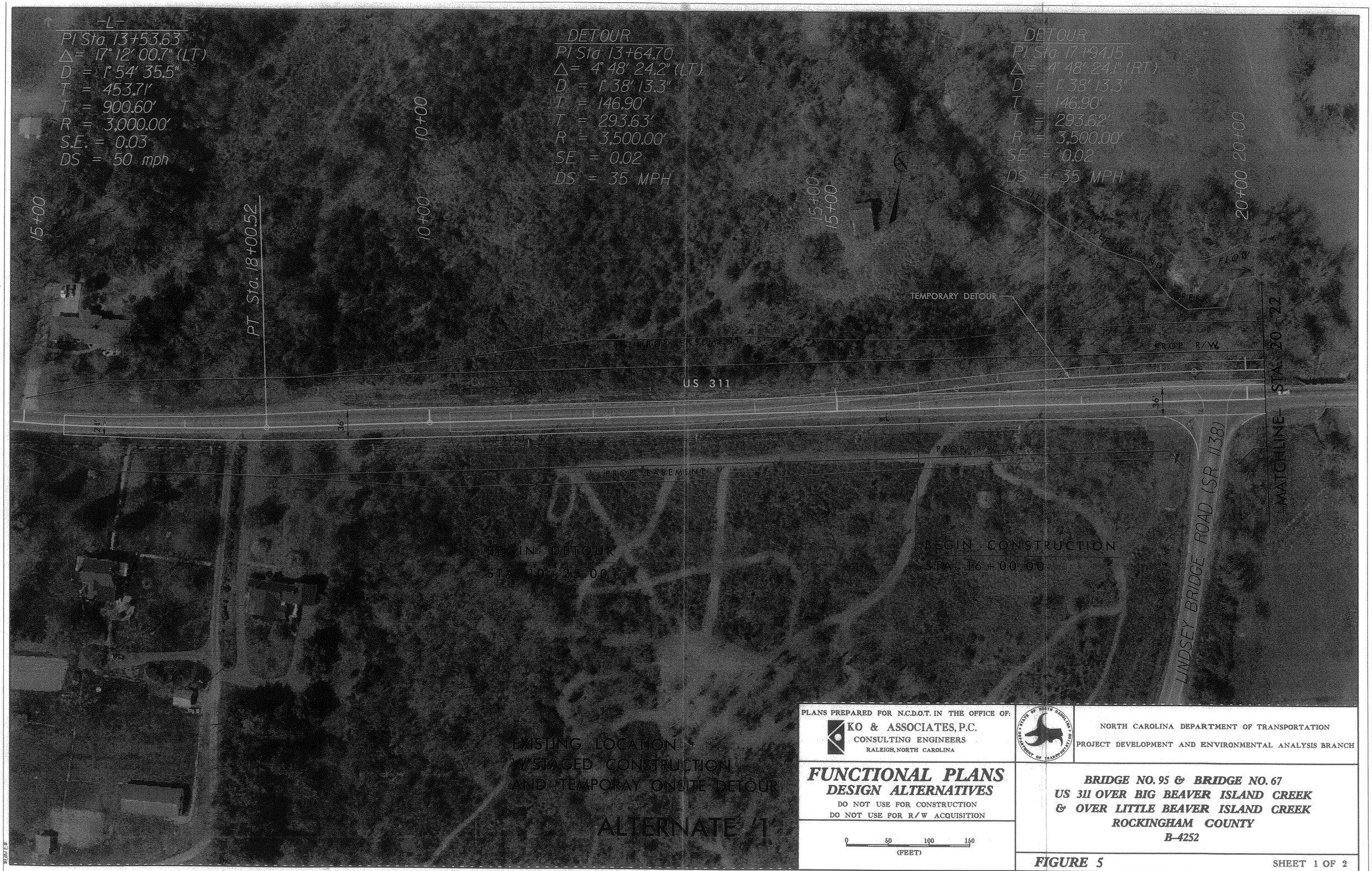
DETOUR APPROACH ROADWAY TYPICAL SECTION



DETOUR BRIDGE TYPICAL SECTION

NOTE:
HORIZONTAL & VERTICAL DESIGN EXCEPTIONS MAY BE REQUIRED.

PREPARED BY: KO & ASSOC. DATE: 02-04-04
REVISED BY: KO & ASSOC. DATE: 02-24-04
APPROVED BY: _____ DATE: _____



PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

0 50 100 150
(FEET)

BRIDGE NO. 95 & BRIDGE NO. 67
US 311 OVER BIG BEAVER ISLAND CREEK
& OVER LITTLE BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FIGURE 5 SHEET 1 OF 2

...\B-4252\DGN\B4252_Alt_A_sh1.psh 8/22/2006 12:14:03 PM

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

0 50 100 150
(FEET)

BRIDGE NO. 95 & BRIDGE NO. 67
US 311 OVER BIG BEAVER ISLAND CREEK
& OVER LITTLE BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FIGURE 5 SHEET 2 OF 2

...\B-4252\DGN\B4252_Alt_A_sh2.psh 8/22/2006 12:19:37 PM

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES

DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

0 50 100 150
(FEET)

BRIDGE NO. 95 & BRIDGE NO. 67
US 311 OVER BIG BEAVER ISLAND CREEK
& OVER LITTLE BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FIGURE 6

ALTERNATE '2'
NEW LOCATION
W/ STAGED CONSTRUCTION

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

0 50 100 150
(FEET)

BRIDGE NO. 95 & BRIDGE NO. 67
US 311 OVER BIG BEAVER ISLAND CREEK
& OVER LITTLE BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FIGURE 6

PROPOSED RE-LOCATION ALTERNATIVES FOR SR 1138 (LINDSEY BRIDGE RD.)

LEGEND

- EXISTING R/W
- PROPOSED R/W
- EXISTING PAVEMENT
- PROPOSED PAVEMENT
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- STREAM / CREEK

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:

KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

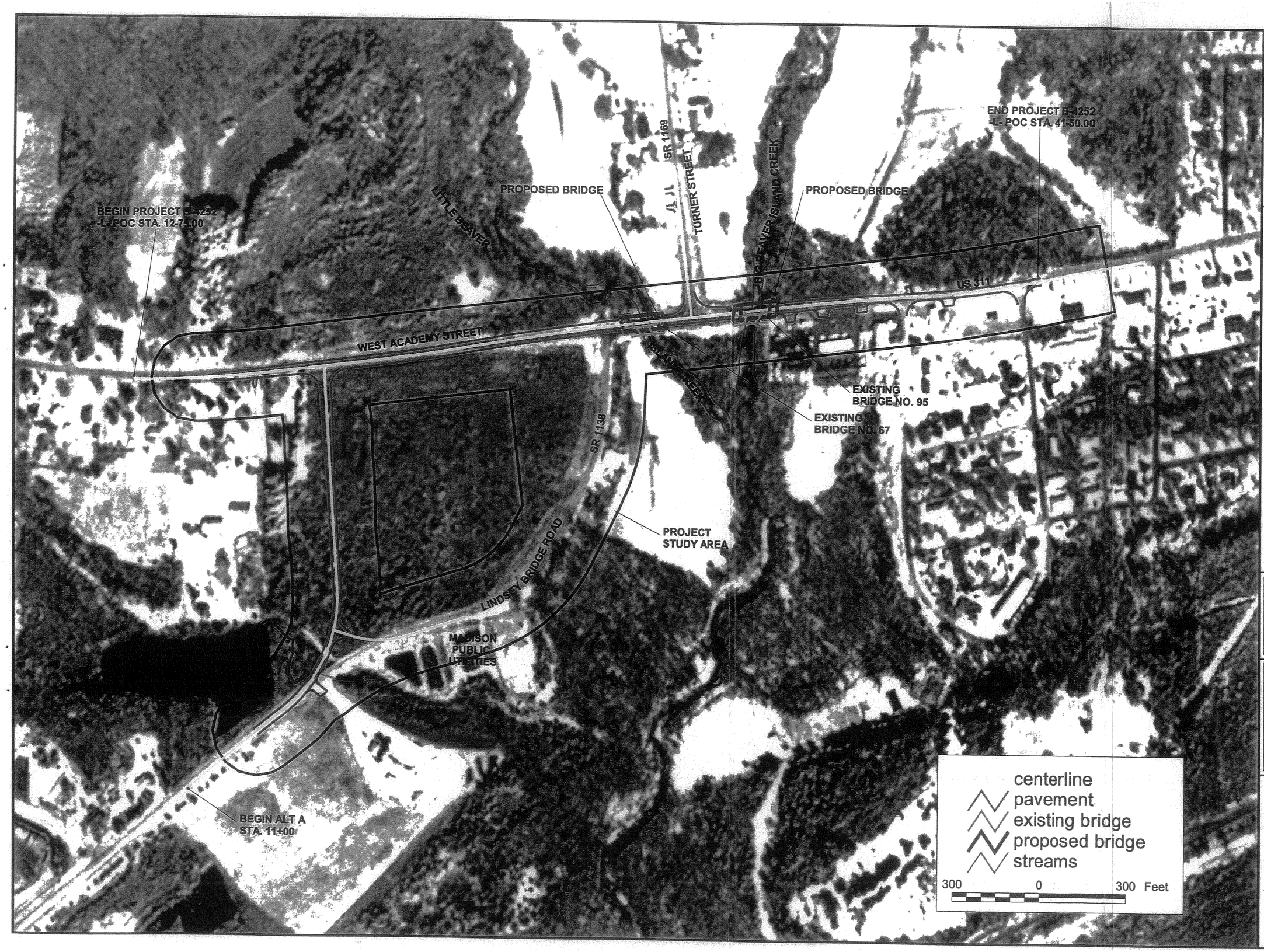
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

0 100 200 300
(FEET)

BRIDGE NO. 95 & BRIDGE NO. 67
US 311 OVER BIG BEAVER ISLAND CREEK
& OVER LITTLE BEAVER ISLAND CREEK
ROCKINGHAM COUNTY
B-4252

FIGURE 7



EcoScience
1101 Haynes Street, Suite 101
Raleigh, North Carolina 27604

Ph: 919 828 3433
Fax: 919 828 3518

ALTERNATE 2

B-4252

Bridge No. 95
and
Bridge No. 67

US 311 over
Big Beaver Island
Creek and Little
Beaver Island Creek

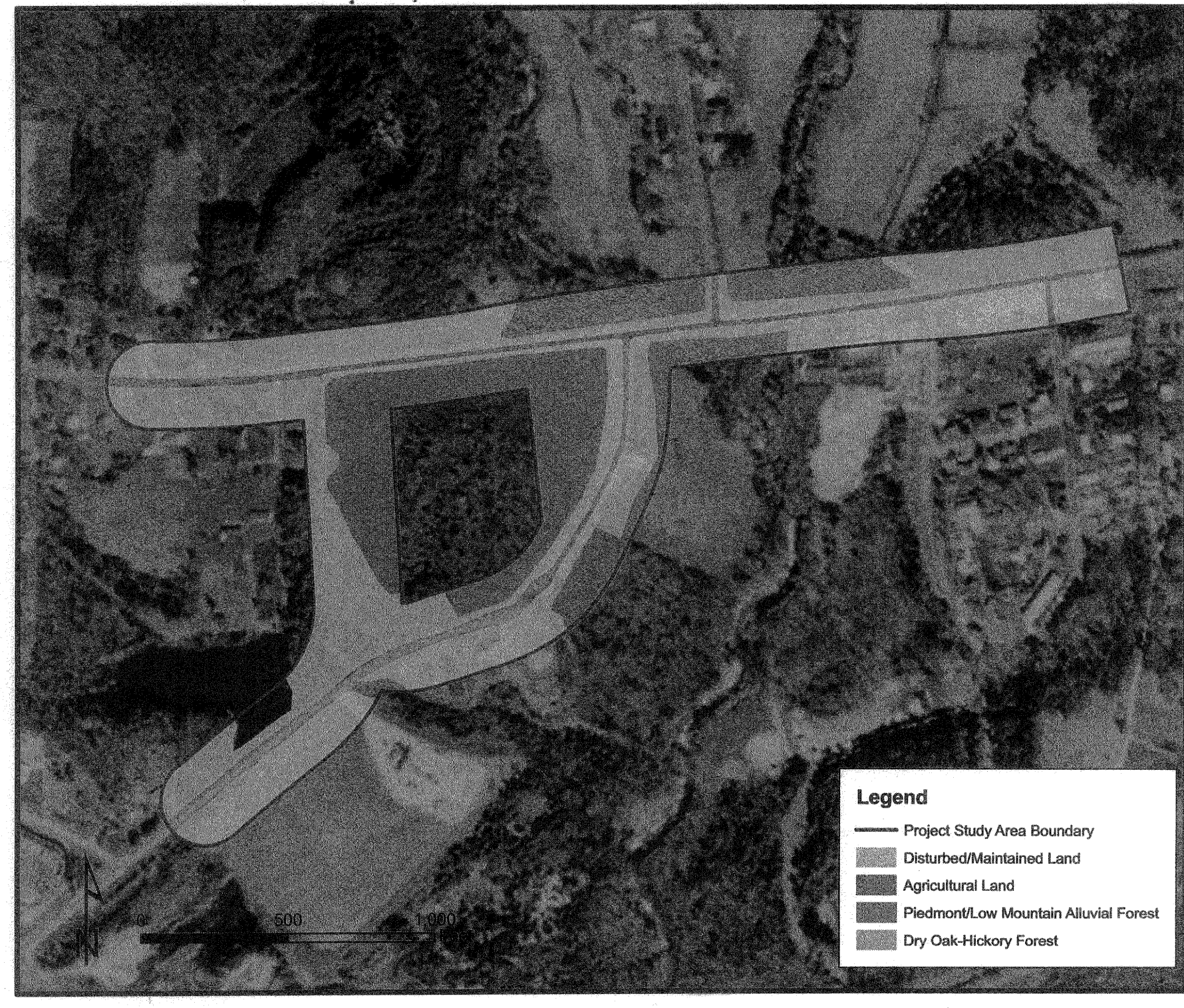
Rockingham County,
NC

N

FIGURE
8

Client: Ko & Associates
Project: 04-185
Date: OCT 2006
Drawn By: ES
Scale: 1" = 300'

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION



EcoScience Corporation
Raleigh, North Carolina

CLIENT:

PROJECT:

Replacement of Bridge No. 95 and Bridge No. 67 (B-4252) over Big Beaver Island Creek and Little Beaver Island Creek

ROCKINGHAM COUNTY
NORTH CAROLINA

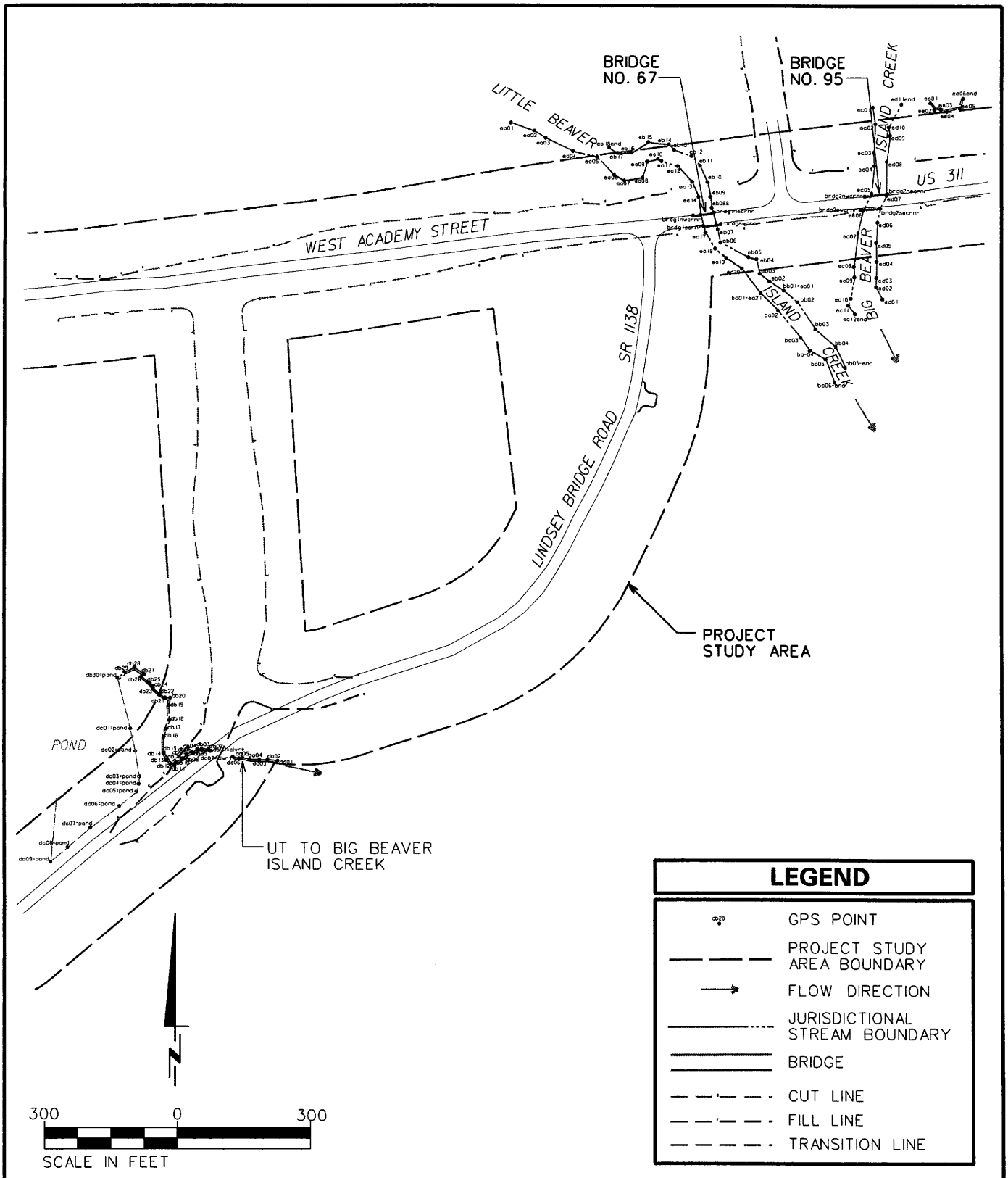
TITLE:

PLANT COMMUNITIES

Dwn By:	Ckd By:
LET	ES
Date:	Scale:
AUG 2006	AS SHOWN

ESC Project No.
04-185

FIGURE
9



Client: STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Project:

JURISDICTIONAL AREAS

Replacement of Bridge No. 95 and Bridge No. 67 (B-4252) over Big Beaver Island Creek and over Little Beaver Island Creek

Rockingham County, North Carolina

Dwn By:	Ckd By:	FIGURE
MAF	LET	10
Date: AUG 2006		
Scale: AS SHOWN		
ESC Project No.: 04-185		

APPENDIX

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

REPLY TO
ATTENTION OF

March 25, 2004

Regulatory Division

Action ID No. 200420713

Mr. Gregory J. Thorpe, PhD
NC Department of Transportation
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, N.C. 27699-1548

Dear Mr. Thorpe:

Reference your letter of February 10, 2004, regarding our scoping comments on TIP Project No. B-4252, Bridge No. 67 and 95 on US 311 over Little Beaver Island Creek and Big Beaver Island Creek, near Madison, in Rockingham County, North Carolina.

Based on the information provided in the referenced letter, it appears the proposed bridge replacement project may impact jurisdictional waters of Little Beaver Island Creek and Big Beaver Island Creek. 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 wetlands in conjunction with this projects, including disposal of construction debris. Specific permit requirements will depend on design of the projects, extent of fill work within the waters of the United States, including wetlands, construction methods, and other factors.

Although the project may qualify as a Categorical Exclusion, to qualify for nationwide permit authorization under Nationwide Permit #23, the project planning report should contain sufficient information to document that the proposed activity does not have more than a minimal individual or cumulative impact on the aquatic environment. All activities, including temporary construction, access, and dewatering activities, should be included in the project planning report. The following items need to be addressed in the project planning report:

a. The report should contain the amount of permanent and temporary impacts to waters and wetlands as well as a description of the type of habitat that will be affected by the proposed project.

b. Off-site detours are always preferable to on-site (temporary) detours in wetlands. If an on-site detour is the recommended action, justification should be provided that demonstrates that alternatives with lower wetland impacts are not practicable. On-site detours, unless constructed on a spanning structure or on a previous detour that was used in a past construction activity, can cause permanent wetland impacts due to sediment consolidation resulting from the on-site detour itself and associated heavy equipment. Substantial sediment consolidation in wetland systems may in turn cause fragmentation of the wetland and impair the ecological and hydrologic functions of the wetland. Thus, on-site detours constructed in wetlands can result in more than minimal wetland impacts. These types of wetland impacts will be considered as permanent wetland impacts. Please note that an onsite detour constructed on a spanning structure can potentially avoid permanent wetland impacts and should be considered whenever an on-site detour is the recommended action. For projects where a spanning structure is not feasible, the NCDOT should investigate the existence of previous onsite detours at the site that were used in previous construction activities. These areas should be utilized for onsite detours whenever possible to minimize wetland impacts.

For proposed projects and associated on-site detours that cause minimal losses of wetlands, an approved wetland restoration and monitoring plan will be required prior to issuance of a DA nationwide or Regional general permit. For proposed projects and associated on-site detours that cause significant wetland losses, an individual DA permit and a compensatory mitigation proposal for the unavoidable wetland impacts may be required.

c. Project commitments should include the removal of all temporary fills from waters and wetlands and "time-of-year" restrictions on in-stream work if recommended by the NC Wildlife Resources Commission. In addition, if undercutting is necessary for temporary detours, the undercut material should be stockpiled on an upland site and later used to restore the site.

d. All restored areas should be planted with endemic vegetation including trees, if appropriate. For projects proposing a temporary onsite detour in wetlands, the entire detour area, including any previous detour from past construction activities, should be removed in its entirety.

e. The report should provide an estimate of the linear feet of new impacts to streams resulting from construction of the project.

f. If a bridge is proposed to be replaced with a culvert, NCDOT must demonstrate that the work will not result in more than minimal impacts on the aquatic environment, specifically addressing the passage of aquatic life including anadromous fish. The work

must also not alter the stream hydraulics and create flooding of adjacent properties or result in unstable stream banks. In addition, the report should address the impacts that the culvert would have on recreational navigation.

g. The report should discuss and recommend bridge demolition methods and shall include the impacts of bridge demolition and debris removal in addition to the impacts of constructing the bridge. The report should also incorporate the bridge demolition policy recommendations pursuant to the NCDOT policy entitled "Bridge Demolition and Removal in Waters of the United States" dated September 20, 1999.

h. Lengthening existing bridges can often benefit the ecological and hydrological functions of the associated wetlands and streams. Most bridge approaches are connected to earthen causeways that were built over wetlands and streams. Replacing these causeways with longer bridges would allow previously impacted wetlands to be restored. In an effort to encourage this type of work, mitigation credit for wetland restoration activities can be provided to offset the added costs of lengthening an existing bridge.

Should you have any questions please call me at the Raleigh Field Office at 919-876-8441.

Sincerely,

John D. Thomas, Jr.

John Thomas
Project Manager, Raleigh
Regulatory Field Office

Copy Furnished:

Mr. Ron Sechler
National Marine Fisheries Service
Pivers Island
Beaufort, North Carolina 28516

Mr. John Dorney
NCDENR-DWQ
Wetlands Section
1621 Mail Service Center
Raleigh, NC 27699-1621

Mr. Doug Huggett
North Carolina Division of
Coastal Management
1638 Mail Service Center
Raleigh, North Carolina 27699-1638

Mr. David Cox
Highway Coordinator
North Carolina Wildlife Resources Commission
1141 I-85 Service Road
Creedmoor, North Carolina 27522

Mr. Howard Hall
United States Fish & Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. William L. Cox, Chief
Wetlands Section – Region IV
Water Management Division
U.S. Environmental Protection Agency
61 Forsyth Street, SW
Atlanta, Georgia 30303

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

March 4, 2004

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

Dear Dr. Thorpe:

This letter is in response to your request for comments from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of the proposed replacement of the following three bridges in Rockingham County:

B-4252, Bridge No. 67 on US 311 over Little Beaver Creek and
Bridge No. 95 on US 311 over Big Beaver Creek
B-4254, Bridge No. 89 on SR 2627 over Little Troublesome Creek

These comments provide scoping information in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661-667d) and section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

For bridge replacement projects, the Service recommends the following general conservation measures to avoid or minimize environmental impacts to fish and wildlife resources:

1. Wetland, forest and designated riparian buffer impacts should be avoided and minimized to the maximum extent practical;

2. If unavoidable wetland impacts are proposed, every effort should be made to identify compensatory mitigation sites in advance. Project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts. Opportunities to protect mitigation areas in perpetuity via conservation easements, land trusts or by other means should be explored at the outset;

3. Off-site detours should be used rather than construction of temporary, on-site bridges. For projects requiring an on-site detour in wetlands or open water, such detours should be aligned along the side of the existing structure which has the least and/or least quality of fish and wildlife habitat. At the completion of construction, the detour area should be

entirely removed and the impacted areas be planted with appropriate vegetation, including trees if necessary;

4. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons. In waterways that may serve as travel corridors for fish, in-water work should be avoided during moratorium periods associated with migration, spawning and sensitive pre-adult life stages. The general moratorium period for anadromous fish is February 15 - June 30;

5. New bridges should be long enough to allow for sufficient wildlife passage along stream corridors;

6. Best Management Practices (BMP) for Protection of Surface Waters should be implemented;

7. Bridge designs should include provisions for roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from run-off of storm water and pollutants;

8. The bridge designs should not alter the natural stream and stream-bank morphology or impede fish passage. To the extent possible, piers and bents should be placed outside the bank-full width of the stream;

9. Bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or flood plain. If spanning the flood plain is not feasible, culverts should be installed in the flood plain portion of the approach to restore some of the hydrological functions of the flood plain and reduce high velocities of flood waters within the affected area.

Two of the alternatives for B-4252 involve relocating SR 1138 either westward or eastward of its present location. The Service would likely prefer a westward relocation as opposed to an eastward one so as to avoid another crossing of Little Beaver Creek.

There are two federally protected species listed for Rockingham County – smooth coneflower (*Echinacea laevigata*) and James spinymussel (*Pleurobema collina*). Although the North Carolina Natural Heritage Program (NCNHP) database does not indicate any known occurrence of smooth coneflower in the vicinity of either project site, use of the NCNHP data should not be substituted for actual field surveys if suitable habitat occurs near the project sites. The NCNHP database only indicates the presence of known occurrences of federally protected species and does not necessarily mean that such species are not present. It may simply mean that an area has not been surveyed. Information about the habitats in which this species is often found is provided on our web site http://endangered.fws.gov/ . If suitable habitat occurs within the project vicinities for this species, surveys should be conducted to determine presence or absence of the species. All survey documentation must include survey methodologies and results.

Little Beaver Creek and Big Beaver Creek are tributaries to the Dan River. Both empty into the Dan River less than one mile downstream of the B-4252 bridge sites. The James spinymussel is known to occur in the Dan River several miles upstream in Stokes County and in the Mayo River upstream of Mayodan in Rockingham County. There is a reasonable possibility that the James spinymussel may occur in the Dan River downstream of the B-4252 bridge sites, or possibly even in the tributaries. The Service recommends that mussel surveys be conducted for B-4252. Mussel surveys should extend at least 100 meters upstream and 400 meters downstream of the proposed work limits. Even if the James spinymussel is not found during surveys, precautions should be taken to minimize disturbance to the creek channels and to minimize sediment and pollutant input into the streams.

We reserve the right to review any federal permits that may be required for these projects, at the public notice stage. Therefore, it is important that resource agency coordination occur early in the planning process in order to resolve any conflicts that may arise and minimize delays in project implementation. In addition to the above guidance, we recommend that the environmental documentation for this project include the following in sufficient detail to facilitate a thorough review of the action:

1. A clearly defined and detailed purpose and need for the proposed project;

2. A description of the proposed action with an analysis of all alternatives being considered, including the "no action" alternative;

3. A description of the fish and wildlife resources, and their habitats, within the project impact area that may be directly or indirectly affected;

4. The extent and acreage of waters of the U.S., including wetlands, that are to be impacted by filling, dredging, clearing, ditching, or draining. Acres of wetland impact should be differentiated by habitat type based on the wetland classification scheme of the National Wetlands Inventory (NWI). Wetland boundaries should be determined by using the 1987 Corps of Engineers Wetlands Delineation Manual and verified by the U.S. Army Corps of Engineers;

5. The anticipated environmental impacts, both temporary and permanent, that would be likely to occur as a direct result of the proposed project. The assessment should also include the extent to which the proposed project would result in secondary impacts to natural resources, and how this and similar projects contribute to cumulative adverse effects;

6. Design features and construction techniques which would be employed to avoid or minimize impacts to fish and wildlife resources, both direct and indirect, and including fragmentation and direct loss of habitat;

7. If unavoidable wetland or stream impacts are proposed, project planning should include a detailed compensatory mitigation plan for offsetting the unavoidable impacts.

The Service appreciates the opportunity to comment on these projects. Please continue to advise us during the progression of the planning process, including your official determination of the impacts of these projects. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520, ext. 32.

Sincerely,

John Ellis

for Garland B. Pardue, Ph.D.
Ecological Services Supervisor

cc: John Thomas, USACE, Raleigh, NC
Beth Barnes, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC

North Carolina Department of Cultural Resources
State Historic Preservation Office

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary
Office of Archives and History

March 10, 2004

MEMORANDUM

TO: Gregory J. Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: David Brook for David Brook

SUBJECT: Bridge No. 67 on US 311 over Little Beaver Creek and Bridge No. 95 on US 311 over Big Beaver Creek, B-4252, Rockingham County, ER04-0499

Thank you for your letter of February 10, 2004, concerning the above project.

There are no recorded archaeological sites located in the immediate vicinity of the proposed bridge replacements. However, the area east of SR 1138 consists of well-drained Congaree soils which have a high probability for the presence of prehistoric archaeological sites. If the selected alternative for the replacement of these bridges includes the relocation of SR 1138 eastward, we recommend that the area of potential effect for the project be subjected to an archaeological survey.

We have determined that the project as proposed will not affect any historic structures.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Mary Pope Furr
Matt Wilkerson

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Karen Taylor
Project Development and Environmental Analysis Branch, NCDOT

FROM: Travis Wilson, Highway Project Coordinator
Habitat Conservation Program

DATE: March 19, 2004

SUBJECT: NCDOT Bridge Replacements in Rockingham, Randolph, and Guilford counties. TIP Nos. B-4252, B-4254, B-4243, B-4244, B-4246, B-4129, B-4130, and B-4131.

Biologists with the N. C. Wildlife Resources Commission (NCWRC) have reviewed the information provided and have the following preliminary comments on the subject project. Our comments are provided in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

Our standard recommendations for bridge replacement projects of this scope are as follows:

1. We generally prefer spanning structures. Spanning structures usually do not require work within the stream and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allows for human and wildlife passage beneath the structure, does not block fish passage, and does not block navigation by canoeists and boaters.

2. Bridge deck drains should not discharge directly into the stream.

3. Live concrete should not be allowed to contact the water in or entering into the stream.

4. If possible, bridge supports (bents) should not be placed in the stream.

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721

5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to revegetate naturally and minimizes disturbed soil.

6. A clear bank (riprap free) area of at least 10 feet should remain on each side of the steam underneath the bridge.

7. In trout waters, the N.C. Wildlife Resources Commission reviews all U.S. Army Corps of Engineers nationwide and general '404' permits. We have the option of requesting additional measures to protect trout and trout habitat and we can recommend that the project require an individual '404' permit.

8. In streams that contain threatened or endangered species, NCDOT biologist Mr. Logan Williams should be notified. Special measures to protect these sensitive species may be required. NCDOT should also contact the U.S. Fish and Wildlife Service for information on requirements of the Endangered Species Act as it relates to the project.

9. In streams that are used by anadromous fish, the NCDOT official policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997)" should be followed.

10. In areas with significant fisheries for sunfish, seasonal exclusions may also be recommended.

11. Sedimentation and erosion control measures sufficient to protect aquatic resources must be implemented prior to any ground disturbing activities. Structures should be maintained regularly, especially following rainfall events.

12. Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long-term erosion control.

13. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.

14. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams.

15. Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural stream bottom when construction is completed.

16. During subsurface investigations, equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used:

1. The culvert must be designed to allow for aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream and downstream ends to restrict or divert flow to the base flow barrel(s). Silled barrels should be filled with sediment so as not to cause noxious or mosquito breeding conditions. Sufficient water depth should be provided in the base flow barrel(s) during low flows to accommodate fish movement. If culverts are longer than 40-50 linear feet, alternating or notched baffles should be installed in a manner that mimics existing stream pattern. This should enhance aquatic life passage: 1) by depositing sediments in the barrel, 2) by maintaining channel depth and flow regimes, and 3) by providing resting places for fish and other aquatic organisms. In essence, base flow barrel(s) should provide a continuum of water depth and channel width without substantial modifications of velocity.

2. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage.

3. Culverts or pipes should be situated along the existing channel alignment whenever possible to avoid channel realignment. Widening the stream channel must be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

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

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. If the area reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be utilized as mitigation for the subject project or other projects in the watershed.

Project specific comments:

1. B-4252, Rockingham County, Bridge No. 67 over Little Beaver Creek and Bridge No. 95 over Big Beaver Creek on US 311. We recommend replacing this bridge with a bridge. A significant fishery for sunfish exists at the Big Beaver Creek site, therefore we request an in-water work moratorium for sunfish from April 1 to June 30. Standard recommendations apply.

2. B-4254, Rockingham County, Bridge No. 89 over Little Troublesome Creek on SR 2627. We recommend replacing this bridge with a bridge. A significant fishery for sunfish

exists at this site, therefore we request an in-water work moratorium for sunfish from April 1 to June 30. Standard recommendations apply.

3. B-4243, Randolph County, Bridge No. 71 over Reek Creek on SR 1504. We recommend replacing this bridge with a bridge. Standard recommendations apply.

4. B-4244, Randolph County, Bridge No. 140 over Gabriels Creek on SR 2215. We recommend replacing this bridge with a bridge. Standard recommendations apply.

5. B-4246, Randolph County, Bridge No. 228 over Richland Creek on SR 2834. We recommend replacing this bridge with a bridge. Standard recommendations apply.

6. B-4129, Guilford County, Bridge No. 226 over Little Alamance Creek on SR 3000. We recommend replacing this bridge with a bridge. A significant fishery for sunfish exists at this site, therefore we request an in-water work moratorium for sunfish from April 1 to June 30. Standard recommendations apply.

7. B-4130, Guilford County, Bridge No. 228 over Alamance Creek on SR 3045. We recommend replacing this bridge with a bridge. A significant fishery for sunfish exists at this site, therefore we request an in-water work moratorium for sunfish from April 1 to June 30. Standard recommendations apply.

8. B-4131, Guilford County, Bridge No. 11 over Little Alamance Creek on SR 3394. We recommend replacing this bridge with a bridge. A significant fishery for sunfish exists at this site, therefore we request an in-water work moratorium for sunfish from April 1 to June 30. Standard recommendations apply.

NCDOT should routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. Restoring previously disturbed floodplain benches should narrow and deepen streams previously widened and shallowed during initial bridge installation. NCDOT should install and maintain sedimentation control measures throughout the life of the project and prevent wet concrete from contacting water in or entering into these streams. Replacement of bridges with spanning structures of some type, as opposed to pipe or box culverts, is recommended in most cases. Spanning structures allow wildlife passage along streambanks and reduce habitat fragmentation.

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at (919) 528-9886. Thank you for the opportunity to review and comment on these projects.

Cc: Gary Jordan, U.S. Fish and Wildlife Service, Raleigh

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E., Director
Division of Water Quality
Coleen H. Sullins, Deputy Director
Division of Water Quality

March 24, 2004

MEMORANDUM

TO: Gregory J. Thorpe, PhD, Director
NCDOT Project Development and Environmental Analysis Branch

FROM: Robert Ridings, Env. Tech., DWQ 401 Unit

THROUGH: John Hennessy, Supervisor, DWQ 401 Transportation Unit

SUBJECT: Scoping Review of NCDOT's proposed bridge replacement projects: B-4281, B-4112, B-4252, B-4254, B-4100, B-4101, B-4243, B-4244, B-4246, B-4104, B-4129, B-4130, B-4131.

In reply to your correspondence dated February 10, 2004 (received February 18, 2004) to Cynthia Van der Wiele, in which you requested comments for the referenced projects, the NC Division of Water Quality has the following comments:

I. General Comments Regarding Bridge Replacement Projects

1. If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used to replace the bridge, then DWQ recommends the use of Nationwide Permit No. 14 rather than Nationwide Permit 23.

2. Bridge demolition should be performed using Best Management Practices developed by NCDOT.

3. DWQ prefers spanning structures. Spanning structures usually do not require work within the stream and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allows for human and wildlife passage beneath the structure, does not block fish passage, and does not block navigation by canoeists and boaters.

4. Bridge deck drains should not discharge directly into the stream; stormwater should be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to NCDOT Best Management Practices for the Protection of Surface Waters

5. Live concrete should not be allowed to contact the water in or entering into the stream. Concrete is mostly made up of lime (calcium carbonate) and when in a dry or wet state (not hardened) calcium carbonate is very soluble in water and has a pH of approximately 12. In an unhardened state concrete or cement will change the pH of fresh water to very basic and will cause fish and other macroinvertebrate kills.

6. If possible, bridge supports (bents) should not be placed in the stream.

7. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to re-vegetate naturally and minimizes disturbed soil.

N. C. Division of Water Quality, 401 Wetlands Certification Unit,
1650 Mail Service Center, Raleigh, NC 27699-1650 (Mailing Address)
2321 Crabtree Blvd., Raleigh, NC 27604-2260 (Location)
(919) 733-1786 (phone), 919-733-6893 (fax), (http://h2o.enr.state.nc.us/ncwetlands)
Customer Service #: 1-877-623-6748

8. A clear bank (rip rap-free) area of at least 10 feet should remain on each side of the steam underneath the bridge.

9. Sedimentation and erosion control measures sufficient to protect water resources must be implemented prior to any ground disturbing activities. Structures should be *maintained regularly*, especially following rainfall events.

10. Bare soil should be stabilized through vegetation or other means as quickly as feasible to prevent sedimentation of water resources.

11. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.

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

II. General Comments if Replacing the Bridge with a Culvert

1. The culvert must be designed to allow for aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream end to restrict or divert flow to the base flow barrel(s). Silled barrels should be filled with sediment so as not to cause noxious or mosquito breeding conditions. Sufficient water depth should be provided in the base flow barrel during low flows to accommodate fish movement. If culverts are longer than 40-50 linear feet, alternating or notched baffles should be installed in a manner that mimics existing stream pattern. This should enhance aquatic life passage: 1) by depositing sediments in the barrel, 2) by maintaining channel depth and flow regimes, and 3) by providing resting places for fish and other aquatic organisms. In essence, the base flow barrel(s) should provide a continuum of water depth and channel width without substantial modifications of velocity.

2. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage.

3. Culverts or pipes should be situated along the existing channel alignment whenever possible to avoid channel realignment. Widening the stream channel must be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

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

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. Tall fescue should not be used in riparian areas. If the area that is reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be used as wetland mitigation for the subject project or other projects in the watershed.

III. *Project-Specific Comments*

B-4281, Bridge 60, Dan River, Stokes County

Dan River is classified as C Trout and is in the Roanoke River Basin. A moratorium prohibiting in-stream and land disturbance within the 25-foot trout buffer is recommended from October 15 to April 15 to protect egg and fry stages of trout. DWQ would prefer this bridge to be replaced with a bridge and the use of BMPs (particularly for sediment and erosion control) to be maximized.

B-4112, Bridge 30, Muddy Creek, Forsyth County

Muddy Creek is classified as C and is in the Yadkin River Basin. DWQ has no special concerns with this p Please refer to general recommendations listed above.

B-4252, Bridges 67 and 95, Little Beaver and Big Beaver Creeks, Rockingham County

Little Beaver and Big Beaver Creeks are both classified as C and are in the Roanoke River Basin. DWQ ha special concerns with this project.

B-4254, Bridge 89, Little Troublesome Creek, Rockingham County

Little Troublesome Creek is listed as C NSW and is in the Cape Fear River Basin. It is a 303(d) listed wate NCDOT shall maximize the use of Best Management Practices for all work crossing or draining to the Criti Area of the Water Supply Watershed and 303(d)-listed waters. In addition, NCDOT shall strictly adhere to "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0124).

B-4100 and B-4101, Bridges 142 and 141, Abbotts Creek, Davidson County

Abbotts Creek is listed as WS-III water supply stream and is in the Yadkin River Basin. There are 30-foot vegetated buffer requirements in WS waters in addition to the requirements to minimize storm water runoff a maximize use of BMPs. Refer to 15A NCAC 2B .0216(3)(b)(i)(F) and (G).

B-4243, Bridge 71, Hasketts Creek, Randolph County

Hasketts Creek is listed as C and is in the Cape Fear River Basin. It is a 303(d) listed water. NCDOT shall maximize the use of Best Management Practices for all work crossing or draining to the Critical Area of the Water Supply Watershed and 303(d)-listed waters. In addition, NCDOT shall strictly adhere to "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0124).

B-4244, Bridge 140, Gabriels Creek, Randolph County

Gabriels Creek is listed as C and is in the Cape Fear River Basin. DWQ has no special concerns for this proj

B-4246, Bridge 228, Richland Creek, Randolph County

Richland Creek is listed as C and is in the Cape Fear River Basin. It is a 303(d) listed water. NCDOT shall maximize the use of Best Management Practices for all work crossing or draining to the Critical Area of the Water Supply Watershed and 303(d)-listed waters. In addition, NCDOT shall strictly adhere to "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0124).

B-4104, Bridge 21, Carter Creek, Davie County

Carter Creek is listed as WS-IV and is in the Yadkin River Basin. There are 30-foot vegetated buffer requirements in WS waters in addition to the requirements to minimize storm water runoff and maximize use BMPs. Refer to 15A NCAC 2B .0216(3)(b)(i)(F) and (G).

B-4129, Bridge 226, Little Alamance Creek, Guilford County

Little Alamance Creek is listed as WS-IV NSW CA and is in the Cape Fear River Basin. There are 30-foot vegetated buffer requirements in WS waters in addition to the requirements to minimize storm water runoff maximize use of BMPs. Refer to 15A NCAC 2B .0216(3)(b)(i)(F) and (G). Since the project is located wi the Critical Area of a water supply watershed, hazardous spill catch basins may be required for this project on traffic count, percent truck traffic or proximity to industries transporting hazardous materials. The proje shall incorporate the requirements for WS-IV Waters within the critical area as specified in 15A NCAC 2B (i.e., stormwater management, sedimentation and erosion control, and buffers).

B-4130, Bridge 228, Alamance Creek, Guilford County

Alamance Creek is listed as WS-IV NSW CA and is in the Cape Fear River Basin. There are 30-foot vegeta buffer requirements in WS waters in addition to the requirements to minimize storm water runoff and maxi use of BMPs. Refer to 15A NCAC 2B .0216(3)(b)(i)(F) and (G). Since the project is located within the Cr Area of a water supply watershed, hazardous spill catch basins may be required for this project based on tra count, percent truck traffic or proximity to industries transporting hazardous materials. The project shall incorporate the requirements for WS-IV Waters within the critical area as specified in 15A NCAC 2B .0215 stormwater management, sedimentation and erosion control, and buffers).

B-4131, Bridge 11, Little Alamance Creek, Guilford County

Little Alamance Creek is listed as WS-IV NSW CA and is in the Cape Fear River Basin. There are 30-foot vegetated buffer requirements in WS waters in addition to the requirements to minimize storm water runoff maximize use of BMPs. Refer to 15A NCAC 2B .0216(3)(b)(i)(F) and (G). Since the project is located wit the Critical Area of a water supply watershed, hazardous spill catch basins may be required for this project b on traffic count, percent truck traffic or proximity to industries transporting hazardous materials. The proje shall incorporate the requirements for WS-IV Waters within the critical area as specified in 15A NCAC 2B . (i.e., stormwater management, sedimentation and erosion control, and buffers).

Thank you for requesting our input at this time. The DOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met a designated uses are not degraded or lost. If you have any questions or require additional information, please contact Robert Ridings at (919) 733-9817 or Cynthia Van der Wiele at (919) 733-5715.

cc: USACE Raleigh Field Office
File Copy

Town of Madison
Office of the Mayor
120 N. Market Street
Madison, North Carolina 27025
(336)427-0221 • Fax: (336)427-2565
www.townofmadison.com

March 22, 2004

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development and
Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Thorpe:

We are in receipt of your letter of February 10, 2004 and appreciate this information. Since there will be no formal interagency scoping meetings regarding this information, I am writing regarding "B-4252." This project deals with the bridges over Little Beaver Creek and Big Beaver Creek. We are respectfully requesting that thorough consideration be given to the third alternative relative to this project: "Replace Bridge Nos. 67 and 95 with three-lane structures at their existing locations....."

We realize the Department has many issues before them at this time. However, these bridges in Rockingham County are of extreme concern to us and need immediate attention.

I shall look forward to hearing from you regarding this request.

Sincerely,

Kenneth Y. Hawkins
Mayor

KYH/shb

(DOT from Mayor-March 22,2004)

B-4252

Rockingham County Schools

Rockingham County Schools
511 Harrington Highway
Eden, North Carolina 27288

Frankie Woods
TIMS Coordinator
(336) 627-2604; FAX 627-266(

August 27, 2002

To: William T. Goodwin,Jr. PE

From: Frankie Woods/ TIMS Coordinator

Subject: Replacement of Bridge # 67 and Bridge # 95 Bridge Crossing

We have 9 buses that travel over the following bridges twice in the morning and twice in the evening. The complete closure of the bridges would definitely have a great impact on the routing of the buses in this area.

If you have any other question please contact Frankie Woods at (336) 627-2604.

36 bus crossings

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 21, 2002

MEMORANDUM

TO: Robert Cauldin
School Transportation Director
Rockingham County Schools
433 County Home Rd.
Reidsville, NC 27320

FROM: William T. Goodwin, Jr. PE
Project Development & Environmental Analysis Branch

SUBJECT: Replacement of Bridge No. 67 and Bridge No. 95 on US 311 over Little Beaver Island Creek and Big Beaver Island Creek, Rockingham County, Federal Aid Project No. BRSTP-311(14), State Project No. 8.1512001, TIP No. B-4252

The N. C. Department of Transportation has begun the planning process to replace the above bridge, which is nearing the end of its useful life. Construction is planned for year 2006.

Alternative methods of replacing the bridge will be studied. Some alternatives may require road closure at the bridge site. In that case, all traffic would be detoured onto other local roads.

The type of bridge or structure that we select will determine how long the road would have to remain closed. However, the time of closure would not be longer than 8-12 months.

We would like to know the specific number of bus crossings per day and if road closure could be handled by re-routing or other changes, or if it would create an unworkable situation for your school bus operations. Of course, closure is not a realistic option for dead end roads. In such cases traffic will be maintained.

We ask that you let us know your opinion in writing by using the enclosed addressed envelope. We need your reply by December 2, 2002.

If you have any questions concerning the project, please contact Davis Moore at (919) 733-7844, ext. 258.

Attachment

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 28, 2004

MEMORANDUM TO: Brian Yamamoto, P.E., Unit Head
Consulting Engineering Unit

FROM: Jared Gray, Environmental Biologist
Office of the Natural Environment

SUBJECT: Protected species survey report for the James spinymussel (*Pleurobema collina*) for the proposed bridge replacement of Bridge 95 over Big Beaver Island Creek on US 311 and Bridge 67 over Little Beaver Island Creek on US 311; Rockingham County: Federal Aid Project No. BRSTP-311 (14); State Project No. 8.1512001; TIP Project No. B-4252.

ATTENTION: Karen Taylor, P.E., Project Planning Engineer
Consulting Engineering Unit

The following memorandum addresses the James spinymussel (*Pleurobema collina*), federally protected species listed by the US Fish and Wildlife Service for Rockingham County. The habitat requirements for the James spinymussel include creeks or river areas with sediment of cobble and sand in reaches with slow to moderate current. (Bogan, 2002). Habitat for the James spinymussel does exist in Big Beaver Island Creek and marginal habitat exists in Little Beaver Island Creek with most of the available habitat being shifting sands. A survey for James spinymussel was conducted and there were no mussels found. This project was pre-screened by Alderman Environmental Services, Wildlife Resources Commission and U. S. Fish and Wildlife Service, and this project was considered to have a low probability of containing mussels.

Surveys, Habitat and Methods

A mussel screening was conducted on April 22, 2004 by NCDOT biologists, Neil Medlin and Jared Gray. The Big Beaver Island Creek and Little Beaver Island Creek crossing at US 311 contained runs, riffles, and pools behind snags with normal and unconsolidated substrate compactness. The substrate above and below the bridge on US 311 consists of sand, silt, cobble and gravel with medium current. The portion of Big Beaver Island Creek and Little Beaver Island Creek that was surveyed had narrow buffer upstream and downstream. The stream banks were unstable with a lot of undercutting and

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erosion. There were no signs of beaver activity. Sand and gravel bars were common in both streams. The water depth was shallow with 95 percent being less than 2 feet in depth. The land use was urban and the stream had about 30 percent cover. The host fish that carry the glochidia for James spinymussel was observed during the survey. Surveys were conducted by wading using a batiscope 100 meters upstream from project crossing and 100 meters past the confluence of Big Beaver Island Creek and Little Beaver Island Creek. No freshwater mussels were found in 4.5 man-hours of survey time. There were Asian clams present in both streams that were surveyed.

Qualifications of Investigators

Investigator:	Jared Gray
Education:	B.S. Environmental Science, Morehead State University
Experience:	Environmental Biologist, Enviro-Pro, October 1994 – May 1997 Environmental Technician, Appian Consulting Engineers, P.A., October 1997 – May 1998 Environmental Specialist, NCDOT, October 1998-present
Expertise:	Endangered species (terrestrial/aquatic) surveys; benthic macroinvertebrate collection, wetland delineation; soils, water quality analysis, and 404/401 permitting.

Investigator:	Neil Medlin, Environmental Specialist
Education:	M.A. Biology, Appalachian State University B.S. Biology, Appalachian State University
Experience:	Environmental Specialist, NCDOT, January 2002 - present Environmental Biologist, NC Division of Water Quality June 1990 - January 2002 Environmental Biologist, FL Department of Environmental Protection (formerly Department of Environmental Regulation), August 1986 – June 1990
Expertise:	Freshwater fish and benthic macroinvertebrate collection and identification; aquatic habitat evaluations and function; biocriteria and biotic indices evaluations; Endangered species (terrestrial/aquatic) surveys.

BIOLOGICAL CONCLUSION: No Effect

Given the survey results, that no freshwater mussels were found, it is apparent that the James Spinymussel does not occur in the project footprint. The North Carolina Natural Heritage Program (NCNHP) does not list a known population up or downstream in Big Beaver Island Creek or Little Beaver Island Creek. The NCNHP records show that the nearest population of James spinymussel to be 28.7 miles upstream from the project in the Dan River and 6.2 miles downstream in the Mayo River. The proposed bridge replacements will have no effect on the James spinymussel.

cc: Cheryl Knepp, Project Manager
File: B-4252

Bogan, Art, 2002. Wordbook and Key to the Freshwater Bivavles of North Carolina.

Summary of Comments
Workshop for TIP No.B-4252
Replacement of Bridges No. 95 & No. 67 on US 311
Over Big Beaver Island Creek and Little Beaver Island Creek
Town of Madison, Rockingham County

It is estimated that 50-60 members of the community (32 signed the attendance sheet) came to the December 2, 2004 workshop to review the project plans and comment on their concerns and interest in the replacement of the bridges. Comment sheets from 14 individuals were submitted at the end of the workshop.

Most of the citizens in the community agree that the bridges need to be replaced and that a safe alternative for routing traffic through the area should be put into place. The majority of the citizen's comments were in support of Alternate 2 for the bridge replacement. For the Y-line, Alternative C was preferred.

Most citizens believe Alternative C for Y-line is the best traffic/safety option. The citizens in this area would like to include a traffic signal at the intersection of Academy St. (US 311) and Island Drive (i.e. Turner Street – SR 1169).

Many in the community were opposed to Alternative A (NCDOT preferred alternative) and Alternative B for the Y-line because it will have an impact on the property owned by New Vision Fellowship Church.

One comment from the business owners within close proximity of the bridge was to keep all trucks, vehicles and construction equipment off of their lots during construction phases.

There was a written comment suggesting that a tunnel be placed under the New Vision Fellowship property to relocate Lindsey Bridge Road with US 311 and to relocate Island Drive (i.e. Turner Street – SR 1169) to the north of the project.

In another written comment, one individual believes that traffic should be routed from Lindsey Bridge Road up to Gibson Road and that the nearby unpaved roads should be paved to accommodate the traffic.

Prior to the workshop, the Town Officials were briefed on the bridge replacement alternatives. The Town Manager requested that we specifically enter into our records that the Town was particularly concerned with the safety issues on US 311 at the intersections of SR 1138 (Lindsey Bridge Road) and SR 1169 (Island Drive). They wanted our records to reflect that the Town had previously requested the NCDOT to install a traffic signal on US 311 at SR 1169. The Manager also indicated the Town's intent to request at the upcoming NCDOT TIP hearings that US 311 be improved to a multilane highway in the vicinity of the bridges. [The capacity analysis for the bridge project indicates that US 311 roadway at the bridges is currently functioning at LOS E. The bridge replacements will not solve the US 311 capacity problem.]

After the workshop, NCDOT received 60 letters/comment sheets from local citizens (as of February 15, 2005).

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

MEETING MINUTES
May 15, 2006
Bridge Group 45, B-4252, Madison, Rockingham County

Date: May 16, 2006
Time: 7:00 p.m.
Place: New Vision Fellowhip
Subject: Project Status and Negotiations
Attendees:

Name	Affiliation
Reverend Paul Hooker	New Vision Fellowship, Acting Senior Pastor
Terry Bowman	New Vision Fellowship
Verona Pruitt	New Vision Fellowship
Michael B. Leffen	New Vision Fellowship
Dave Dixon	New Vision Fellowship
Donna Evans	New Vision Fellowship
Keith Evans	New Vision Fellowship
Glenn S. Blarkusly	New Vision Fellowship
Misty Welborn	New Vision Fellowship
Stephen Edwards	New Vision Fellowship
Greg Gentry	New Vision Fellowship
Jack Ward, PE	KO & Associates, Project Manager
Brian Wiles, PE	KO & Associates, Project Engineer
Cathy Houser, PE	NC DOT, Section Engineer
Lois Little	NC DOT, Division 7 Right of Way Agent
Malcolm Watson, PE	NC DOT, Engineer Coordinator
Mike Mills, PE	NC DOT, Division 7 Engineer
Wade Kirby, PE, PG	NC DOT, Project Development Engineer

Reverend Hooker opened up the meeting with a request for introductions from the attendees.

Jack Ward proceeded with the meeting with a brief discussion of project history and objectives. The project is a bridge replacement and the project has been funded. Right of Way acquisition was originally scheduled for the fall of 2006. This has been rescheduled to January 2007 to allow NCDOT to coordinate design and right of way issues with New Vision Fellowship (NVF). Construction is scheduled to start in 2007. The NCDOT Division Engineer expressed concerns of the bridge conditions. He had to shut down a portion of US 311 last summer so bridge repair could be done.

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NCDOT is aware of capacity and safety issues created by the closeness of the Island Drive and Lindsey Bridge Road intersections on US 311. The intersections are approximately 300 feet apart. US 311 is currently 2 lanes. This makes it difficult to make the left turns onto US 311 from Island Road and Lindsey Bridge Road. Also, no storage for the left turns is provided on US 311. NCDOT analyses of these intersections suggest a Level of Service of F (complete failure) by the design year (2025). NCDOT Congestion Management Section recommends Lindsey Bridge Road be realigned approximately 1,275 feet from the Island Drive intersection, three lanes be provided to allow storage for the left turns, and the two intersections be signalized. This design would allow the intersections to operate at a Level of Service of C until the design year (2025). In summary this would allow the necessary capacity and address the safety issues.

Currently, NCDOT has no projects or funding set up for road improvements on US 311. An unique opportunity exists to use funding set aside for bridge replacement to improve US 311 as part of the bridge replacement project. Based on NCDOT analysis, the ultimate arrangement would be to provide 1200 feet of separation between Island Drive and Lindsey Bridge Road. Realigning Lindsey Bridge Road along the western property line of the NVF property. The project is necessary to maintain the level of service for US 311 to the design year (2025).

The existing pond on Lindsey Bridge Road, south of NVF property forces the realignment further east on the church property instead of along the property line. With this alignment, the west edge of the proposed road is approximately 100 feet from the property line. Also, NCDOT prefers to stay on NVF property to avoid disturbing additional property and a house located on the western side of NVF property.

Aligning Lindsey Bridge Road with Island Drive is problematic because of the environmental regulations protecting floodplains and water quality issues. The governing environmental agencies (U.S. Corps of Engineers and NC Division of Water Quality) would probably not grant the necessary permits to build the road through the floodplain. Bridging through this area would be cost prohibitive. The two creeks are too close to US 311 so the bridge elevation can be lowered to tie into the grades of the existing road.

Rev Hooker said two things holding them from start of construction of Phase I, they wanted to know DOT's plans and funding.

NVF has paid for professional services in developing the current site plan; however, their budget will not allow plan changes. The original consultant's costs were high and NVF will not seek services from this consultant again.

NVF has graded the site and the driveway. Stone has been installed in a portion of the driveway and parking lot. NVF is not sure when the next phase of the Church (main sanctuary and school) will be constructed.

Project Advantages:

1 – NCDOT would construct the necessary turn lanes on Lindsey Bridge Road and US 311. If Lindsey Bridge remains in the current location, NVF may be required to construct turns on US 311 as part of the approval for the future school.

2 – The Church entrance would be moved to the realigned Lindsey Bridge Road providing safer access for Church users. Otherwise, Church users would have to enter and exit onto US 311.

3 –The intersection of US 311 and the new realignment of Lindsey Bridge Road would be signalized. As discussed, the existing unsignalized intersection is subject to failure in the future.

4 – NVF could possibly realize some cost savings by tying the second entrance into the portion of Lindsey Bridge Road subject to closure.

5 – Money received from sale of property to NCDOT could be rolled into the Church budget for future construction.

NVF Concerns:

NVF asked about Right of Way acquisition. NCDOT would either do the appraisal or hire a contractor. Typically two or three similar properties are considered in developing the appraisal. Once a cost basis is established, the value of the proposed right of way is calculated. Other things may be included in the appraisal. NVF can have the property appraised and NCDOT will consider this appraisal. NVF commented on Church property on west side of the proposed realignment. This property would be rendered useless since it is cut off from the rest the property by the road. NCDOT may consider purchasing this property as part of right of way acquisition.

A NVF member noted possible site distance issues at the proposed align of Lindsey Bridge Road. NCDOT believes a signal at this intersection would reduce some of the sight distance concerns.

NVF was concerned on maintenance of property adjacent to the road. They requested NCDOT grade with 4 to 1 slopes instead of 2 to 1. NCDOT expressed this would move the temporary construction easement outwards and could shift the buildable space likewise. NVF understood this but preferred to have the maintainable slopes.

A NVF member expressed concerns that children safety on the property may be compromised by the new alignment of the road. The western property line of the Church borders residential property making the property safe for children's use. The Church site plan and proposed recreation areas were laid out to capitalize on this. She expressed the whole layout of the Church property would be comprised if the road was realigned to the western side of the property. She felt Church children would be more exposed to traffic. NCDOT suggested the layout could be revised since traffic to the east would now be minimized. Also, a fence could be installed along Lindsey Road to limit access by the children. This could be part of the right of way negotiations.

NVF will need to look at how the entrance can be shifted and assess any impacts. NCDOT should follow up with NVF on how far the entrance needs to be from the intersection. A right and left turn lanes would be constructed on the new alignment and this complicates the location of the Church entrance.

NVF was not ready to agree to the realignment of Lindsey Bridge Road along the western side of their property. Rev Hooker wanted to further discuss this with the congregation and then get back with NCDOT.

Action Items:

NVF needs to assess options for a new driveway location and coordinate efforts with the NCDOT District office.

NVF needs to commit to a willingness to work with NCDOT on Lindsey Bridge realignment.

NCDOT will proceed with design of the two bridges and realignment of Lindsey Bridge Road.

Jack Ward

From: PAUL HOOKER [paulheidy@msn.com]

Sent: Tuesday, June 13, 2006 10:36 PM

To: jward@koassociates.com

Cc: hcamp59@hotmail.com; hcamp@alliancemutual.com; sedwards27@triad.rr.com; dhevans@rock.k12.nc.us; kdevans5@yahoo.com; greg@hahnmason.com; paulheidy@msn.com; leffewm@yahoo.com; ml@isometrics-inc.com; verondapruitt@yahoo.com; vnpruitt@novanthealth.org; MWelborn6@triad.rr.com; nvfmisty@earthlink.net

Subject: Lindsey Bridge Rd, New Vision Fellowship

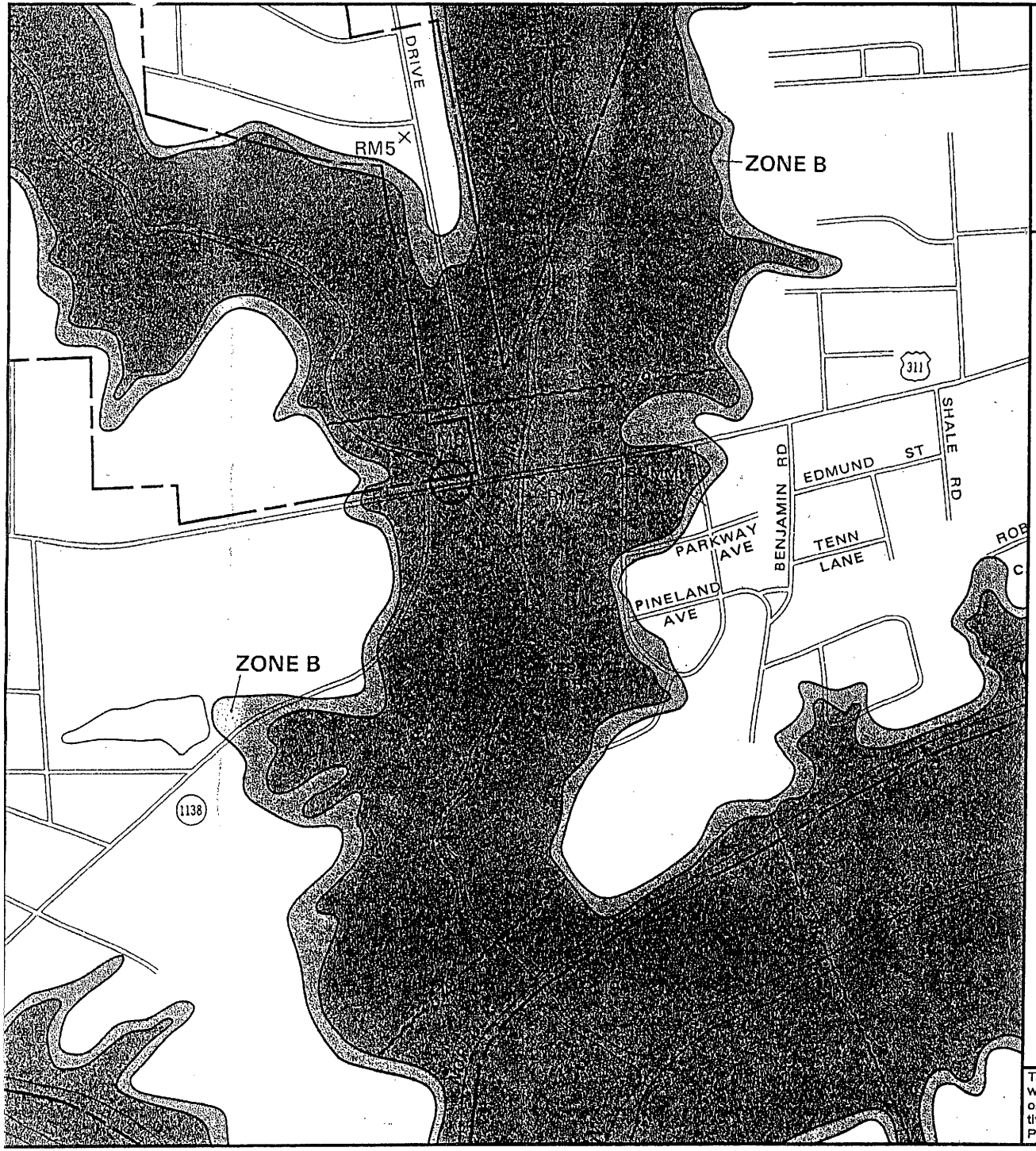
Jack,

To follow up our phone conversation a few days ago, this is the statement from the Ministry Leadership Team at New Vision Fellowship, in respect to the Lindsey Bridge Road relocation:

"Preferably, we would like for our property to be left undisturbed due to concerns regarding future use of the property made by New Vision Fellowship, however, we agree at this time to be open to proceeding with the next step."

Please keep us informed of any new information, updates, changes, etc.

Paul Hooker
New Vision Fellowship
Madison NC



APPROXIMATE SCALE

800 0 800 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

TOWN OF
MADISON,
NORTH CAROLINA
ROCKINGHAM COUNTY

COMMUNITY-PANEL NUMBER
370207 0001 A

PAGE 1 OF 1

EFFECTIVE
NOVEMBER 16, 1977

U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION