STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 19, 2005

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTENTION: Ms. Angie Pennock
NCDOT Coordinator

Dear Madam:

SUBJECT: **Nationwide Permit 23 and 33 Applications** for the proposed replacement of Bridge No. 320 on SR 1212 (Homestead Road) over tributary over Shaw Creek, in Henderson County. Federal Aid Project No. BRZ-1212(4), State Project No. 33208.1.1, TIP No. B-3663.

Please find enclosed a copy of the categorical exclusion for the above referenced project. NCDOT proposes to replace Bridge No. 320 on the existing alignment with a 45-foot, single span, cored slab bridge. As Homestead Road has no outlet, an on-site detour is necessary to maintain traffic. There are no jurisdictional wetlands within the project area.

Impacts to Waters of the United States

Permanent Impacts: Construction of the proposed project will result in total of 0.01 acre of permanent fill in surface water. This proposed impact is unavoidable due to the active railroad track immediately adjacent to the bridge.

Temporary Impacts: The onsite detour will result in 67 linear feet of temporary dewatering. Three 72" corrugated metal pipes will be used establish this temporary detour. Once the new bridge is completed, all materials used for the temporary detour will be removed completely from Shaw Creek.

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

Bridge Demolition

The existing bridge is a single-span structure with an overall length of 41 feet, and a clear roadway width of 19.1 feet. It was constructed in 1961. The bridge consists of a timber deck, steel I-beams, and timber piles, caps and abutments. Bridge No. 320 is structurally and functionally obsolete and has a posted weight limit for single vehicles of 10 tons and 13 tons for truck-tractor semi trailers. All measures will be taken to avoid any temporary fill from entering Waters of the U.S. Best Management Practices for Bridge Demolition and Removal will be implemented.

Avoidance and Minimization

NCDOT has minimized impacts to the fullest extent possible. The design of this project is severely constrained by the proximity of an active railroad crossing and an onsite detour is necessary due to Homestead Road having no outlet. However, the temporary detour has been designed to a minimum width, which includes two 9-foot travel lanes. The new bridge will be a single- spanning structure, however there will be permanent fill associated with lining the unstable banks near the southern bent due to the inability to secure the bridge foundation in close proximity to the railroad tracks.

Water Resources

The water resource impacted for project B-3663 is Shaw Creek. The North Carolina Department of Environment and Natural Resources classifies the Shaw Creek as "WS-IV". The designation of WS-IV denotes waters protected as water supplies which are generally in moderately to highly developed watersheds; point source discharges of treated wastewater are permitted; local programs to control non-point source and storm water discharge of pollution are required. The classification date and index number for this portion of the creek are 04-03-02, 6-20, and the bridge is located in Hydrological Cataloguing Unit 06010105.

There are no Outstanding Resource Waters (ORW), High Quality Waters (HQW), WS-I, WS-II, or watershed Critical Area (CA), within 1 mile upstream or downstream of the project study area.

No special restrictions are required for in-water work other than those outlined in the NCDOT guidelines, "Best Management Practices for Protection of Surface Waters". This section of Shaws Creek is not designated as a trout stream by NC WRC. As commented by WRC in the January 2003 CE, WRC has, "No specific concerns other than the minimization of impacts to water quality and aquatic and riparian habitat."

Design Standards in Sensitive Waters was inadvertently added as a commitment for this project. There is no environmental concern warranting these standards for this project, and this commitment, in consultation with NCDOT's Roadside Environmental Unit, has been removed.

Federally Protected Species

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), Proposed Threatened (PT), are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003, the United States Fish and Wildlife Service lists eight federally protected species for Henderson County (Table 1). A description of each species and biological conclusions are provided in the referenced CE document. The Bog Turtle is listed as Proposed Threatened due to similarity of appearance to other rare species that are listed for protection. This species is not biologically endangered or threatened and is not subject to Section 7 consultation. Therefore, no biological conclusion is required.

Table 1. Federally Protected Species for Henderson County.

Common Name	Scientific Name	Status	Biological Conclusion
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]	N/A
Appalachian elktoe	*Alasmidonia raveneliana*	Endangered	No Effect
Oyster mussel	*Epioblasma capsaeformis*	Endangered	No Effect
Bunched arrowhead	*Sagittaria fasciculata*	Endangered	No Effect
Mountain sweet pitcher plant	*Sarracenia jonesii*	Endangered	No Effect
Small-whorled pogonia	*Isotria medeoloides*	Threatened	No Effect
Swamp pink	*Helonias bullata*	Threatened	No Effect
White irisette	*Sisyrinchium dichotomum*	Endangered	No Effect

KEY:

Status	Definition
Endangered -	A taxon "in danger of extinction throughout all or a significant portion of its range."
Threatened -	A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."
T(S/A) 1-	Threatened due to similarity of appearance a species that is threatened due to similarity of appearance with other rare species and is listed for its protection. These species are not biologically endangered or threatened and are not subject to Section 7 consultation. [1]In the November 4, 1997, Federal Register (55822-55825), the northern population of the bog turtle (from New York south to Maryland) was listed as T (threatened), and the southern population (from Virginia south to Georgia) was listed as T(S/A) (threatened due to similarity of appearance). The T(S/A) designation bans the collection and interstate and international commercial trade of bog turtles from the southern population. The T(S/A) designation has no effect on land-management activities by private landowners in North Carolina, part of the southern population of the species.

Regulatory Approvals

Section 404 Permit: It is anticipated that the temporary dewatering of tributary to Catawba River be authorized under Section 404 Nationwide Permit 33 (Temporary Construction Access and Dewatering). We are, therefore, requesting the issuance of a Nationwide Permit 33 authorizing the temporary dewatering of Shaw Creek. All other aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR § 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification numbers 3403 and 3366 will apply to this project. In accordance with 15A NCAC 2H .0501(a) we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their records.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Michael Turchy at maturchy@dot.state.nc.us or (919) 715-1468.

Sincerely,

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

Cc: W/attachment

Mr. John Hennessy, NCDWQ (2 Copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC
Mr. Harold Draper, TVA TVA
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. J. B. Setzer, P.E., Division Engineer
Mr. Mark Davis, DEO

W/o attachment

Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Franklin, USACE, Wilmington
Ms. Stacy Baldwin, P.E., PDEA Project Planning Engineer

Office Use Only: Form Version March 05

USACE Action ID No. _____ **DWQ No.** _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

1. Check all of the approval(s) requested for this project:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☒ 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: NW 23 & 33

3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☒

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☐

5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: 1598 Mail Service Center
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: maturchy@dot.state.nc.us

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name:
   Company Affiliation:
   Mailing Address:
   Telephone Number: Fax Number:
   E-mail Address:

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: B-3663 Replacement of bridge no 320 carrying SR 1212 over Shaw Creek.

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3663

3. Property Identification Number (Tax PIN): N/A

4. Location
   County: Henderson Nearest Town: Hendersonville
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.):

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 35 20' 05.20" °N 83 32' 04.26" °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Shaw Creek

8. River Basin: French Broad
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Residential/ Agriculture

10. Describe the overall project in detail, including the type of equipment to be used: Replacement of bridge no 320 over Shaw Creek with a new, single span bridge on the current alignment. A temporary detour will be used to accommodate traffic as SR 1212 has no outlet. Earth moving equipment, cranes, etc, will be used during construction.

11. Explain the purpose of the proposed work: To replace the functionally and structurally obselete bridge.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules. N/A

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.
N/A

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: Due to the close proximity to the active railroad track, 0.01 acre of fill is necessary to secure the streamback. A temporary bridge (temporary impacts) are necessary as the road has no outlet and an on-site detour is necessary.

2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
No	Wetland	Impacts			
Total Wetland Impact (acres)					

3. List the total acreage (estimated) of all existing wetlands on the property:None_____

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
1	Shaw Creek	Permanent	Perennial	20-25'	n/a	0.01
2	Shaw Creek	Temporary	Perennial	20-35'	67'	0.02
Total Stream Impact (by length and acreage)					67	0.03

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
None				
Total Open Water Impact (acres)				

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	0.03
Wetland Impact (acres):	0
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	0.03
Total Stream Impact (linear feet):	67

7. Isolated Waters
   Do any isolated waters exist on the property? ☐ Yes ☒ No
   Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

8. Pond Creation
   If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
   Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
   Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.):
   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):
   Current land use in the vicinity of the pond:
   Size of watershed draining to pond: Expected pond surface area:

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. The selected design completely spans Shaw Creek.

VIII. Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCEEP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at http://h2o.enr.state.nc.us/ncwetlands/strmgide.html.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.

   N/A

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

   Amount of stream mitigation requested (linear feet): 0
   Amount of buffer mitigation requested (square feet): 0
   Amount of Riparian wetland mitigation requested (acres): 0
   Amount of Non-riparian wetland mitigation requested (acres): 0
   Amount of Coastal wetland mitigation requested (acres): 0

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes ☒ No ☐

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes ☒ No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes ☒ No ☐

X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify _____)? Yes ☐ No ☒

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3 (2 for Catawba)	
2		1.5	
Total			

* Zone 1 extends out 30 feet perpendicular from the top of the near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. _____

_____

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. Impervious surface will not significantly increase as a result of this project. Water will be controlled off of the bridge deck and will not fall directly into the stream. NCDOT's Best Management Practices will be followed throughout the construction of the project.

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.
N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No ☒

Is this an after-the-fact permit application? Yes ☐ No ☒

XIV. Cumulative Impacts (required by DWQ)

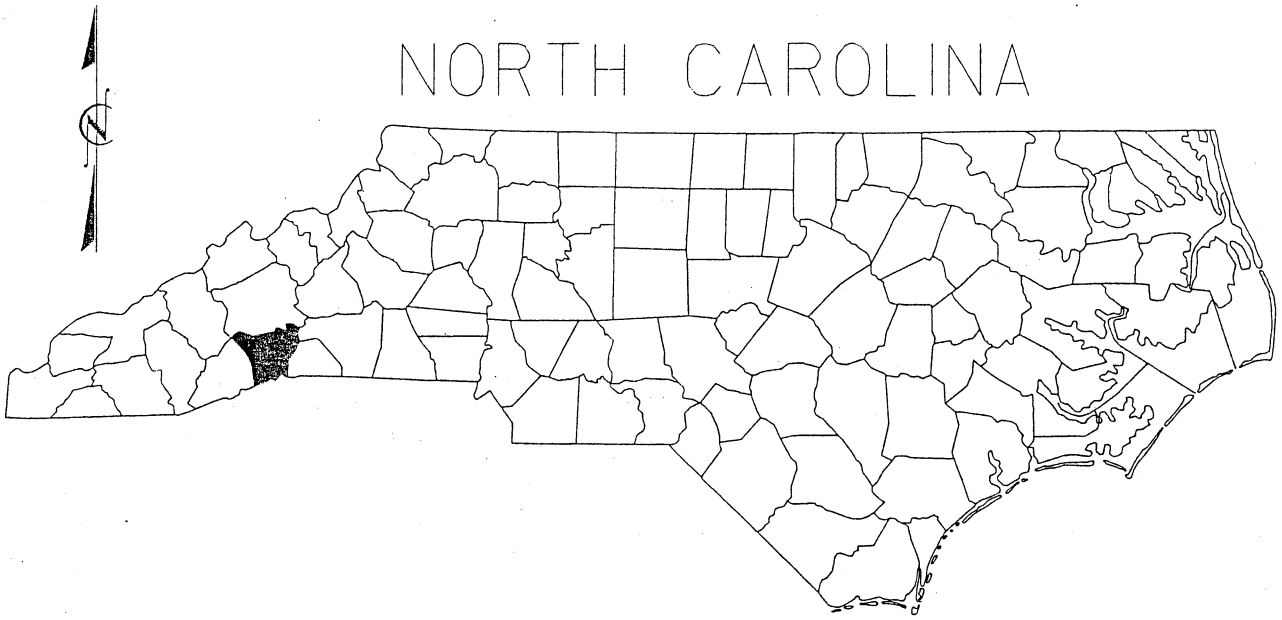
Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description:

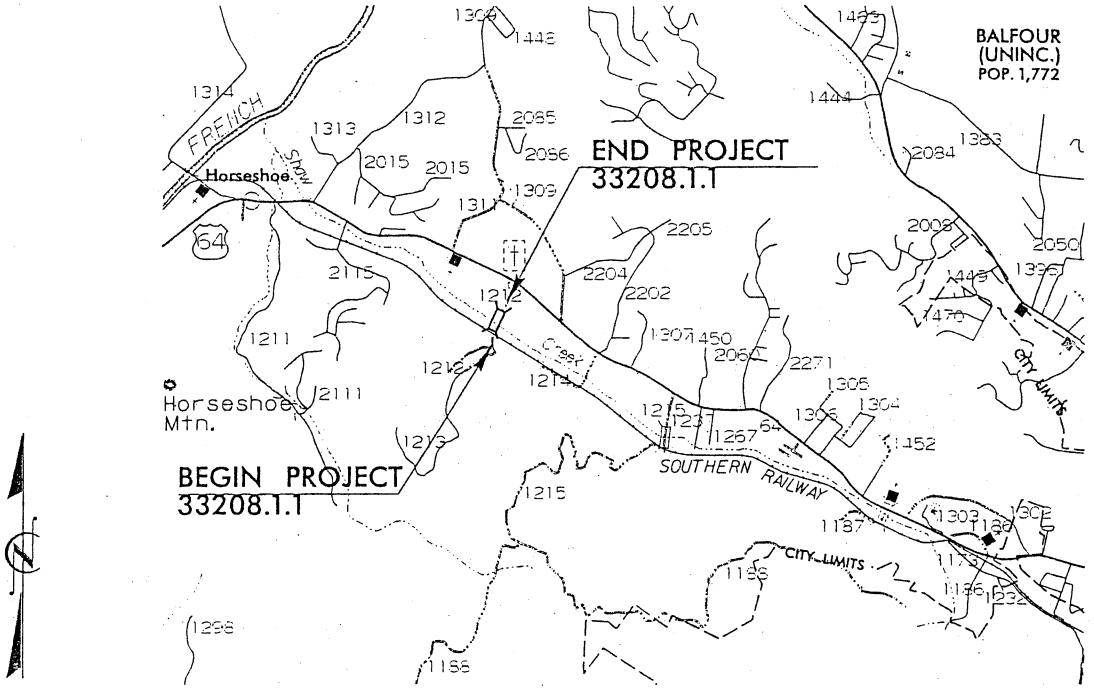
XV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).
N/A

7/12/05

Applicant/Agent's Signature **Date**
(Agent's signature is valid only if an authorization letter from the applicant is provided.)





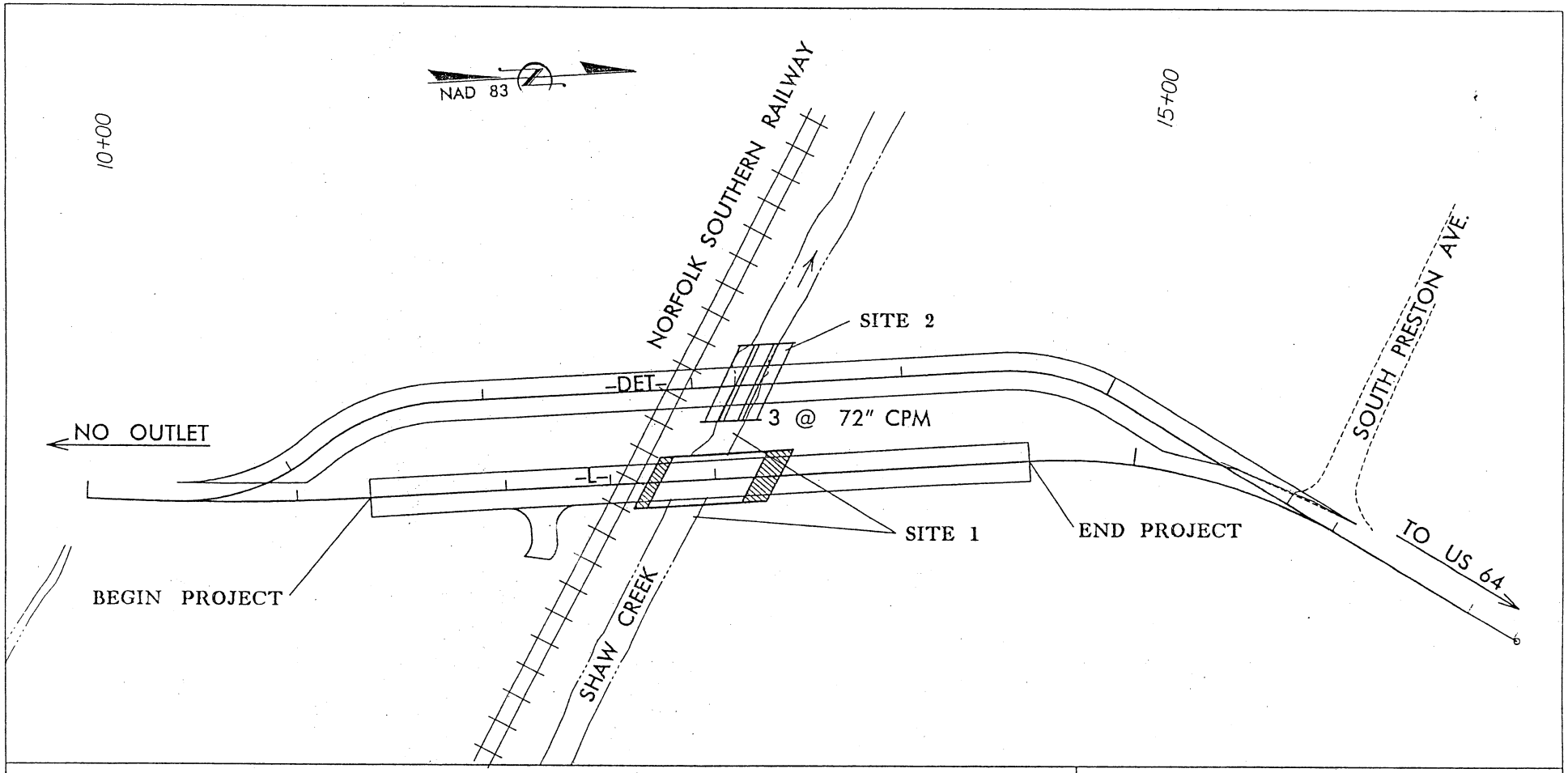
VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS
HENDERSON COUNTY
PROJECT: 33208.1.1 (B-3663)
BRIDGE NO. 320 ON SR 1212
(OLD HOMESTEAD ROAD)
OVER SHAW CREEK

SHEET 1 OF 6

4/14/04



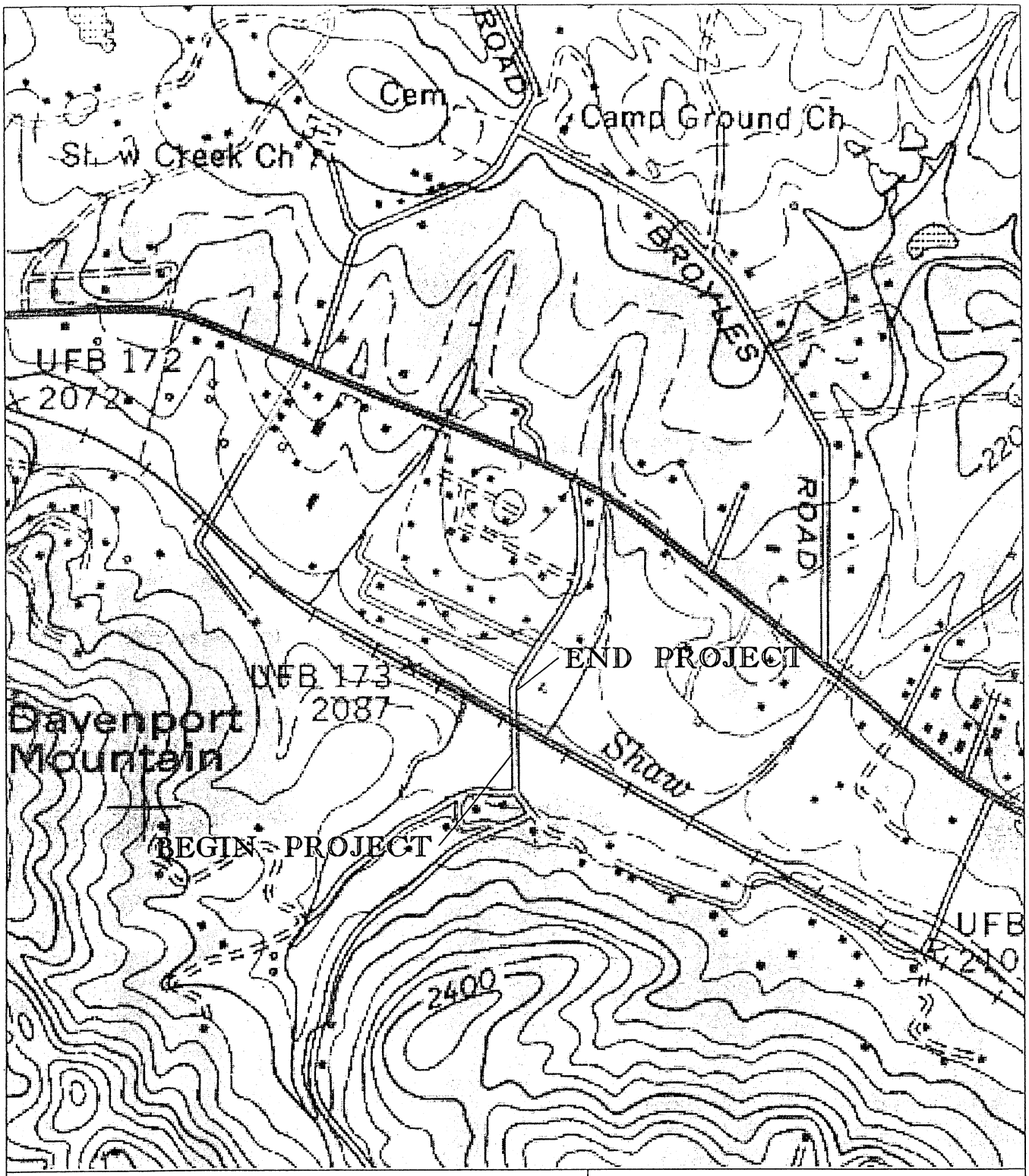
SITE MAP

(NOT TO SCALE)

NCDOT

DIVISION OF HIGHWAYS
HENDERSON COUNTY
PROJECT: 33208.1.1 (B-3663)
BRIDGE NO. 320 ON SR 1212
(OLD HOMESTEAD ROAD)
OVER SHAW CREEK

SHEET 2 OF 6 4/14/04



TOPO MAP

SCALE 1" = 1000'

NCDOT

DIVISION OF HIGHWAYS
HENDERSON COUNTY
PROJECT: 33208.1.1 (B-3663)
BRIDGE NO. 320 ON SR 1212
(OLD HOMESTEAD ROAD)
OVER SHAW CREEK

SHEET 3 OF 6

4/14/03

PROJECT REFERENCE NO.	SHEET NO.
B-3663	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

MULKEY ENGINEERS & CONSULTANTS

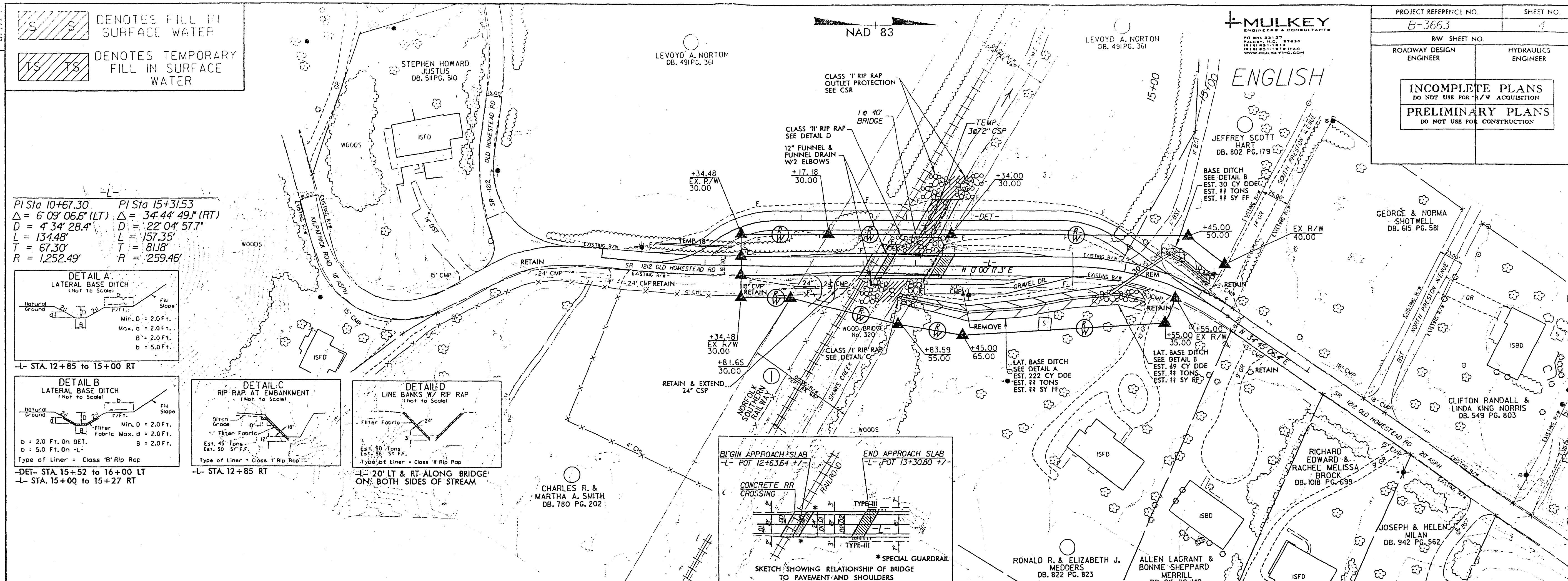
ENGLISH

S — DENOTES FILL IN SURFACE WATER

TS — DENOTES TEMPORARY FILL IN SURFACE WATER

-L-

PI Sta 10+67.30	PI Sta 15+31.53
Δ = 6°09' 06.6" (LT)	Δ = 34°44' 49.1" (RT)
D = 4°34' 28.4"	D = 22°04' 57.7"
L = 134.48'	L = 157.35'
T = 67.30'	T = 81.18'
R = 1,252.49'	R = 259.46'



BM# 1 Elevation = 2101.34'
N = 595092.4940 E = 945899.6210
-BL- Sta. 5+82.34 17.79' Right
8" NAIL SET IN ROOT OF 24" BEECH TREE. 16' +/- SOUTH OF THE CENTERLINE OF A 20' GRAVEL ROAD SR-1212 (OLD HOMESTEAD ROAD).

BM# 2 Elevation = 2087.09'
N = 595569.9510 E = 946017.5580
-BL- Sta. 12+51.48 105.17' Left
-L- Sta. 13+63.21 92.70' Left
8" NAIL SET IN ROOT OF 12" WILD CHERRY. 90' +/- NORTHEAST OF THE CENTERLINE OF SR-1212. 45' +/- FROM THE NORTHEAST CORNER OF A BRIDGE.

PIPE HYDRAULIC DATA
30" RCP

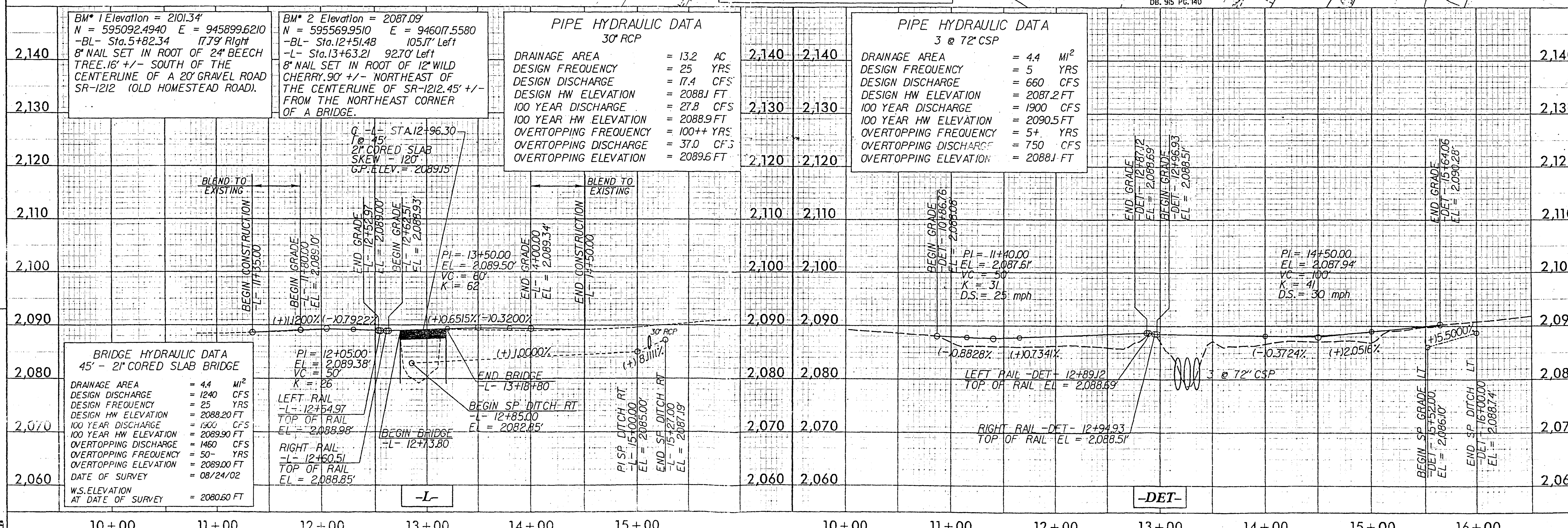
DRAINAGE AREA	= 13.2 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 17.4 CFS
DESIGN HW ELEVATION	= 2088.1 FT
100 YEAR DISCHARGE	= 27.8 CFS
100 YEAR HW ELEVATION	= 2088.9 FT
OVERTOPPING FREQUENCY	= 100++ YRS
OVERTOPPING DISCHARGE	= 37.0 CFS
OVERTOPPING ELEVATION	= 2089.6 FT

PIPE HYDRAULIC DATA
3 @ 72" CSP

DRAINAGE AREA	= 4.4 MI^2
DESIGN FREQUENCY	= 5 YRS
DESIGN DISCHARGE	= 660 CFS
DESIGN HW ELEVATION	= 2087.2 FT
100 YEAR DISCHARGE	= 1900 CFS
100 YEAR HW ELEVATION	= 2090.5 FT
OVERTOPPING FREQUENCY	= 5+ YRS
OVERTOPPING DISCHARGE	= 750 CFS
OVERTOPPING ELEVATION	= 2088.1 FT

BRIDGE HYDRAULIC DATA
45' - 21" CORED SLAB BRIDGE

DRAINAGE AREA	= 4.4 MI^2
DESIGN DISCHARGE	= 1240 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2088.20 FT
100 YEAR DISCHARGE	= 1900 CFS
100 YEAR HW ELEVATION	= 2089.90 FT
OVERTOPPING DISCHARGE	= 1460 CFS
OVERTOPPING FREQUENCY	= 50- YRS
OVERTOPPING ELEVATION	= 2089.00 FT
DATE OF SURVEY	= 08/24/02
W.S. ELEVATION AT DATE OF SURVEY	= 2080.60 FT



REVISIONS

8/17/99

8/17/94

REVISIONS

DENOTES FILL IN SURFACE WATER

DENOTES TEMPORARY FILL IN SURFACE WATER

NAD 83

MULKEY ENGINEERS & CONSULTANTS

PROJECT REFERENCE NO.	SHEET NO.
B-3663	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI Sta 10+67.30
Δ = 6°09'06.6" (LT)
D = 4°34'28.4"
L = 134.48'
T = 67.30'
R = 1,252.49'

PI Sta 15+31.53
Δ = 34°44'49" (RT)
D = 22°04'57.7"
L = 157.35'
T = 81.18'
R = 259.46'

DETAIL A
LATERAL BASE DITCH
(Not to Scale)

Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.
b = 5.0 Ft.

-L- STA. 12+85 to 15+00 RT

DETAIL B
LATERAL BASE DITCH
(Not to Scale)

Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.
b = 2.0 Ft. On DET.
b = 5.0 Ft. On -L-
Type of Liner = Class 'B' Rip Rap

-DET- STA. 15+52 to 16+00 LT
-L- STA. 15+00 to 15+27 RT

DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)

Est. 45 Tons
Est. 50 SY F.F.
Type of Liner = Class 'I' Rip Rap

-L- STA. 12+85 RT

DETAIL D
LINE BANKS W/ RIP RAP
(Not to Scale)

Est. 90 Tons
Est. 96 SY F.F.
Type of Liner = Class 'B' Rip Rap

-L- 20' LT & RT ALONG BRIDGE ON BOTH SIDES OF STREAM

BEGIN APPROACH SLAB
-L- POT 12+63.64 +/-

END APPROACH SLAB
-L- POT 13+30.80 +/-

CONCRETE RR CROSSING

RAILROAD

TYPE-III

* SPECIAL GUARDRAIL

SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS

STEPHEN HOWARD JUSTUS
DB. 511 PG. 510

LEVOYD A. NORTON
DB. 491 PG. 361

CHARLES R. & MARTHA A. SMITH
DB. 780 PG. 202

RONALD R. & ELIZABETH J. WEDDERS
DB. 822 PG. 823

ALLEN LAGRANT & BONNIE SHEPPARD MERRILL
DB. 915 PG. 140

JEFFREY SCOTT HART
DB. 802 PG. 179

GEORGE & NORMA SHOTWELL
DB. 615 PG. 581

CLIFTON RANDALL & LINDA KING NORRIS
DB. 549 PG. 803

RICHARD EDWARD & RACHEL MELISSA BROCK
DB. 1018 PG. 699

JOSEPH & HELEN MILAN
DB. 942 PG. 562

ENGLISH

SR 1212 OLD HOMESTEAD RD

PATRICK ROAD

NORFOLK SOUTHERN RAILWAY

SUMMS CREEK

WOOD BRIDGE No. 320

SOUTH PRESTON AVENUE

BM* 1 Elevation = 2101.34'
N = 595092.4940 E = 945899.6210
-BL- Sta. 5+82.34 17.79' Right
8" NAIL SET IN ROOT OF 24" BEECH TREE. 16' +/- SOUTH OF THE CENTERLINE OF A 20' GRAVEL ROAD SR-1212 (OLD HOMESTEAD ROAD).

BM* 2 Elevation = 2087.09'
N = 595569.9510 E = 946017.5580
-BL- Sta. 12+51.48 105.17' Left
-L- Sta. 13+63.21 92.70' Left
8" NAIL SET IN ROOT OF 12" WILD CHERRY. 90' +/- NORTHEAST OF THE CENTERLINE OF SR-1212. 45' +/- FROM THE NORTHEAST CORNER OF A BRIDGE.

PIPE HYDRAULIC DATA
30" RCP

DRAINAGE AREA	= 13.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 17.4	CFS
DESIGN HW ELEVATION	= 2088.1	FT
100 YEAR DISCHARGE	= 27.8	CFS
100 YEAR HW ELEVATION	= 2088.9	FT
OVERTOPPING FREQUENCY	= 100++	YRS
OVERTOPPING DISCHARGE	= 37.0	CFS
OVERTOPPING ELEVATION	= 2089.6	FT

PIPE HYDRAULIC DATA
3 @ 72" CSP

DRAINAGE AREA	= 4.4	MI²
DESIGN FREQUENCY	= 5	YRS
DESIGN DISCHARGE	= 660	CFS
DESIGN HW ELEVATION	= 2087.2	FT
100 YEAR DISCHARGE	= 1900	CFS
100 YEAR HW ELEVATION	= 2090.5	FT
OVERTOPPING FREQUENCY	= 5+	YRS
OVERTOPPING DISCHARGE	= 750	CFS
OVERTOPPING ELEVATION	= 2088.1	FT

BRIDGE HYDRAULIC DATA
45' - 21' CORED SLAB BRIDGE

DRAINAGE AREA	= 4.4	MI²
DESIGN DISCHARGE	= 1240	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2088.20	FT
100 YEAR DISCHARGE	= 1900	CFS
100 YEAR HW ELEVATION	= 2089.90	FT
OVERTOPPING DISCHARGE	= 1460	CFS
OVERTOPPING FREQUENCY	= 50-	YRS
OVERTOPPING ELEVATION	= 2089.00	FT
DATE OF SURVEY	= 08/24/02	
W.S. ELEVATION AT DATE OF SURVEY	= 2080.50	FT

-L-

BEGIN CONSTRUCTION -L- 11+35.00
EL = 2089.10'
BEGIN GRADE -L- 11+80.00
EL = 2089.10'
(+)1.1200% (-)0.7922%
PI = 12+05.00
EL = 2089.38'
VC = 50'
K = 26
LEFT RAIL -L- 12+54.97
TOP OF RAIL EL = 2088.98'
RIGHT RAIL -L- 12+60.51
TOP OF RAIL EL = 2088.85'
END GRADE -L- 12+52.97
EL = 2089.00'
BEGIN GRADE -L- 12+62.51
EL = 2088.93'
Q -L- STA. 12+96.30
1 @ 45'
21' CORED SLAB
SKEW = 120°
G.F. ELEV. = 2089.15'
BEGIN BRIDGE -L- 12+13.80
PI = 13+50.00
EL = 2089.50'
VC = 60'
K = 62
(+)0.6515% (-)0.3200%
END GRADE -L- 14+00.00
EL = 2089.34'
END CONSTRUCTION -L- 14+50.00
BLEND TO EXISTING
(+)1.0000%
END BRIDGE -L- 13+18.80
BEGIN SP DITCH RT -L- 12+85.00
EL = 2082.85'
PI SP. DITCH RT -L- 15+00.00
EL = 2085.00'
END SP. DITCH RT -L- 15+27.00
EL = 2087.19'
30" RCP
(+)8.3111%

-DET-

BEGIN GRADE -DET- 10+86.76
EL = 2088.28'
PI = 11+40.00
EL = 2087.61'
VC = 50'
K = 31
D.S. = 25 mph
END GRADE -DET- 12+87.12
EL = 2088.69'
BEGIN GRADE -DET- 12+96.93
EL = 2088.51'
(-)0.8828% (+)0.7341%
LEFT RAIL -DET- 12+89.12
TOP OF RAIL EL = 2088.69'
RIGHT RAIL -DET- 12+94.93
TOP OF RAIL EL = 2088.51'
3 @ 72" CSP
PI = 14+50.00
EL = 2087.94'
VC = 100'
K = 41
D.S. = 30 mph
(-)0.3724% (+)2.0516%
+15.5000%
BEGIN SP. GRADE LT -DET- 15+52.00
EL = 2086.10'
END SP. DITCH LT -DET- 16+10.00
EL = 2088.74'
END GRADE -DET- 15+64.06
EL = 2090.28'

10+00	11+00	12+00	13+00	14+00	15+00	10+00	11+00	12+00	13+00	14+00	15+00	16+00
-L-						-DET-						

2,140 2,130 2,120 2,110 2,100 2,090 2,080 2,070 2,060

XLTEA
WLEA

WETLANDS IMPACT PERMIT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	13+00 -L-	1 @ 45' CORED SLAB BRIDGE					0.01				
2	13+30 -DET-	3 @ 72" CMP (TEMPORARY)							0.02	67	
TOTALS:			0	0	0	0	0.01	0	0.02	67	0

Form Revised 3/22/01

NCDOT

DIVISION OF HIGHWAYS
HENDERSON COUNTY
PROJECT 33208.1.1 (B-3663)
BRIDGE NO. 320 ON SR 1212
(OLD HOMESTEAD ROAD)
OVER SHAW CREEK

4/14/2004

PROPERTY OWNERS

NAMES AND ADDRESSES

REFERENCE NO.	NAMES	ADDRESSES
1	NORFOLK SOUTHERN RAILWAY	99 SPRING ST. S.W. ATLANTA, GA 30303

NCDOT

DIVISION OF HIGHWAYS

HENDERSON COUNTY

PROJECT: 33208.1.1 (B-3663)

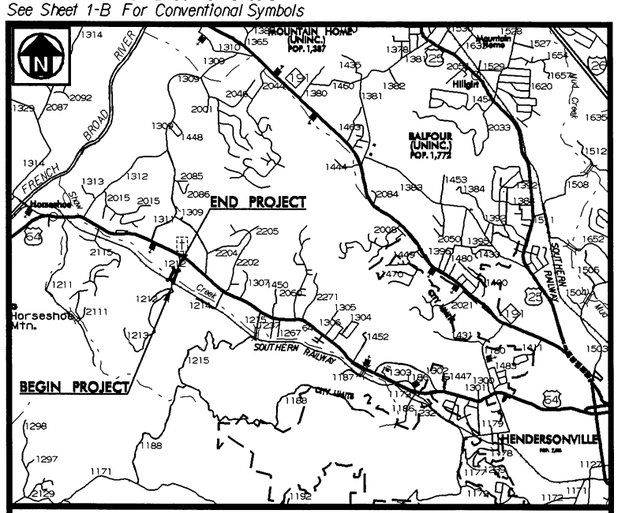
BRIDGE NO. 320 ON SR 1212 (OLD HOMESTEAD ROAD) OVER SHAW CREEK

4/14/04

TIP PROJECT: B-3663

CONTRACT: C201197

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HENDERSON COUNTY

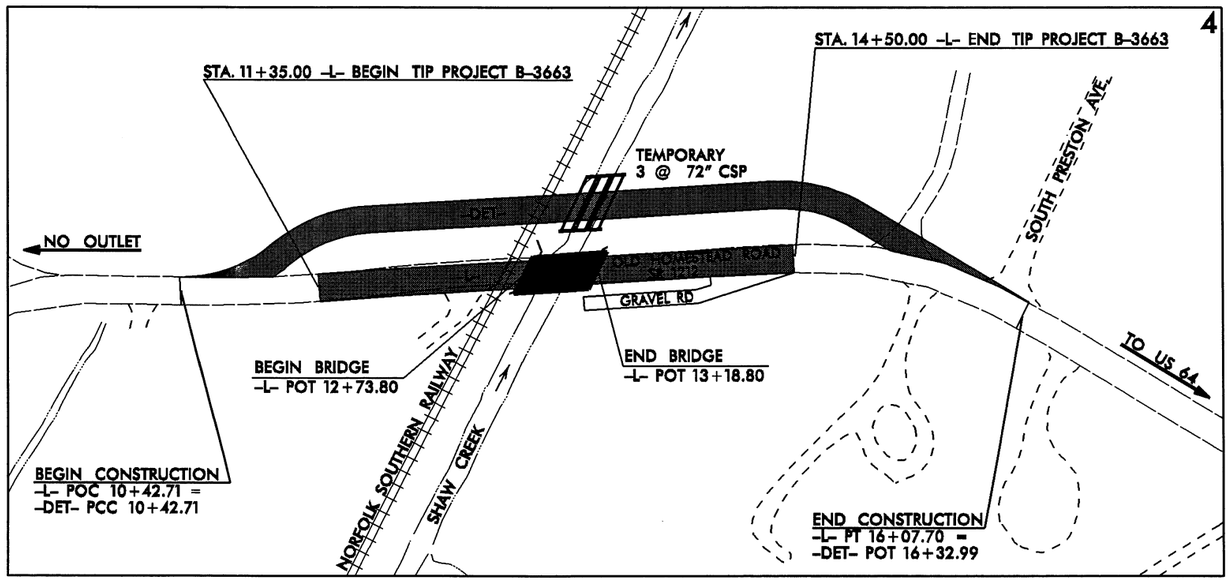
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3663	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33208.1.1	BRZ-1212(4)	PE
33208.2.1	BRZ-1212(4)	RW, UTL
33208.3.1	BRZ-1212(5)	CONST

LOCATION: ***BRIDGE NO. 320 ON SR 1212 (OLD HOMESTEAD ROAD) OVER SHAW CREEK***

TYPE OF WORK: PAVING, GRADING, DRAINAGE, AND STRUCTURE

NAD 83



MULKEY
ENGINEERS & CONSULTANTS

GRAPHIC SCALES

PLANS 50 25 0 50 100

PROFILE (HORIZONTAL) 50 25 0 50 100

PROFILE (VERTICAL) 10 5 0 10 20

DESIGN DATA

ADT 2005	=	224 vpd
ADT 2025	=	300 vpd
DHV	=	15 %
D	=	65 %
T	=	3 % *
V	=	25 MPH
Func. Class	=	Rural Local

* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3663	=	0.051 MILE
LENGTH STRUCTURE TIP PROJECT B-3663	=	0.009 MILE
TOTAL LENGTH TIP PROJECT B-3663	=	0.060 MILE

Prepared In the Office of:
MULKEY
ENGINEERS & CONSULTANTS
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 30, 2004

LETTING DATE: MAY 17, 2005

TIM JORDAN, PE
ROADWAY DESIGN ENGINEER

JENNY FLEMING, PE
HYDRAULICS ENGINEER

NCDOT CONTACT:
TERESA BRUTON, PE
DESIGN SERVICES PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

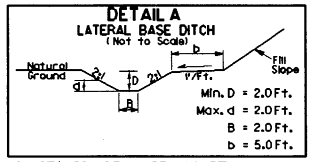
PROJECT REFERENCE NO.	SHEET NO.
B-3663	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

MULKEY ENGINEERS & CONSULTANTS

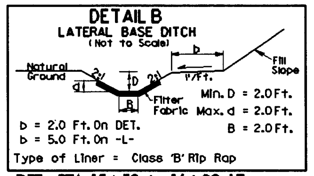
8/17/99

-L-

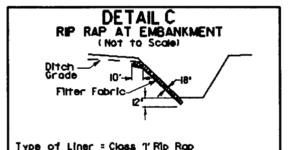
PI Sta 10+67.30	PI Sta 15+31.53
Δ = 6° 09' 06.6" (LT)	Δ = 34° 44' 49.1" (RT)
D = 4° 34' 28.4"	D = 22° 04' 57.7"
L = 134.48'	L = 157.35'
T = 67.30'	T = 81.18'
R = 1,252.49'	R = 259.46'



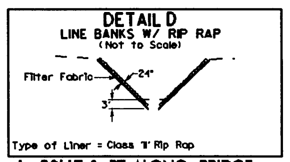
-L- STA. 12+85 to 15+00 RT



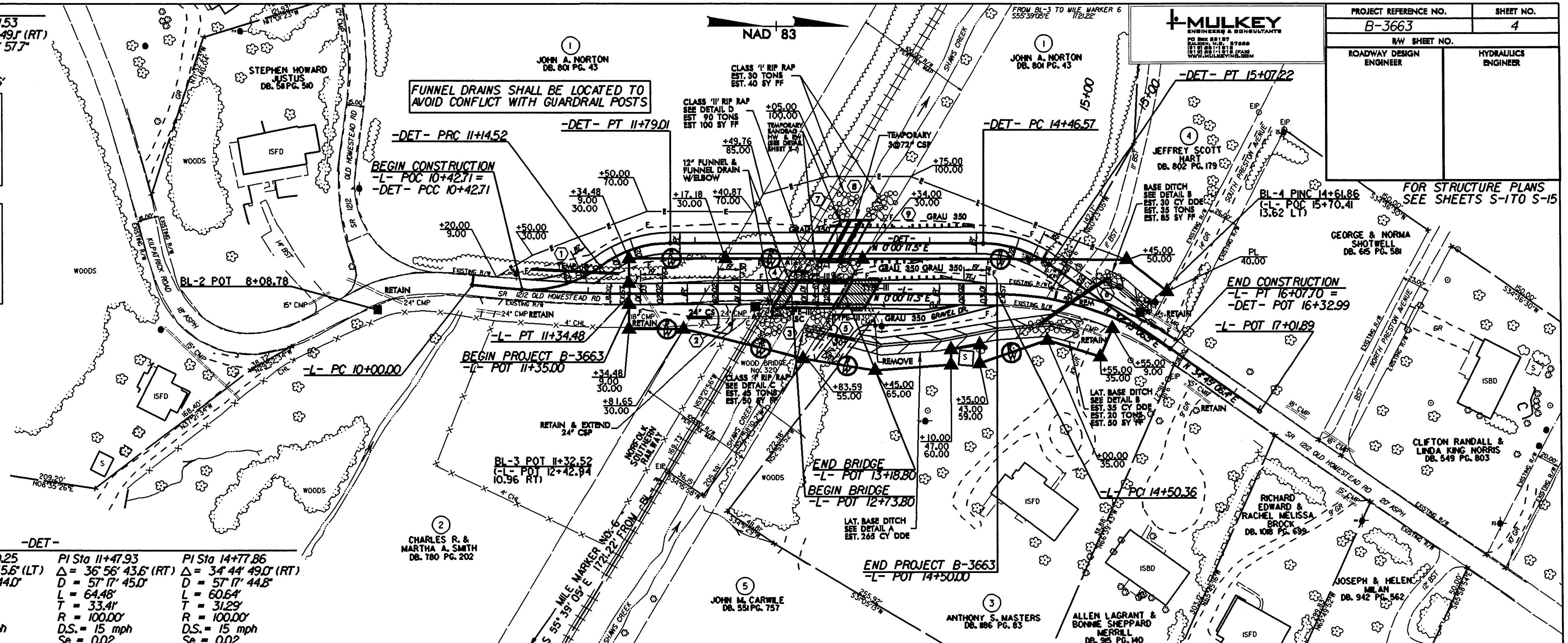
-DET- STA. 15+52 to 16+00 LT
-L- STA. 15+00 to 15+27 RT



-L- STA. 12+85 RT



-L- 20' LT & RT ALONG BRIDGE ON BOTH SIDES OF STREAM



NAD 83
FUNNEL DRAINS SHALL BE LOCATED TO AVOID CONFLICT WITH GUARDRAIL POSTS
-DET- PRC 11+14.52
-DET- PT 11+79.01
-DET- PC 14+46.57
-DET- PT 15+07.22
BEGIN CONSTRUCTION
-L- POC 10+42.71 = -DET- PCC 10+42.71
BL-2 POT 8+08.78
-L- PT 11+34.48
BEGIN PROJECT B-3663
-L- POT 11+35.00
-L- PC 10+00.00
BL-3 POT 11+32.52 (-L- POT 12+42.84 10.96 RT)
END BRIDGE -L- POT 13+18.80
BEGIN BRIDGE -L- POT 12+73.80
END PROJECT B-3663 -L- POT 14+50.00
-L- PC 14+50.36
END CONSTRUCTION
-L- PT 16+07.70 = -DET- POT 16+32.99
-L- POT 17+01.89
BL-4 PINC 14+61.86 (-L- POC 15+70.41 13.62 LT)
FOR STRUCTURE PLANS SEE SHEETS S-1 TO S-15
JOHN A. NORTON DB. 801 PG. 43
STEPHEN HOWARD JUSTUS DB. 54 PG. 510
JEFFREY SCOTT HART DB. 802 PG. 179
GEORGE & NORMA SHOTWELL DB. 615 PG. 581
CHARLES R. & MARTHA A. SMITH DB. 780 PG. 202
JOHN M. CARWILE DB. 551 PG. 757
ANTHONY S. MASTERS DB. 886 PG. 83
ALLEN LAGRANT & BONNIE SHEPPARD MERRILL DB. 915 PG. 140
RICHARD EDWARD & RACHEL MELISSA BROCK DB. 1011 PG. 699
JOSEPH & HELEN MILAN DB. 942 PG. 562
CLIFTON RANDALL & LINDA KING NORRIS DB. 649 PG. 803
SR 1212 OLD HOMESTEAD RD
NORFOLK SOUTHERN RAILWAY
SHAWS CREEK
SOUTH PRESTON AVENUE
WOODS

-DET-

PI Sta 10+21.36	PI Sta 10+80.25	PI Sta 11+47.93	PI Sta 14+77.86
Δ = 1° 57' 14.4" (LT)	Δ = 41° 08' 35.6" (LT)	Δ = 36° 56' 43.6" (RT)	Δ = 34° 44' 49.0" (RT)
D = 4° 34' 28.4"	D = 57° 17' 44.0"	D = 57° 17' 45.0"	D = 57° 17' 44.8"
L = 42.71'	L = 71.81'	L = 64.48'	L = 60.64'
T = 21.36'	T = 37.53'	T = 33.41'	T = 31.29'
R = 1,252.49'	R = 100.00'	R = 100.00'	R = 100.00'
D.S. = N/A	D.S. = 15 mph	D.S. = 15 mph	D.S. = 15 mph
Se = N/A	Se = 0.02	Se = 0.02	Se = 0.02

BM# 1 Elevation = 2101.34'
N = 595092.4940 E = 945899.6210
-BL- Sta. 5+82.34 17.79' Right
8" NAIL SET IN ROOT OF 24" BEECH TREE. 16' +/- SOUTH OF THE CENTERLINE OF A 20' GRAVEL ROAD SR-1212 (OLD HOMESTEAD ROAD).

BM# 2 Elevation = 2087.09'
N = 595569.9510 E = 946017.5580
-BL- Sta. 12+51.48 105.17' Left
-L- Sta. 13+63.21 92.70' Left
8" NAIL SET IN ROOT OF 12" WILD CHERRY. 90' +/- NORTHEAST OF THE CENTERLINE OF SR-1212. 45' +/- FROM THE NORTHEAST CORNER OF A BRIDGE.

PIPE HYDRAULIC DATA
30" RCP

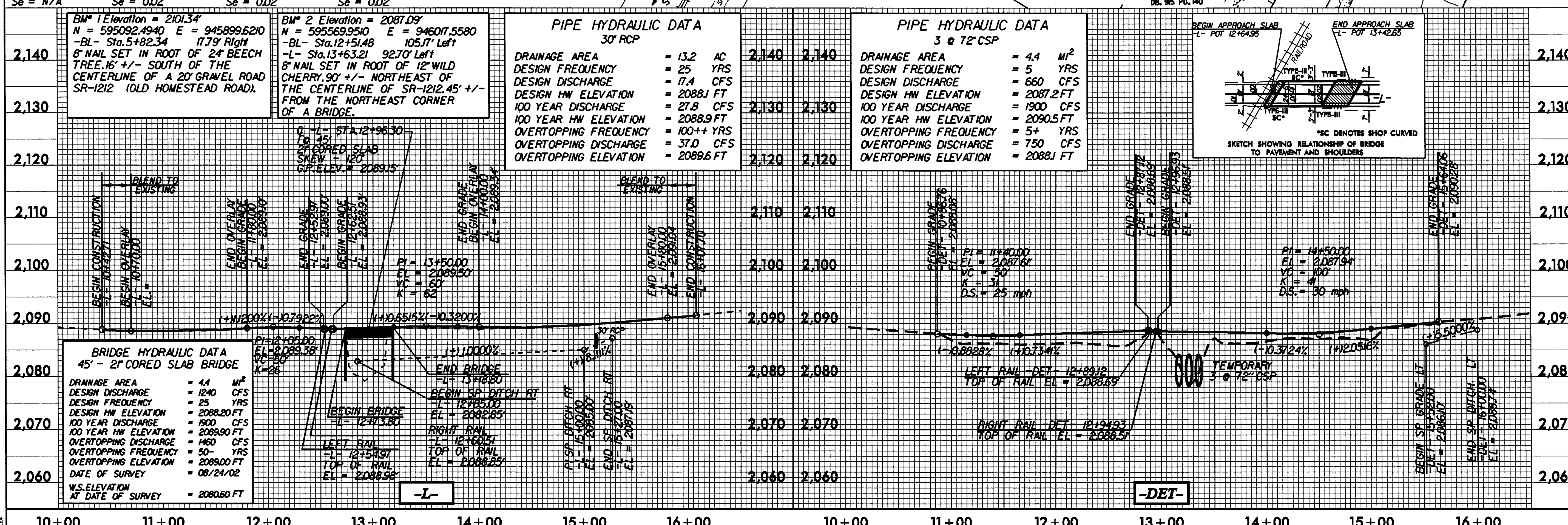
DRAINAGE AREA	= 13.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 17.4	CFS
DESIGN HW ELEVATION	= 2088.1	FT
100 YEAR DISCHARGE	= 27.8	CFS
100 YEAR HW ELEVATION	= 2088.9	FT
OVERTOPPING FREQUENCY	= 100++	YRS
OVERTOPPING DISCHARGE	= 37.0	CFS
OVERTOPPING ELEVATION	= 2089.6	FT

PIPE HYDRAULIC DATA
3 @ 72" CSP

DRAINAGE AREA	= 4.4	MI^2
DESIGN FREQUENCY	= 5	YRS
DESIGN DISCHARGE	= 660	CFS
DESIGN HW ELEVATION	= 2087.2	FT
100 YEAR DISCHARGE	= 1900	CFS
100 YEAR HW ELEVATION	= 2090.5	FT
OVERTOPPING FREQUENCY	= 5+	YRS
OVERTOPPING DISCHARGE	= 750	CFS
OVERTOPPING ELEVATION	= 2088.1	FT

BRIDGE HYDRAULIC DATA
45' - 21" CORED SLAB BRIDGE

DRAINAGE AREA	= 4.4	MI^2
DESIGN DISCHARGE	= 1240	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2088.20	FT
100 YEAR DISCHARGE	= 1900	CFS
100 YEAR HW ELEVATION	= 2089.90	FT
OVERTOPPING DISCHARGE	= 1460	CFS
OVERTOPPING FREQUENCY	= 50-	YRS
OVERTOPPING ELEVATION	= 2089.00	FT
DATE OF SURVEY	= 08/24/02	
W.S. ELEVATION AT DATE OF SURVEY	= 2080.60	FT



2,140
2,130
2,120
2,110
2,100
2,090
2,080
2,070
2,060
℄ -L- STA 12+96.30
℄ 45'
21" CORED SLAB
SKEW = 120°
G.P. ELEV. = 2089.15'
BLEND TO EXISTING
PI = 13+50.00
EL = 2089.50'
VC = 60'
K = 62
PI = 12+05.00
EL = 2089.38'
VC = 50'
K = 26
END BRIDGE -L- 13+18.80
BEGIN BRIDGE -L- 12+73.80
LEFT RAIL -L- 12+54.97 TOP OF RAIL EL = 2088.98'
RIGHT RAIL -L- 12+60.51 TOP OF RAIL EL = 2088.85'
-L-
PI = 11+40.00
EL = 2087.61'
VC = 50'
K = 31
D.S. = 25 mph
PI = 14+50.00
EL = 2087.94'
VC = 100'
K = 41
D.S. = 30 mph
LEFT RAIL -DET- 12+89.12 TOP OF RAIL EL = 2088.69'
RIGHT RAIL -DET- 12+94.93 TOP OF RAIL EL = 2088.51'
TEMPORARY 3 @ 72" CSP
BEGIN APPROACH SLAB -L- POT 12+64.95
END APPROACH SLAB -L- POT 13+42.65
RAILROAD
TYPE-III SC*
TYPE-III
*SC DENOTES SHOP CURVED
SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS
-DET-
10+00
11+00
12+00
13+00
14+00
15+00
16+00

Henderson County
SR 1212 (Old Homestead Road)
Bridge No. 320 Over Shaw Creek
Federal-Aid Project No. BRZ-1212(4)
State Project No. 8.2951801
T.I.P. No. B-3663

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

01-15-03
DATE

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

01/15/03
DATE

for Donald J. Voelker
Acting Division Administrator
Federal Highway Administration

Henderson County
SR 1212 (Old Homestead Road)
Bridge No. 320 Over Shaw Creek
Federal-Aid Project No. BRZ-1212(4)
State Project No. 8.2951801
T.I.P. No. B-3663

CATEGORICAL EXCLUSION

January 2003

Documentation Prepared by:
Barbara H. Mulkey Engineering, Inc.

Clifton T. Register, PE
Project Manager

01/14/2003
Date

For the North Carolina Department of Transportation

John Wadsworth, PE
Project Manager
Consultant Engineering Unit

PROJECT COMMITMENTS

Henderson County
SR 1212 (Old Homestead Road)
Bridge No. 320 Over Shaw Creek
Federal-Aid Project No. BRZ-1212(4)
State Project No. 8.2951801
T.I.P. No. B-3663

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, Design Standards for Sensitive Watersheds, Best Management Practices for Bridge Demolition and Removal, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

The following measures will be carried out for the replacement of Bridge No. 320

Project Development and Environmental Analysis Branch:

A copy of the environmental planning document will be submitted to the Tennessee Valley Authority (TVA) and United States Army Corps of Engineers (COE).

Hydraulics Unit / Structure Design Unit:

This project will be reviewed under Section 26a of the Tennessee Valley Authority (TVA) Act. The final bridge plans, hydraulic analysis of the effects of the replacement structure on the 100-year flood elevation, and notice of compliance with the Historic Preservation Act of 1966 will be forwarded to TVA for approval.

Roadway Design Unit / Division Construction:

Access to the fire departments draft point will be provided.

Henderson County
SR 1212 (Old Homestead Road)
Bridge No. 320 Over Shaw Creek
Federal-Aid Project No. BRZ-1212(4)
State Project No. 8.2951801
T.I.P. No. B-3663

INTRODUCTION: The replacement of Bridge No. 320 is included in the North Carolina Department of Transportation (NCDOT) 2002-2008 Transportation Improvement Program (T.I.P.) and in the Federal-Aid Bridge Replacement Program. The bridge location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED

The NCDOT Bridge Maintenance Unit records indicate that Bridge No. 320 has a sufficiency rating of 39.6 out of a possible 100 for a new structure. Bridge No. 320 is considered structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge No. 320 is located on SR 1212 (Old Homestead Road) over Shaw Creek in Henderson County approximately 1.5 miles (2.4 kilometers) southeast of the community of Horseshoe. Henderson County is a trout county; however, Shaw Creek is not a designated trout stream.

SR 1212 is classified as Rural Local. Land use in the project area consists of isolated residences, limited agricultural properties, and a railroad corridor that extends parallel with Shaw Creek. Development is somewhat restricted by the severe terrain. SR 1212 is a two-lane facility that serves local traffic and terminates in heavily wooded, mountainous terrain.

The existing bridge is a single-span structure with an overall length of 41 feet (12.5 meters) and a clear roadway width of 19.1 feet (5.8 meters). It was constructed in 1961. The bridge consists of a timber deck, steel I-beams, and timber piles, caps, and abutments. Bridge No. 320 has a posted weight limit of ten tons (10.16 metric tons) for single vehicle (SV) and 13 tons (13.2 metric tons) for truck-tractor semi trailer (TTST).

The approach roadway consists of two lanes with a clear roadway width of 18 feet (5.5 meters). Just to the south of the bridge there is a railroad track that parallels Shaw Creek and crosses SR 1212 at a skew of approximately 119-degrees. Approximately 340 feet (104 meters) south of Bridge No. 320, SR 1212 is on curve with a radius of approximately 120 feet (37 meters). Approximately 200 feet (61 meters) to the north of Bridge No. 320 SR 1212 is on a curve with a radius of approximately 255 feet (78 meters). The posted speed limit is 25 miles per hour (mph) [40 kilometers per hour (km/h)].

An overhead power line is located on the upstream (east) side of the existing bridge. Telephone poles are approximately 100 feet (30 meters) north of the bridge. It is anticipated that the utility impacts will be minimal.

The bridge replacement will involve an existing at grade railroad crossing located approximately 20 feet (six meters) south of the existing bridge. This portion of railroad is owned by Norfolk Southern

Railways and is part of their TR-line that runs from Hendersonville to Brevard. One train per day passes over this crossing and it is protected by railroad crossbucks.

There is a gravel area adjacent to the northeast side of the bridge. This is a fire department draft point, which allows water to be drawn from Shaw Creek in the event of a fire in the vicinity.

The 2002 estimated average daily traffic (ADT) volume is 210 vehicles per day (vpd). The projected ADT is 300 vpd by the design year 2025. The percentages of truck traffic are two percent DUALS and one percent TTST.

One accident was reported in the vicinity of Bridge No. 320 during the period from July 1, 1997 to June 31, 2001.

This section of SR 1212 in Henderson County is not part of a designated bicycle route nor is it listed in the T.I.P. as needing incidental bicycle accommodations.

The Henderson County Public School was notified by a scoping letter and a request for the number of buses crossing Bridge No. 320 on a daily basis. Two buses cross Bridge No. 320 twice per day.

III. ALTERNATIVES

A. Project Description

Based on the preliminary hydraulics report the proposed replacement structure for Bridge No. 320 will be a reinforced concrete box culvert with three (3) barrels at 8 feet (2.4 meters) by 8 feet (2.4 meters) and approximately 53 feet (16.2 meters) in length. The culvert will be buried 1-foot (0.3 meters) below the streambed to allow unimpeded fish and other aquatic organisms passage through the crossing. The length and opening size of the proposed structure may increase or decrease as necessary to accommodate peak flows as determined, by a more detailed hydraulic analysis to be performed during the final design phase of the project.

The proposed approach roadway will consist of two 9-foot (2.7-meter) travel lanes and 2-foot (0.6 meter) turf shoulders (See Figure 3). The proposed grade will be approximately the same as the existing roadway.

Railroad crossing signals will be provided to address safety concerns at the crossing.

Access to the fire departments draft point will be provided.

B. Build Alternatives

Alternate A (Preferred) replaces Bridge No. 320 with a triple barrel culvert on the existing alignment. Traffic will be maintained by an on-site detour located west (downstream) of the existing bridge. The detour structure will consist of three 72-inch (1800-millimeter) corrugated metal pipes (CMP) approximately 52 feet (15.8 meters) in length. The on-site detour approaches will consist of two 9-foot travel lanes (2.7 meters) 2-foot (0.6 meter) turf shoulders. The total length of Alternate A is approximately 315 feet (96 meters).

Alternate B replaces Bridge No. 320 with a triple barrel culvert on new alignment west (downstream) of the existing structure. The new alignment will be on approximately a 636-foot (110-meter) radius curve. Traffic will be maintained on the existing roadway and structure during construction. The total length of Alternate B is approximately 885 feet (269.7 meters).

Alternative B was not selected as the preferred alternative because of the impact to existing farmlands.

Alternate C replaces Bridge No. 320 with a triple barrel culvert on new alignment east (upstream) of the existing structure. The north approach will be on approximately a 636-foot (194-meter) radius curve. The south approach, will tie-in to an existing compound curve. Traffic will be maintained on the existing roadway and structure during construction. The total length of Alternate C is approximately 1,195 feet (364 meters).

Alternative C will require a design exception for horizontal curvature. This alternative also has greater impacts to local residential properties.

Alternate D replaces Bridge No. 320 with a triple barrel culvert on new alignment west (downstream) and parallel to the existing structure. The south approach, will tie-in to an existing compound curve. Traffic will be maintained on the existing roadway and structure during construction.

Alternative D was not selected as the preferred alternative due to the impact to the existing farmland.

C. Alternatives Eliminated From Further Study

The "do-nothing' alternative will eventually necessitate removal of the existing structure and closure of SR 1212 (Old Homestead Road). This is not desirable due to the service provided by SR 1212.

Investigation of the existing structure by the Bridge Maintenance Unit indicates that this bridge can not be rehabilitated due to the timber substructure and inadequate load capacity.

D. Preferred Alternative

Alternative A was selected as the preferred alternative because of the following reasons:

- minimization of approach work,
- lessens impacts to potential environmental and archaeological resources,
- and minimizes impacts to residential properties and farmland.

The Division Construction Engineer concurs with Alternative A as the preferred alternative.

E. Anticipated Design Exceptions

A design exception is not anticipated for this project.

IV. ESTIMATED COST

The estimated costs, based on current prices are as follows:

	Alternative A (Preferred)	Alternate B	Alternate C	Alternate D
Structure Removal (Existing)	$ 6,400	$ 6,400	$ 6,400	$ 6,400
Structure Proposed	90,300	74,200	74,200	93,000
Roadway Approaches	181,050	286,900	349,400	251,800
Temp. Detour Structure	22,500	0	0	0
Temp. Detour Approaches	160,500	0	0	0
Miscellaneous and Mobilization	179,250	165,500	194,000	128,800
Engineering Contingencies	110,000	92,000	101,000	70,000
ROW/Const. Easements/Utilities	77,000	60,000	112,000	69,000
TOTAL	$827,000.00	$685,000.00	$837,000.00	$619,000.00

The estimated cost of the project as shown in the 2002-2008 Transportation Improvement Program is $300,000, including $25,000 for right-of-way and $275,000 for construction.

V. NATURAL RESOURCES

A. Methodology

Materials and literature supporting this investigation have been derived from a number of sources including U.S. Geological Survey (USGS) topographic mapping (Horse Shoe, N.C. 7.5 minute quadrangle), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory mapping (NWI) (Horse Shoe, N.C. 7.5 minute quadrangle), Natural Resources Conservation Service (NRCS), soils mapping (SCS 1980), and recent aerial photography.

Plant community descriptions are based on a classification system utilized by N.C. Natural Heritage Program (NHP) (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 exceptions for updated nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach following U.S. Army Corps of Engineers (COE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). Aquatic and terrestrial wildlife habitat requirements and distributions were determined by supportive literature (Martof *et al.* 1980; Potter *et al.* 1980; Webster *et al.* 1985; Menhinick 1991; Hamel 1992; Palmer and Braswell 1995; and Rohde *et al.* 1994). Water quality information for area streams and tributaries was derived from available sources (DWQ 2000a, 2000b). Quantitative sampling was not undertaken to support existing data.

The most current FWS listing of federally protected species with ranges extending into Henderson County (May 31, 2002) was reviewed prior to generation of this report. In addition, NHP records documenting presence of federally or state listed species were consulted before commencing field investigations.

The site was visited on January 23, 2001. The project corridor was walked and visually surveyed for significant features. Actual impacts will be limited to cut-fill boundaries and are expected to be less than those shown for the project corridor. Special concerns evaluated in the field include:
1) potential protected species habitat and
2) wetlands and water quality protection in Shaw Creek.

B. Physiography and Soils

Hendersonville and its surrounding area are underlain by the Chauga Belt geologic formation located immediately east of the Brevard fault zone. Area soils are underlain by intrusive rocks, which were formed approximately 524 million years ago. These rocks consist of Gneiss and Monzonite, which generally weather to form acidic soils. The Chauga Belt is located in the Blue Ridge Physiographic province of North Carolina. Topography is characterized by moderately to steeply sloping terrain with narrow floodplains along drainage ways. The project corridor is located within a relatively level, narrow floodplain valley surrounded by steep valley walls. Elevations in the project corridor range from a high of approximately 2120 feet (646 meters) National Geodetic Vertical Datum (NGVD) along slopes to the north of Shaw Creek, to a low of approximately 2070 feet (630.1 meters) NGVD within the stream channel.

Based on NRCS soil mapping for Henderson County (SCS 1980), the project corridor is underlain by three separate soil series: Codorus loam (*Fluvaquentic Dystrochrepts*), Tate fine sandy loam (*Typic Hapludults*), and Elsinboro loam (*Typic Hapludults*). The majority of the project corridor is composed of the Shaw Creek floodplain, which is mapped as the Codorus Series. A small section south of the floodplain along steeper slopes (seven to 15 percent), is mapped as the Tate Series. Slightly rising slopes north of the floodplain (zero to three percent) are mapped as the Elsinboro series.

The Codorus series is characterized as a moderately well to somewhat poorly drained soil with moderate permeability, which typically occurs in slight depressions within floodplains. This area is subject to frequent flooding events associated with Shaw Creek. The Codorus series is considered non-hydric but having inclusions of hydric soils in depressional areas within the floodplain. Typical depressional areas may contain the Toxaway series or Hatboro series; both are listed as hydric soils for Henderson County (NRCS 1997). Field investigations concluded that no hydric inclusions or depressional features are located within the project corridor.

The Tate series is described as a well drained, moderately permeable soil typically found along smooth foot slopes and lower coves. This soil was mapped along the steeper slopes to the south of the Shaw Creek floodplain where flooding is not a concern. This soil series is considered non-hydric for Henderson County (NRCS 1997).

The Elsinboro series is described as a well-drained and moderately permeable soil. The Elsinboro series is typically found on low stream terraces. This soil was mapped within the residential areas surrounding the floodplain of Shaw Creek and is commonly used for development purposes. Flooding occurs much less frequently in this soil series. This series is considered non-hydric for Henderson County (NRCS 1997).

C. WATER RESOURCES

1. Waters Impacted

The project corridor is located within sub-basin 04-03-02 of the French Broad River Basin (DWQ 2000a). This area is part of USGS Hydrologic Unit 06010105 of the Tennessee Region (Region 06). Structures targeted for replacement span the open water stream associated with Shaw Creek. There is no direct involvement of additional streams or tributaries. This section of Shaw Creek has been assigned Stream Index Number 6-50 by the N.C. Division of Water Quality (DWQ 2000b).

2. Water Resource Characteristics

Shaw Creek is a well-defined, high order, perennial stream with moderate flow over sand, gravel, and cobble substrate. The Shaw Creek contains a wide, flat floodplain encompassed by steep valley slopes. Several low order, intermittent headwater streams drain to Shaw Creek from the adjacent side slopes. Shaw Creek, at the Bridge No. 320, is characterized by a drainage basin encompassing 4.4 square miles (11.4 square kilometers). Within the project corridor, Shaw Creek appears to have been straightened and entrenched. Bank-to-bank width averages approximately 25.0 feet (six meters) wide while bank height averages approximately six feet (1.8 meters) above current water levels. During field investigations, water clarity was good, flow velocity was moderate, and water depth was approximately five to 14 inches (13 to 36 centimeters). Shaw Creek has very low sinuosity but has a well-defined riffle pool structure. Stream banks have been stabilized by the growth of a thick shrub riparian zone.

3. Best Usage Classifications and Water Quality

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 **WS-IV** has been assigned to Shaw Creek. The designation **WS-IV** denotes waters protected as water supplies, which are generally in moderately to highly developed watersheds. Specific local programs to control nonpoint source and stormwater discharge of pollution are required. Water use for the **WS-IV** classification is listed as suitable for Class **C** uses. Class **C** uses include aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation refers to human body contact with waters on an infrequent or incidental basis. No designated High Quality Waters (**HQW**), Outstanding Resource Waters (**ORW**), Water Supply I (**WS-I**), or Water Supply II (**WS-II**) waters occur within 1.0 mile (1.6 kilometer) of the project corridor (DWQ 2000b).

The Division of Water Quality (DWQ) has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed project corridor is summarized in the French Broad River basinwide water quality plan (DWQ 2000a). Based on DWQ data, Shaw Creek is currently not rated; however the French Broad River at the confluence with Shaw Creek is currently **Fully Supporting**. Shaw Creek is not rated for ambient water quality; however, the French Broad River, approximately 12.4 miles (19.9 kilometers) downstream of the confluence with Shaw Creek, has a bioclassification rating of **Good-Fair** based on macroinvertebrate community sampling (DWQ 2000a).

Sub-basin 04-03-02 of the French Broad River Basin overall supports 166 permitted point source dischargers. 16 of these discharges are permitted for greater than 0.5 million gallons per day (1.9 million liters per day). Major discharges within the French Broad River basin are located well down stream and within Hendersonville. The remaining dischargers within the sub-basin consist of minor discharge facilities (less than 0.5 million gallons per day [1.9 million liters per day]). One minor non-municipal discharger has been located approximately 1.0 mile (1.6 kilometer) northwest of the project corridor and one minor facility is located on the French Broad River approximately 0.25 mile (0.40 kilometer) downstream of the Shaw Creek and French Broad River confluence. Both facilities are located downstream of the project corridor. Shaw Creek is not directly impacted by any major or minor dischargers. Major non-point sources of pollution for this sub-basin include agriculture, urban, construction, forestry, onsite wastewater disposal, and atmospheric deposition. Sedimentation and nutrient inputs are major problems associated with non-point source discharges and often result in fecal coliform. Heavy metals, oil from roads and parking lots, and increased nutrient levels in surface waters are other potential nonpoint source concerns (DWQ 2000a).

4. Anticipated Impacts to Water Resources

a. General Impacts

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. The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled "Control of Erosion, Siltation, and Pollution" (NCDOT, Specifications for Roads and Structures). These measures include the use of dikes, berms, silt basins, and other containment measures to control runoff; elimination of construction staging areas in floodplains and adjacent to waterways; re-seeding of herbaceous cover on disturbed sites; management of chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoidance of direct discharges into streams by catch basins and roadside vegetation.

The proposed bridge replacement will allow for continuation of pre-project stream flows in Shaw Creek, thereby protecting the integrity of these waterways. Long-term impacts to adjacent reaches resulting from construction are expected to be negligible. In order to minimize impacts to water resources, **NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters** will be strictly enforced during the entire life of the project.

b. Impacts related to Bridge Demolition and Removal

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in three NCDOT documents entitled "Pre-Construction Guidelines for Bridge Demolition and Removal", "Policy: Bridge Demolition and Removal in Waters of the United States", and "Best Management Practices for Bridge Demolition and Removal" (all documents dated 9/20/99). Guidelines followed for bridge demolition and removal are in addition to those implemented for Best Management Practices for the Protection of Surface Waters.

There is little potential that components of the existing bridge may be dropped into waters of the United States during construction. The bridge is composed completely of timber and steel. **Therefore, no temporary fill is expected to result from bridge removal. This project can be classified as Case 3, where there are no special restrictions other than those outlined in Best Management Practices for Protection of Surface Waters.** NCDOT will coordinate with the various resource agencies during project planning to ensure that all concerns regarding bridge demolition are resolved.

D. BIOTIC RESOURCES

1. Plant Communities

All plant communities within the project corridor have been substantially disturbed. These communities have been separated into two distinct categories: residential/disturbed land and successional field. The differentiating component between these two communities is the presence of regular maintenance throughout the residential/disturbed community. These plant communities are described below.

a. Residential/Disturbed Land

Residential/disturbed land covers a substantial area (approximately 55 percent) of the project corridor. The majority of this plant community is characterized by maintained grasses subject to regular mowing and maintenance such as roadside shoulders and individual yards associated with residential structures. Grasses appear to include planted fescue (*Festuca* sp.) and rye (*Lolium* sp.) with numerous invasive herbaceous species such as crab grass (*Digitaria* sp.), plantain (*Plantago* sp.), and clover (*Trifolium repens*). Residential yards also include woody, ornamental species such as white pine (*Pinus strobus*), eastern red cedar (*Juniperus virginiana*), Norway spruce (*Picea abies*), and azaleas (*Rhododendron* sp.).

b. Abandoned Succesional Field

Approximately 45 percent of the project corridor contains abandoned successional field within the floodplain of Shaw Creek. This area is dominated by herbs and shrubs with a few trees scattered throughout. This community is not regularly maintained but may be affected by occasional overbank flood events. The dominant shrub and herb species include goldenrods (*Solidago* spp.), blackberry (*Rubus* sp.), rose (*Rosa* sp.), rose mallow (*Hibiscus* sp.), dog fennel (*Eupatorium capillifolium*), broom sedge (*Andropogon virginicus*), fox-tail grass (*Setaria* sp.), Queen Anne's lace (*Daucus carota*), clematis vine (*Clematis* sp.), and Japanese honeysuckle (*Lonicera japonica*). Trees identified in this community include black locust (*Robinia pseudo-acacia*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), and black willow (*Salix nigra*). Where this community approaches the banks of Shaw Creek, more mesic species dominate. Additional species along channel banks include tag alder (*Alnus serrulata*), Chinese privet (*Ligustrum sinense*), and black cherry (*Prunus serotina*). Areas adjacent to the railroad appear to be maintained regularly by vegetative clearing; however, a dense thicket of the above mentioned vegetation has grown along portions of the channel bank.

2. Anticipated Impacts to Terrestrial Plant Communities

Plant community areas are estimated based on the amount of each plant community present within the projected right-of-ways and temporary easements. Permanent impacts are considered to be those impacts that occur within the proposed right-of-way. Temporary impacts are those impacts that occur outside the right-of way boundary but within the proposed temporary easement or impacts to communities that will be reestablished. A summary of potential plant community impacts is presented in Table 1.

Table 1: Potential Impacts, Areas are given in acre (hectare).

		Plant community		
Alternative Corridors	Impact Type	Successional Field	Roadside/ **Disturbed Land**	Total
A	Temporary	0.32 (0.13)	0.26 (0.10)	0.58 (0.23)
	Permanent	0.01 (0.004)	0.01 (0.004)	0.02 (0.008)
	Total	0.33 (0.13)	0.27 (0.11)	0.60 (0.24)
B	Temporary	-- --	0.14 (0.05)	0.14 (0.05)
	Permanent	0.48 (0.19)	0.02 (0.008)	0.50 (0.20)
	Total	0.48 (0.19)	0.16 (0.06)	0.64 (0.26)
C	Temporary	-- --	0.52 (0.21)	0.52 (0.21)
	Permanent	-- --	0.38 (0.15)	0.38 (0.15)
	Total	-- --	0.90 (0.36)	0.90 (0.36)
D	Temporary	-- --	0.14 (0.05)	0.14 (0.05)
	Permanent	0.36 (0.15)	0.02 (0.008)	0.38 (0.16)
	Total	0.36 (0.15)	0.16 (0.06)	0.52 (0.21)

No undisturbed plant communities occur within the study corridor. Existing communities are either recovering from a severe disturbance (abandoned successional field) or are actively maintained (residential/disturbed land). Total plant community impacts are greatest for Alternate C because of the dimensions of the proposed alternative; however, Alternate C impacts will be limited to roadside/disturbed community. The majority of impacts associated with Alternative B are permanent.

Permanent impacts to plant communities resulting from bridge replacements are generally restricted to narrow strips adjacent to the existing bridge and roadway approach segments. No area of natural plant community is expected to be impacted by the proposed project. From an ecological perspective, impacts of upgrading existing road facilities are minimal. Minimal additional fragmentation of plant communities will be created, as the project will result primarily in alteration of community boundaries.

3. Wildlife

a. Terrestrial

Due to the dominant surrounding residential/disturbed communities, only species adapted to anthropogenic disturbances are expected to occur in the project corridor. White-tail deer (*Odocoileus virginianus*) and racoon (*Procyon lotor*) tracks were observed. Other mammal species that may frequent the vicinity include Virginia opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), eastern mole (*Scalopus aquaticus*), eastern pipistrelle (*Pipistrellus subflavus*), red bat (*Lasiurus borealis*), and eastern chipmunk (*Tamias striatus*).

Birds observed within or adjacent to the project corridor include the Carolina wren (*Thryothorus ludovicianus*), northern cardinal (*Cardinalis cardinalis*), Carolina chickadee (*Poecile carolinensis*), song sparrow (*Melospiza melodia*), white-throated sparrow (*Zonotrichia albicollis*), blue jay (*Cyanocitta cristata*), northern mockingbird (*Mimus polyglottos*), cedar waxwing (*Bombycilla cedrorum*), and yellow-bellied sapsucker (*Sphyrapicus varius*). Other bird species expected to occur in the project corridor include those habituated to road noise, open areas adjacent to dense thickets, as well as successional fields. These species may include American goldfinch (*Carduelis tristis*), field sparrow (*Spizella pusilla*), eastern towhee (*Pipilo erythrophthalmus*), common yellowthroat (*Geothlypis trichas*), and tufted titmouse (*Baeolophus bicolor*). Species expected to hunt over open areas and roadways, such as turkey vulture (*Cathartes aura*), American kestrel (*Falco sparverius*),and red-tailed hawk (*Buteo jamaicensis*), would also be expected in the project corridor.

No terrestrial reptile or amphibian species were observed during the site visit. Some terrestrial reptiles which might be expected include eastern box turtle (*Terrapene carolina*), rat snake (*Elaphe obsoleta*), American toad (*Bufo americana*), eastern fence lizard (*Sceloporus undulatus*), five-lined skink (*Eumeces fasciatus*), copperhead (*Agkistrodon contortrix*), spring peeper (*Pseudacris crucifer*), and spotted salamander (*Ambystoma maculatum*).

b. Aquatic

Limited surveys resulted in no observations of aquatic species within the project corridor. Aquatic or semi-aquatic species expected to occur include northern water snake (*Nerodia sipedon*), queen snake (*Regina septemvittata*), green frog (*Rana clamitans*), and blackbelly salamander (*Desmognathus quadramaculatus*).

No sampling was undertaken in Shaw Creek to determine fishery potential. Visual surveys of Shaw Creek did reveal the presence of fish, however species were not identified. Fish species which may be present in Shaw Creek include creek chub (*Semotilus atromaculatus*), river chub (*Nocomis micropogon*), northern hog sucker (*Hypentelium nigricans*), white sucker (*Catostomus commersoni*), and redbreast sunfish (*Lepomis auritus*).

c. Anticipated Impacts to Wildlife

Due to the limited extent of infringement on natural communities, the proposed bridge replacement is not expected to result in a substantial loss or displacement of known terrestrial animal populations. No substantial habitat fragmentation is expected since most permanent improvements will be restricted to existing roadside margins. Construction noise and associated disturbances will have short-term impacts on avifauna and migratory wildlife movement patterns. Long-term impacts are expected to be inconsequential for replacement of Bridge No. 320 over Shaw Creek.

Potential impacts to down-stream aquatic habitat may be substantial since all alternatives include replacing the existing bridge with box culverts. Stream integrity will only be retained through 1) proper installation of the box culverts, 2) and restoration of the reach of stream impacted by the temporary detour. Each alternative is designed to result in maintenance of regular stream flow. Short-term impacts associated with turbidity and suspended sediments will affect benthic populations. BMPs and stringent erosion control measures will be implemented to minimize temporary impacts to downstream habitats from increased sediment during construction.

E. SPECIAL TOPICS

1. Waters of the United States

Surface waters within the embankments of Shaw 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). Field investigations indicate that within the project corridor, Shaw Creek exhibits geomorphological features (substrate change, continuos flow, and continuous bed and bank) characteristic of jurisdictional streams.

Field investigations involved the survey for wetlands subject to jurisdictional consideration under Section 404 of the Clean Water Act as "Waters of the United States" within the project corridor (33 CFR section 328.3). These areas 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 (DOA 1987). NWI mapping indicates that the Shaw Creek floodplain does not exhibit characteristics of a wetland system (Cowardin *et al.* 1979), and field investigations confirmed this assessment. No features containing hydric soils, neither a predominance of hydrophytic vegetation, nor evidence of hydrology at or near the surface were identified within the project corridor.

Currently, Bridge No. 320 shades approximately 0.01 acre (0.004 hectare) of "Waters of the United States". Impacts to Shaw Creek associated with the project alternatives will involve fill in the existing channel for permanent structures. Anticipated impacts to linear distance of stream and stream area are shown in Table 2. Linear distance of stream impacted by the replacement culverts is obtained from the length of the culvert, approximately (45 feet [13.7 meters]). Stream area is calculated as culvert length by stream width at the point of impact (16 feet [4.9 meters]).

Table 2: Potential Open Water Impacts (area and linear distance of stream impacts) are approximated based on proposed construction impacts (fill from culverts). The existing Bridge NO. 320 shades approximately 19 linear feet (5.9 meters) of stream and approximately 0.01 acre (0.004 hectare) of stream area. Areas are depicted in acre (hectare) and linear distances are depicted in feet (meters).

Alternative Corridors	Impact Type	Stream Area Acres (Hectares)	Stream Linear distance Feet (Meters)
A	Temporary	0.01 (0.005)	52 (15.8)
	Permanent	0.02 (0.01)	53 (16.2)
	Total	0.03 (0.015)	105 (32)
B	Temporary	-- (--)	-- (--)
	Permanent	0.02 (0.01)	53 (16.2)
	Total	0.02 (0.01)	53 (16.2)
C	Temporary	-- (--)	-- (--)
	Permanent	0.02 (0.01)	53 (16.2)
	Total	0.02 (0.01)	53 (16.2)
D	Temporary	-- (--)	-- (--)
	Permanent	0.014 (0.006)	47 (14.3)
	Total	0.014 (0.006)	47 (14.3)

Each alternative have similar stream impacts and include three barrels to allow normal stream flows and conditions as well as flows associated with major storm water events (floodplain culverts).

2. Permits

This project is being processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The COE has made available Nationwide Permit (NWP) No. 23 (61 FR 65874, 65916; December 13, 1996) for CEs due to minimal impacts expected with bridge construction. DWQ has made available a General 401 Water Quality Certification for NWP No. 23. However, authorization for jurisdictional area impacts through use of this permit will require written notice to DWQ. In the event that NWP No. 23 will not suffice, minor impacts attributed to bridging and associated approach improvements are expected to qualify under General Bridge Permit 031 issued by the Wilmington COE District. Notification to the Asheville COE office is required if this general permit is utilized.

Henderson County is under the jurisdiction of the Tennessee Valley Authority (TVA). This project will be reviewed under Section 26a of the Tennessee Valley Authority Act. The final bridge plans, hydraulic analysis of the effects of the replacement structure on the 100-year flood elevation, and notice of compliance with the Historic Preservation Act of 1966 will be forwarded to TVA for approval at 2611 West Andrew Johnson Hwy Morristown, TN 37814-3295.

3. Mitigation

Compensatory mitigation is not proposed for this project due to the limited nature of project impacts. However, utilization of BMPs is recommended in an effort to minimize impacts. Fill or alteration of more than 150 linear feet (45.8 meters) of stream may require compensatory mitigation in accordance with 15 NCAC 2H .0506(h). A final determination regarding mitigation rests with the COE. If construction of an on site detour proves necessary, DWQ will rewuire remediation measures in accordance with requirements for General 401 Certification 2726/NWP No. 33 (Temporary Construction, Access and Dewatering).

F. Rare and Protected Species

1. Federally Protected Species

Species with the federal classification of Endangered (E), Threatened (T), Threatened due to Similarity of Appearance (T [S/A]), or officially Proposed (P) 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 substantial 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 substantial portion of its range" (16 U.S.C. 1532). The term "Threatened due to Similarity of Appearance" is defined as a species which is not "Endangered" or "Threatened," but "closely resembles an Endangered or Threatened species" (16 U.S.C. 1532). Federally protected species listed for Henderson County (May 31, 2002 FWS list) are presented in Table 3.

Table 3. Federally protected Species listed for Henderson County (May 31, 2002FWS list).

Common Name	Scientific Name	Status*
Bog turtle	*Clemmys muhlenbergii*	T(S/A)
Appalachian elktoe	*Alasmidonta raveneliana*	E
Oyster mussel	*Epioblasma capsaeformis*	E
Swamp pink	*Helonias bullata*	T
Small-whorled pogonia	*Isotria medeoloides*	T
Bunched arrowhead	*Sagittaria fasciculata*	E
Mountain sweet pitcher plant	*Sarracenia jonesii*	E
White irisette	*Sisyrinchium dichotomum*	E

Bog Turtle - The bog turtle is a small turtle reaching an adult size of approximately 3 to 4 inches (8 to 10 centimeters). This otherwise darkly colored species is readily identifiable by the presence of a bright orange or yellow blotch on the sides of the head and neck (Martof *et. al.* 1980). The bog turtle has declined drastically within the northern portion of its range due to over-collection and habitat alteration. As a result, the FWS officially proposed in the January 29, 1997 Federal Register (62 FR 4229) to list bog turtle as threatened within the northern portion of its range, and within the southern portion of its range, which includes North Carolina, the bog turtle is proposed for listing as threatened due to similarity of appearance to the northern population. The proposed listing would allow incidental take of bog turtles in the southern population resulting from otherwise lawful activity.

The bog turtle is typically found in bogs, marshes, and wet pastures, usually in association with aquatic or semi-aquatic vegetation and small, shallow streams over soft bottoms (Palmer and Braswell 1995). In North Carolina, bog turtles have a discontinuous distribution in the Mountains and western Piedmont.

The bog turtle is listed as Threatened due to Similarity of Appearance (T S/A). T S/A species are not subject to Section 7 consultation and a biological conclusion is not required. However, this project is not expected to affect the bog turtle as no bogs, marshes, or wet pastures occur within the project corridor. In addition, Shaw Creek is characterized by moderate to fast flow volumes, with a sand and gravel substrate, which is an unsuitable habitat for bog turtles. NHP records indicate that bog turtles have not been documented within 1.0 mile (1.6 kilometers) of the project corridor and no bog turtles were observed during field surveys.

Appalachian Elktoe - Appalachian elktoe is a small, subovate- to kidney-shaped freshwater mussel that grows to approximately 3.1 inches (8.0 centimeters) in length, 1.4 inches (3.5 centimeters) in height, and 1.0 inch (2.5 centimeters) in width (Clarke 1981). The shell is thin, but not fragile, and exhibits slight inflation along the posterior ridge near the center of the shell. Beaks project only slightly above the hinge line. Lateral teeth are absent; however, the hinge plate of both valves is thickened. Small, pyramidal, compressed pseudocardinal teeth are present, and an interdental projection is present in the left valve. Juveniles are yellowish brown, but the periostracum (outer

shell surface) is thicker and dark brown in adults. Individuals may be variably marked with prominent to obscure greenish rays. The nacre (shell interior) is shiny, blue to bluish white with salmon, pinkish, or brownish coloring in the central portion of the shell and beak cavity.

Appalachian elktoe is endemic to the upper Tennessee River system in the mountains of western North Carolina and eastern Tennessee. In North Carolina, this species may now be restricted to the Little Tennessee and Nolichucky drainages (LeGrand and Hall 1999). Recent N.C. Wildlife Resources Commission surveys have documented this species in the Little Tennessee River in Macon and Swain Counties, Cane River in Yancey County, Nolichucky and North Toe Rivers in Yancey and Mitchell Counties. A new population has recently been found in the Little River near the Henderson-Transylvania County line approximately 8 miles (12.9 kilometers) southwest of the study corridor (USFWS, July 11, 2001). The Pigeon River once supported a population of this mussel, but now is reported to be severely polluted and no longer likely to support the species (TSCFTM 1990). Suitable habitat for Appalachian elktoe is well-oxygenated riffle areas with sand and gravel substrate among cobbles and boulders. Current is usually moderate to swift and depth is no more than 3 feet (0.9 meter) (Parmalee and Bogan 1998).

BIOLOGICAL CONCLUSION: Because habitat for Appalachian elktoe exists within the project corridor, detailed surveys will be necessary to determine whether individuals are present within the impact area. NCDOT Environmental Specialist visited the project site on March 5, 2002. Freshwater mussel surveys using batiscopes were conducted from approximately 1000 feet (304.8 meters) upstream and downstream of the existing bridge. No mussel species were observed. BMPs for the protection of surface waters and HQW guidelines (*Design Standards in Sensitive Watersheds*) will be strictly enforced during the life of the project. **NO EFFECT**

Oyster Mussel - The oyster mussel is a small freshwater mussel that grows to approximately 2.1 inches (7.0 centimeters) in length. The shell is dull to sub-shiny and yellowish-to green-colored with numerous dark green rays. The nacre (inside shell surface) is whitish to bluish in color. Shells of females are slightly inflated and thinner toward the posterior margin. Oyster mussels inhabit small to medium-sized rivers characterized by sand to boulder substrata and moderate to swift currents. This species is sometimes associated with water willow (*Justicia americana*) and is found in gravel pockets between bedrock and swift currents. Four species of fish have been identified as hosts: spotted darter (*Etheostoma maculatum*), redline darter (*E. rufilineatum*), dusky darter (*Percina sciera*), and banded sculpin (*Cottus carollinae*) (FWS 2000)

The oyster mussel is endemic to the Cumberland and Tennessee River drainages in Alabama, Kentucky, Tennessee, Virginia, and North Carolina. Within North Carolina, the species was known to have been abundant in the early 1900s in the upper Tennessee River system of the mountains of western North Carolina and Tennessee. Currently the oyster mussel survives in nine tributaries of the Tennessee and Cumberland River systems in Kentucky, Tennessee, and Virginia. This species is now considered to have been "formerly reported" from the French Broad River (LeGrand and Hall 1999). Much of the historic range of this species has been impounded by the Tennessee Valley Authority and the U.S. Army Corps of Engineers. Other populations have probably been lost due to pollution and siltation. All known populations are small and vulnerable to disturbance.

BIOLOGICAL CONCLUSION: Because habitat for oyster mussel exists within the project corridor, detailed surveys will be necessary to determine whether individuals are present within the impact area. NCDOT Environmental Specialist visited the project site on March 5, 2002.

Freshwater mussel surveys using batiscopes were conducted from approximately 1000 feet (304.8 meters) upstream and downstream of the existing bridge. No mussel species were observed. BMPs for the protection of surface waters and HQW guidelines (*Design Standards in Sensitive Watersheds*) will be strictly enforced during the life of the project. **NO EFFECT**

Swamp Pink: Swamp pink is a perennial, hydrophytic herb in the lily family with simple leaves in a basal rosette. Small scale-like leaves or bracts are found on a hollow flowering stem, which may be 16 inches (40 centimeters) tall in flower and 24 inches (60 centimeters) tall in fruit. The inflorescence consists of pink to lavender flowers borne on a raceme without bracts. Fruits consist of three-lobed papery capsules. Flowering occurs in April and May, with fruits present from May through July. Vegetative portions of the plant may emerge in April and persist through September (Massey *et al.* 1983).

In North Carolina, swamp pink is found in mountain swamps and bogs. Swamp pink occurs along small watercourses in permanently saturated, acidic, organic soils or black muck which is mostly sphagnous (Porter and Wieboldt 1991). Swamp pink does not tolerate prolonged inundation, but can survive infrequent and brief flooding. In North Carolina, the current distribution is restricted to Henderson, Jackson, and Transylvania Counties (Amoroso 1999).

BIOLOGICAL CONCLUSION: Swamp pink occurs in permanently saturated, acidic, organic soils or black muck which is mostly sphagnous. Soils within the project corridor are mineral, well drained soils; therefore, no suitable habitat occurs within the project corridor. NHP records indicate that swamp pink has not been documented within 1.0 mile (1.6 kilometers) of the project corridor, and swamp pink was not observed during field surveys. The proposed project is not expected to adversely impact swamp pink due to the lack of potential habitat. **NO EFFECT**

Small-whorled Pogonia: Small-whorled pogonia is a terrestrial orchid growing to about 10 inches (25 centimeters) high. Five or six drooping, pale dusty green, widely rounded leaves with pointed tips are arranged in a whorl at the apex of the greenish or purplish, hollow stem. Typically a single, yellowish green, nearly stalkless flower is produced just above the leaves; a second flower rarely may be present. Flowers consist of three petals, which may reach lengths of 0.7 inch (1.7 centimeters), surrounded by three narrow sepals up to 1.0 inch (2.5 centimeters) in length. Flower production, which occurs from May to July, is followed by the formation of an erect ellipsoidal capsule 0.7 to 1.2 inches (1.7 to 3.0 centimeters) in length (Massey *et al.* 1983). This species may remain dormant for periods up to 10 years between blooming periods (Newcomb 1977).

Small-whorled pogonia is widespread, occurring from southern Maine to northern Georgia, but is very local in distribution. In North Carolina, this species is found in scattered locations in the Mountains, Piedmont and Sandhills (Amoroso 1999). Small-whorled pogonia is found in open, dry deciduous or mixed pine-deciduous forest, or along stream banks. Examples of areas providing suitable conditions (open canopy and shrub layer with a sparse herb layer) where small-whorled pogonia has been found include old fields, pastures, windrow areas, cutover forests, old orchards, and semi-permanent canopy breaks along roads, streams, lakes, and cliffs (Massey *et al.* 1983). In the Mountains and Piedmont of North Carolina, this species is usually found in association with white pine (*Pinus strobus*) (Weakley 1993). Based on Natural Heritage Program (NHP) records, this species has not been documented to occur within 1.0 mile (1.6 kilometers) of the proposed alternatives.

BIOLOGICAL CONCLUSION: Suitable habitat for small-whorled pogonia does exist within the study corridor; however, based on a NHP record search and a systematic search conducted within areas of suitable habitat and during the flowering period, this project will not affect small-whorled pogonia. ~~**NO EFFECT**~~ ME, NLAA

Bunched Arrowhead: Bunched arrowhead is a perennial, emergent, aquatic herb growing to 14 inches (35 centimeters) in height with simple, basal leaves. Two leaf forms are produced: phyllodes (blade-less) early in the season, and progressively longer, broader leaves later in the season (Kral 1983). The phyllodes are linear, distinctively flattened, spongy-tissue, and are up to 4 inches (10 centimeters) long and 0.8 inches (2 centimeters) wide. Later leaves may be spoon-shaped or narrowly oblanceolate and strap-like, growing to lengths of 14 inches (35 centimeters) and widths of 1.6 inches (4.0 centimeters). Unisexual flowers are borne on an erect flowering stem in two to four whorls, with each whorl subtended by three bracts fused at the base. Fruits consist of a round aggregate of large, distinctively crested achene. Flowering has been reported as occurring in May and June (Kral 1983) to as late as July (Massey *et al.* 1983), with fruits present from May through September (Massey *et al.* 1983). Vegetative portions of the plant may emerge in April and persist through September (Massey *et al.* 1983).

Bunched arrowhead is found rooted in shallow water in or along shallow, sluggish streams flowing through mountain swamps or bogs (Kral 1983). Typical substrate is reported to be siliceous and micaceous silty muck, often with high sulfide content (Kral 1983). The current distribution is restricted to Buncombe and Henderson Counties in the mountains of North Carolina (Amoroso 1999) and Greenville County in the upper Piedmont of South Carolina.

BIOLOGICAL CONCLUSION: Bunched arrowhead occurs in shallow water in or along shallow, sluggish streams flowing through mountain swamps or bogs. No wetlands or bogs occur within the project corridor, and Shaw Creek exhibits moderate to high flow velocities; therefore, no suitable habitat occurs within the project corridor. NHP records indicate that bunched arrowhead has not been documented within 1.0 mile (1.6 kilometers) of the project corridor, and bunched arrowhead was not observed during the field visit. The proposed project is not expected to adversely impact bunched arrowhead due to the lack of potential habitat. **NO EFFECT**

Mountain Sweet Pitcher Plant: Mountain sweet pitcher plant is an insectivorous, perennial, hydrophytic herb growing to 30 inches (76 centimeters) in height with hollow, trumpet-shaped leaves. The pitcher chamber is narrow but expands sharply along the upper quarter of the length. An ascending, cordate-shaped hood is held high over the exposed pitcher chamber orifice. Solitary flowers are produced on erect flowering stems. Petals are dark red to maroon on the outside, with the inner surface often yellow-green tinged with red. Flowering has been reported from April to June with fruits formed by August. Vegetative portions of the plant may emerge in April and persist through August (Massey *et al.* 1983). Mountain sweet pitcher plant is treated as a subspecies of the more common sweet pitcher plant (*S. rubra*).

Mountain sweet pitcher plant is found in mountain bogs and along streams. The current distribution is restricted to Buncombe, Henderson, and Transylvania Counties in the mountains of North Carolina (Amoroso 1999) and Greenville and Pickens Counties in western South Carolina.

BIOLOGICAL CONCLUSION: Mountain sweet pitcher plant occurs in mountain bogs and along streams. No wetlands or bogs occur within the project corridor and Shaw Creek exhibits moderate to high flow velocities; therefore, no suitable habitat occurs within the project corridor. NHP records indicate that mountain sweet pitcher plant has not been documented within 1.0 mile (1.6 kilometers) of the project corridor, and mountain sweet pitcher plant was not observed during field surveys. The proposed project is not expected to adversely impact mountain sweet pitcher plant due to the lack of potential habitat. **NO EFFECT**

White Irisette: White irisette is a perennial herb in the iris family that grows to 16 inches (40 centimeters) tall. Stem leaves are at least as wide as the winged stem and may reach 5.5 inches (14.0 centimeters) long and 0.2 inches (0.5 centimeters) wide. Basal leaves reach one-third to one-half the height of the plant and may be up to 7.5 inches (19.0 centimeters) long and 0.14 inches (0.36 centimeters) wide. White irisette differs from other blue-eyed grasses by having three to five nodes with successively shorter internodes between dichotomous branches (FWS 1995). Four to six flowers with white, recurved perianth units are borne per spathe. Flowering occurs from late May through July.

White irisette is found in dry to mesic, open oak-hickory forest on mid-elevation mountain slopes at elevations from 1300 to 3300 feet (400 to 1000 meters) with aspects ranging primarily from southeast to southwest (FWS 1995). White irisette grows in shallow, circumneutral soils, especially over weathered amphibolite. White irisette is reported to grow best on regularly disturbed sites, such as power lines, roadsides, and woodland edges, which mimic suppressed natural disturbances and maintain open habitat (FWS 1995). The current distribution is restricted to Forsyth, Henderson, Polk, and Rutherford Counties in North Carolina (Amoroso 1999) and Greenville County in western South Carolina. Based on NHP records, this species has not been documented to occur within 1.0 mile (1.6 kilometers) of the proposed alternatives.

BIOLOGICAL CONCLUSION: Suitable habitat for white irisette does exist within the study corridor; however, based on a NHP record search and a systematic search conducted within areas of suitable habitat and during the flowering period, this project will not affect white irisette. ~~**NO EFFECT**~~ MENLTAA

Federal Species of Concern - The May 31, 2002 FWS 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 Henderson County are presented in Table 4. NHP files have no documentation of FSC listed species within the project corridor or within 1.0 mile (1.6 kilometers) of the project corridor.

Table 4. Federal Species of Concern listed for Henderson County (May 31, 2002 FWS list).

Common Name	Scientific Name	Potential Habitat	State Status*
Green salamander	*Aneides aeneus*	no	E
Hellbender	*Cryptobranchus alleganiensis*	yes	SC
Eastern small-footed myotis	*Myotis leibii*	yes	SC
Southern Appalachian woodrat	*Neotoma floridana haematoreia*	yes	SC
French Broad crayfish	*Cambarus reburrus*	yes	W2
Tennessee heelsplitter	*Lasmigona holstonia*	yes	E
Diana fritillary butterfly	*Speyeria diana*	no	SR
Schweinitz's sedge	*Carex schweinitzii*	no	E
Mountain heartleaf	*Hexastylis contracta*	no	E
French Broad heartleaf	*Hexastylis rhombiformis*	no	C
Butternut	*Juglans cinerea*	no	W5
Rough rush	*Juncus caesariensis*	no	E
Gray's lily	*Lilium grayi*	no	T-SC
Fraser's loosestrife	*Lysimachia fraseri*	yes	E
Large-flowered Barbara's buttons	*Marshallia grandiflora*	no	C
Sweet pinesap	*Monotropsis odorata*	yes	C
Bog asphodel	*Narthecium americanum*	no	E
White fringeless orchid	*Plantantherea integrilabia*	no	E
Divided-leaf ragwort	*Senecio millefolium*	no	T
Mountain catchfly	*Silene ovata*	yes	C

2. State Protected Species

Plant and animal species which are on the North Carolina state list as Endangered (E), Threatened (T), Special Concern (SC), Candidate (C), Significantly Rare (SR), Proposed (P), NC Plant Watch List: rare ,but taxonomically questionable (W2), NC Plant Watch List: rare because of severe decline (W5), (Amoroso 1999; LeGrand and Hall 1999) receive limited protection under the North Carolina Endangered Species Act (G.S. 113-331 *et seq.*) and the North Carolina Plant Protection Act of 1979 (G.S. 106-202 *et seq.*). NHP records indicate that no state listed species have been documented to occur within 1.0 mile (1.6 kilometers) of the project corridor.

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 Section 106, codified at 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in 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

A field survey of the Area of Potential Effects (APE) was conducted on September 28, 2000. All structures within the APE were photographed, and later reviewed by the State Historic Preservation Office (HPO). In a concurrence form dated June 18, 2002 the State Historic Preservation Officer (SHPO) concurred that there are no historic architectural resources either listed on or eligible for listing in the National Register of Historic Places within the APE. A copy of the concurrence form is included in the Appendix.

C. Archaeology

The SHPO, in a memorandum dated February 8, 2001 stated, "We have conducted a search of our files and are aware of no structures of historical or architectural importance within the planning area... There are no recorded archaeological sites within the proposed project area." A copy of the SHPO memorandum is included in the Appendix.

VII. Environmental Effects

The project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safer traffic operations.

The project is a Federal "Categorical Exclusion" due to its limited scope and lack of significant 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 regulation. No significant change in land use is expected to result from construction of the project.

No adverse impact on families or communities is anticipated. Right of way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

In compliance with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations) a review was conducted to determine whether minority or low-income populations were receiving disproportionately high and adverse human health or environmental impacts as a result of this project. The investigation determined the project would not disproportionately impact any minority or low-income populations.

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.

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

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). Since the proposed bridge will be replaced at the existing location the Farmland Protection Policy does not apply.

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

This project is an air quality "neutral" project, so it is not required to be included the regional emission analysis (if applicable) and a project level CO analysis is not required.

The traffic volumes will not increase or decrease because of this project. There are no receptors located in the immediate project area. The project's impact on noise and air quality will not be substantial.

Noise levels could increase during construction but will be temporary. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise (23 CFR Part 772) and for air quality (1990 CAAA and NEPA) and no additional reports are required.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Water Quality, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no hazardous waste sites in the project area

Henderson County is not currently participating in the National Flood Insurance Program. The project site on Shaw Creek is located in a designated flood hazard zone. Attached is a copy of the Flood Insurance Rate Map, Figure 5, on which are shown the approximate limits of the 100-year flood plain in the vicinity of the project.

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

VIII. Public Involvement

Efforts were undertaken early in the planning process to contact local officials to involve them in the project development with scoping letters. Scoping letters were also sent to various agencies including, the Tennessee Valley Authority (TVA) and the US Army Corps of Engineers (COE) on December 6, 2000.

An on-site meeting was held at the request of Mr. John Norton, Property Owner, to discuss the impacts to his property. Mr. Norton explained his objections to the previously selected Alternative B. He has a small farming operation and the affected fields are extremely important in providing feed for his live stock. He asked that NCDOT take his concerns in to consideration and reevaluate the alternatives.

NCDOT agreed to reevaluate replacing the bridge on site and to minimize the on-site detour. Also, a new alternative (Alternative D) was evaluated, replacing the bridge downstream on a parallel to and as close to the existing bridge as possible. On Monday, December 16, 2002, a second alternative selection meeting was held and Alternative A was selected as the preferred alternative by all in attendance. Alternative A minimizes impacts to Mr. Norton's farmland and minimizes the amount of approach work.

IX. Agencies Comments

U. S. Fish and Wildlife Services
Comment: *"Our records for Henderson County indicate no known locations of listed species in the project areas."*

Response: A field survey was conducted for the bunch arrowhead and mountain sweet pitcher plant no occurrences of these species were observed. **Biological conclusion: "NO EFFECT".**

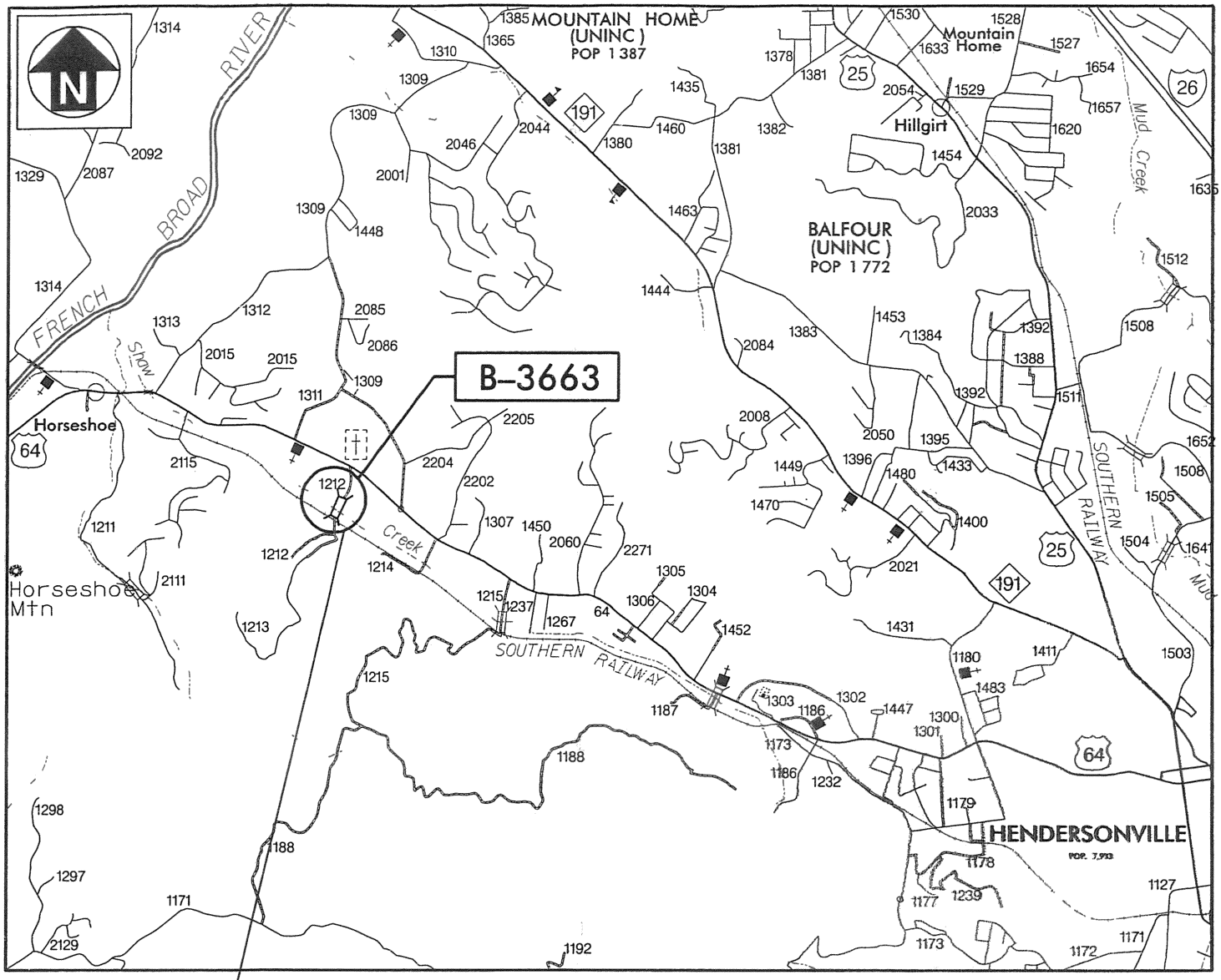
Other Comments: *Based on available information, riparian areas within the project corridor constitute potential habitat for* ***Appalachian Elktoe*** *and* ***Oyster Mussel.***

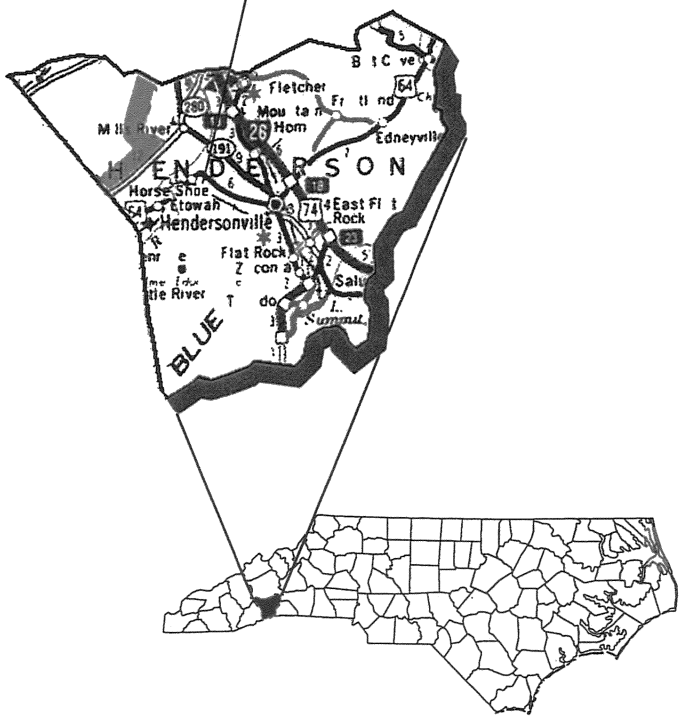
Response: NCDOT Environmental Specialist visited the project site on March 5, 2002. Freshwater mussel surveys using batiscopes were conducted from approximately 1000 feet (304.8 meters) upstream and downstream of the existing bridge. No mussel species were observed. **NO EFFECT**

NCDENR-Division of Water Quality
Comment: *"...if the new structure is to be a culvert, it should be countersunk to allow unimpeded fish and aquatic organisms passage through the crossing."*

Response: The culvert will be buried one-foot (0.3-meter) below the surface of the streambed.

US Army Corps of Engineers (COE)
Comment: *December 12, 2001 "...look forward to reviewing the CE document when they are available."*
Response: NCDOT will send copy of final CE to the US Army Corps of Engineers.





North Carolina Department of Transportation
Project Development & Envrionmental Analysis

HENDERSON COUNTY
BRIDGE NO 320 ON SR 1212
OVER SHAW CREEK
B-3663

0 kilmt 16 kilmt 32
0 mil 10 mil 20

FIGURE 1

B-3663
ALTERNATE A
(Preferred)

NAD 83

SHAW CREEK

℄ STA 11+35.00 BEGIN STATE PROJECT NO. 8.2951801
℄ STA 11+35.00 BEGIN F.A. PROJECT NO. BRZ-1212(4)

℄ STA 14+50.00 END STATE PROJECT NO. 8.2951801
℄ STA 14+50.00 END F.A. PROJECT NO. BRZ-1212(4)

10:00

TEMP. SANDBAG HW

3 @ 72" CMP

16:00

RCBC
3@ 8' X 8'

BEGIN DETOUR
℄ PDC 10+27.71
DET- PCC 10+42.71

END DETOUR
℄ PT 16+07.70
DET- EOT 15+40.90

Norfolk Southern Railroad

SHAW CREEK

SR 1212 (Old Homestead Road)

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

North Carolina Department Of
Transportation
Project Development &
Environmental Analysis

HENDERSON COUNTY
BRIDGE NO. 320
ON SR 1212 (OLD HOMESTEAD ROAD)
OVER SHAW CREEK
B-3663

50' 0 50'
15.2 m SCALE 15.2 m

FIGURE 2

B-3663

ALTERNATE B

NAD 83

SHAW CREEK

RCBC
3@ 8' X 8'

15:00

20:00

BEGIN CONSTRUCTION
-L- POT 12+31.00

END CONSTRUCTION
-L- POT 21+15.00

SR 1212 (Old Homestead Road)

Norfolk Southern Railroad

SHAW CREEK

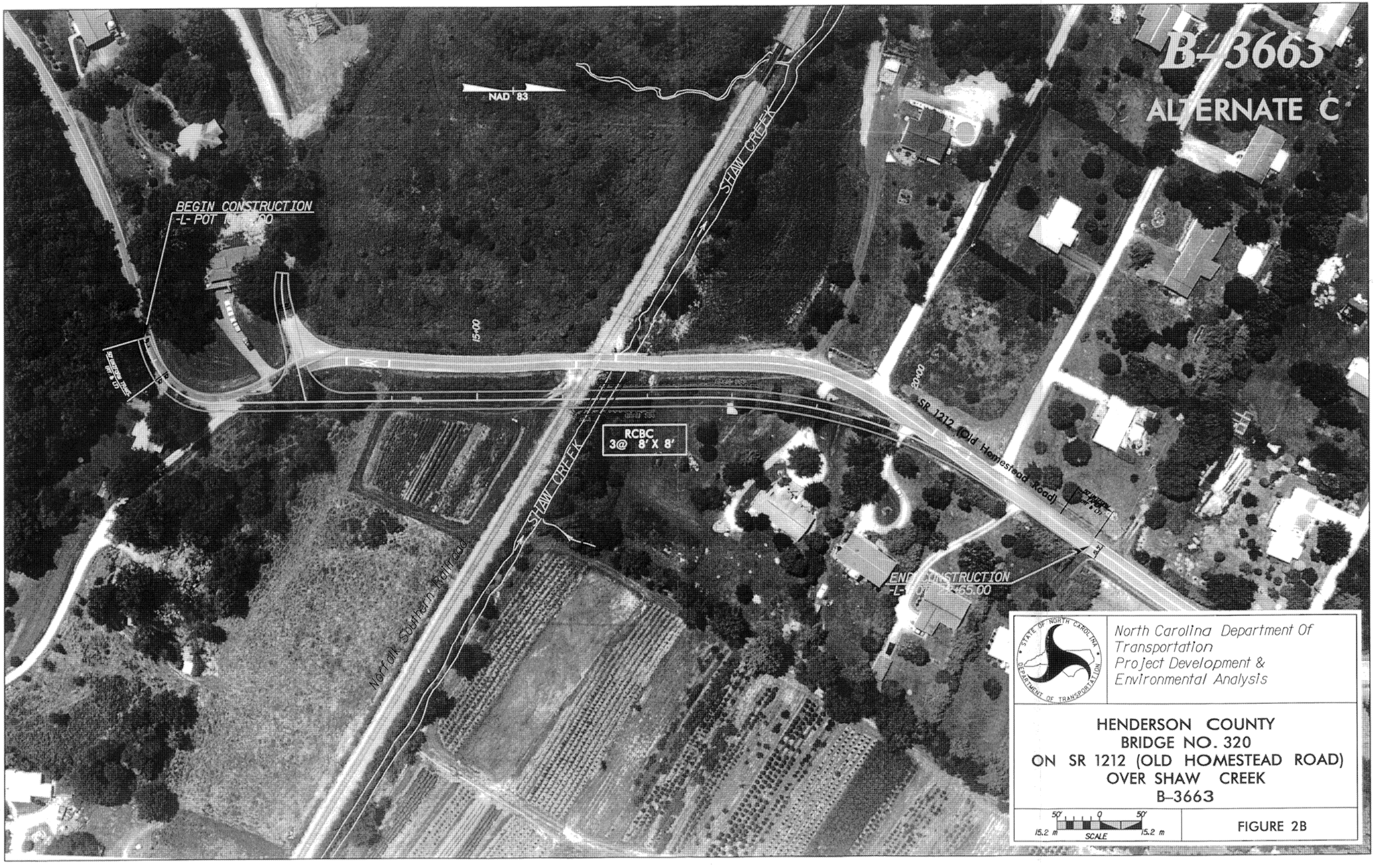
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

North Carolina Department Of
Transportation
Project Development &
Environmental Analysis

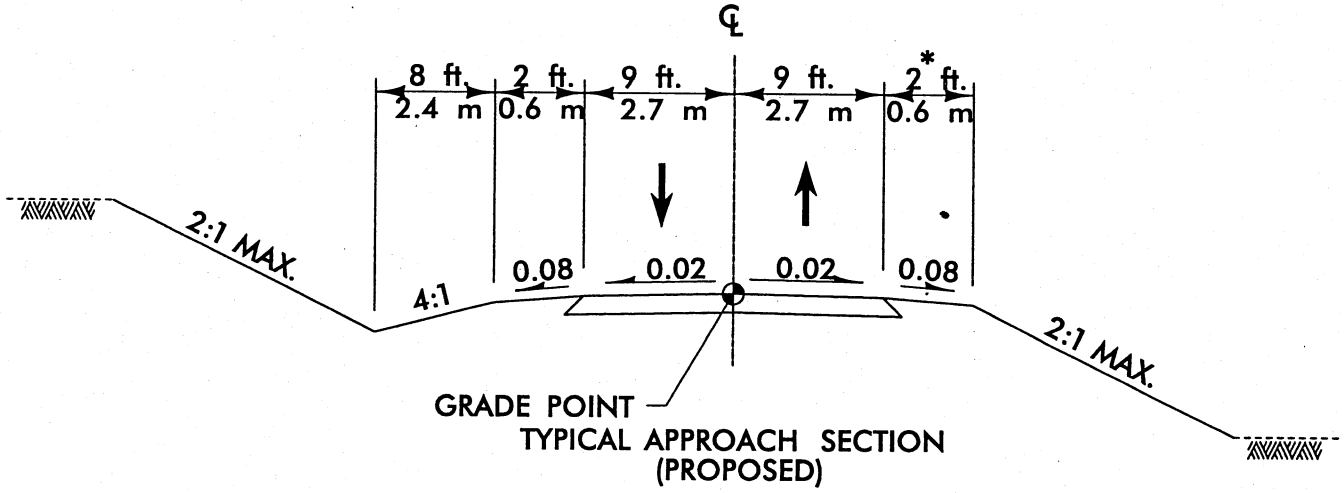
HENDERSON COUNTY
BRIDGE NO. 320
ON SR 1212 (OLD HOMESTEAD ROAD)
OVER SHAW CREEK
B-3663

50' 0 50'
15.2 m SCALE 15.2 m

FIGURE 2A


B-3663
ALTERNATE C
NAD 83
SHAW CREEK
BEGIN CONSTRUCTION
-L- POT
15-00
RCBC
3@ 8' X 8'
SHAW CREEK
Norfolk Southern Railroad
SR 1212 (Old Homestead Road)
END CONSTRUCTION
-L- POT
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
North Carolina Department Of
Transportation
Project Development &
Environmental Analysis
HENDERSON COUNTY
BRIDGE NO. 320
ON SR 1212 (OLD HOMESTEAD ROAD)
OVER SHAW CREEK
B-3663
50' 0 50'
15.2 m SCALE 15.2 m
FIGURE 2B


B-3663
ALTERNATE D
NAD 83
SHAW CREEK
15+00
10+00
-L- PT 13+00.68
-L- PT 17+38.30
Remove Existing Roadway & Fill
RCBC
3@ 8' X 8'
SR 1212 (Old Homestead Road)
Norfolk Southern Railroad
-L- STA 10+56.00 BEGIN STATE PROJECT NO. 8.2951801
-L- STA 10+56.00 BEGIN F.A. PROJECT NO. BRZ-1212(4)
-L- STA 19+00.00 END STATE PROJECT NO. 8.2951801
-L- STA 19+00.00 END F.A. PROJECT NO. BRZ-1212(4)
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
North Carolina Department Of
Transportation
Project Development &
Environmental Analysis
HENDERSON COUNTY
BRIDGE NO. 320
ON SR 1212 (OLD HOMESTEAD ROAD)
OVER SHAW CREEK
B-3663
50' 0 50'
15.2 m SCALE 15.2 m
FIGURE 2C



TYPICAL APPROACH SECTION
(PROPOSED)

* WHEN GUARDRAIL IS WARRANTED, THE MINIMUM SHOULDER WIDTH IS INCREASED TO 7.0' (2.1 m)

(EXISTING) 2002 ADT = 210 LOS A
(CONST. YR.) 2004 ADT = 220 LOS A
(DESIGN YR.) 2025 ADT = 300 LOS B
DUAL 2%
TTST 1%

FUNCTIONAL CLASSIFICATION : RURAL LOCAL

3/7/01

North Carolina Department of Transportation
Project Development and Environmental Analysis

HENDERSON COUNTY
BRIDGE NO. 320 ON SR 1212
OLD HOMESTEAD ROAD
OVER SHAW CREEK
TIP NO: B-3663

FIGURE 3

Looking south along SR 1212 across Bridge No. 320.

Looking north along SR 1212 across Bridge No. 320.

Upstream side view of Bridge No. 320.

Figure 4

FEMA Flood Map
Henderson County

B-3663

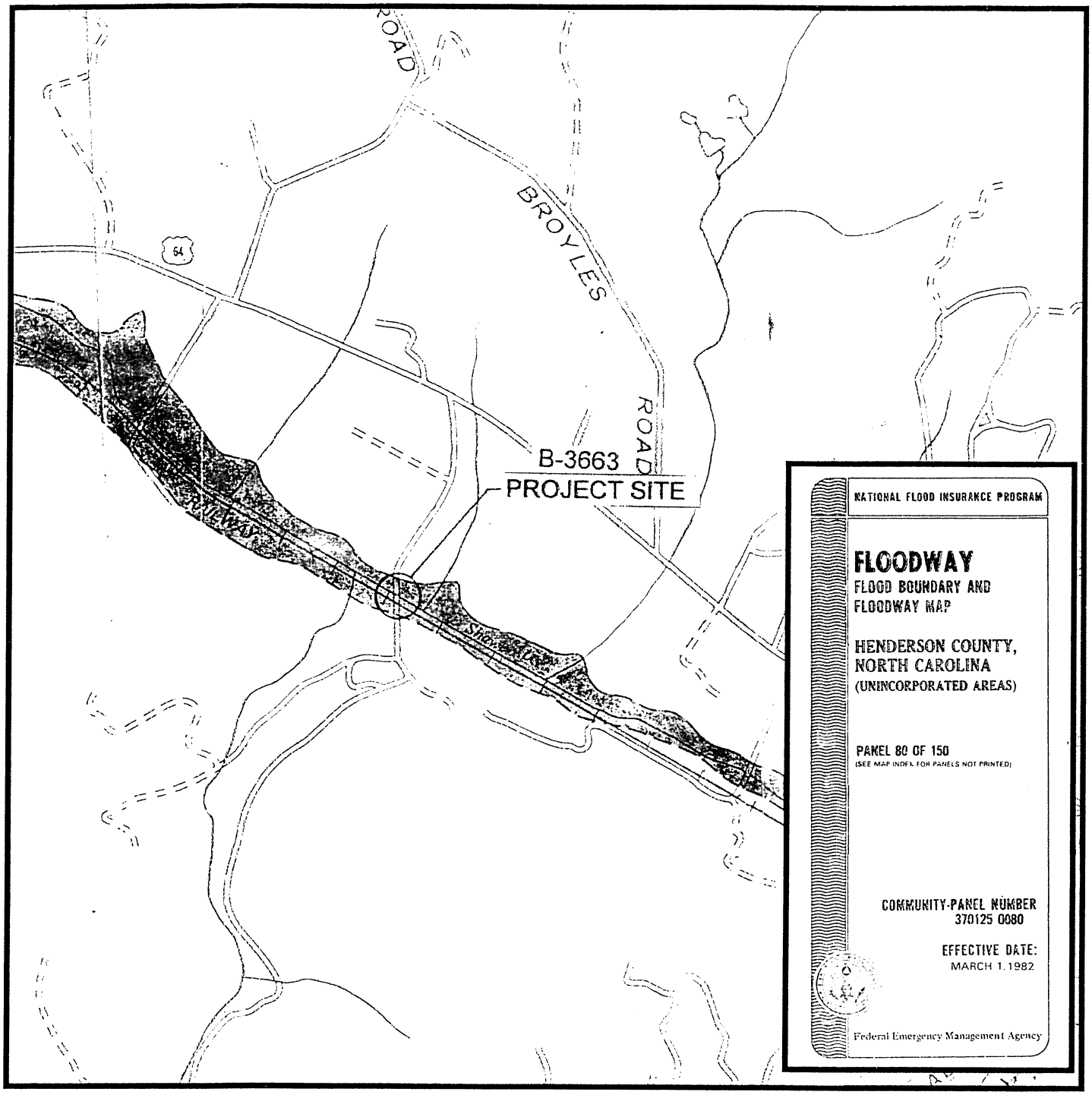


Figure 5

APPENDIX

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville North Carolina 28801

February 7 2001

Mr William D Gilmore P E Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh North Carolina 27699 1548

Dear Mr Gilmore

Subject Bridge Replacements Avery County (B 3808) Henderson County (B 3475 B 3662 B 3663 B 3664 B 3665 B 3666 and B 3857) McDowell County (B 3673) and Watauga County (B 3709 and B 3710)

We have reviewed the subject projects and are providing the following comments in accordance with the Fish and Wildlife Coordination Act as amended (16 U S C 661 667e) and Section 7 of the Endangered Species Act of 1973 as amended (16 U S C 1531 1543) (Act)

The information we received for these 11 projects does not include descriptions of the structures that will replace the existing bridges and it does not include any environmental information regarding the streams or whether habitat assessments or surveys for rare species have been conducted for any of the projects Therefore our comments are limited primarily to the known locations of listed species and species of Federal concern When the categorical exclusions are prepared and more information is available regarding environmental effects we can then offer more substantive comments

Enclosed is a list of species from the four counties involved This list provides the names of species that are on the Federal List of Endangered and Threatened Wildlife and Plants as well as species of Federal concern Federal species of concern are not legally protected under the Act and are not subject to any of its provisions including Section 7 unless they are formally proposed or listed as endangered or threatened We are including these species in our response to give you advance notification and to request your assistance in protecting them if any are found in the vicinity of these projects Our records indicate the following

Henderson County

Project B 3475 Known locations of the federally endangered bunched arrowhead (*Sagittaria fasciculata*) and the federally threatened small whorled pogonia (*Isotria medeoloides*) occur near this project We recommend surveying the project area for these species prior to any further planning or on the ground activities If these species occur in the project area further consultation will be required

Project B 3665 Known locations of the federally endangered bunched arrowhead (*Sagittaria fasciculata*) and mountain sweet pitcher plant (*Sarracenia jonesii*) occur in the vicinity of this project We recommend surveying the project area for these species prior to any further planning or on the ground activities If these species occur in the project area further consultation will be required

Projects B 3662 and B 3664 These projects occur in the general vicinity of Mud Creek an area with several occurrences of bunched arrowhead (*Sagittaria fasciculata*) and mountain sweet pitcher plant (*Sarracenia jonesii*) Currently there are no known locations of these species in the immediate project area However a lack of any systematic surveys throughout the Mud Creek drainage may account for the apparent absence of these species In the areas affected by these projects we recommend conducting habitat assessments and surveying any suitable habitat for these species

Projects B-3666, B 3663, and B 3857 Our records for Henderson County indicate no known locations of listed species in the project areas However we recommend conducting habitat assessments and surveying any suitable habitat in the project areas for these species prior to any further planning or on the ground activities to ensure that no adverse impacts occur

McDowell County

Project B 3673 Our records indicate known locations for the bog turtle (*Clemmys muhlenbergii*) near this project Habitat assessments and surveys of suitable habitat should be conducted in the project area for this species. If the bog turtle occurs in the project area, it should be protected from impacts

Watauga and Avery Counties

Projects B 3709, B 3710, and B 3808 Although our records for Watauga and Avery Counties indicate no known locations of listed species in the project areas we recommend conducting habitat assessments in the affected area of each project Any suitable habitat should be surveyed for these species prior to any further planning or on the ground activities to ensure that no adverse impacts occur

We are interested in the types of structures that will replace these existing bridges and would recommend spanning structures preferably bridges in all cases We look forward to reviewing the completed categorical exclusion documents

If you have questions about these comments please contact Ms Marella Buncick of our staff at 828/258 3939 Ext 237 In any future correspondence concerning this project please reference our Log Number 4 2 01 278

Sincerely,

for Brian P Cole
State Supervisor

Enclosure

cc

Ms Stacy Harris Project Development and Environmental Analysis Branch North Carolina Department of Transportation 1548 Mail Service Center Raleigh NC 27699 1548

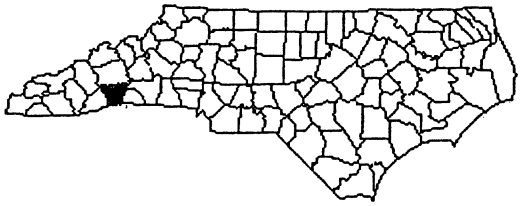
Mr Owen Anderson Mountain Region Coordinator North Carolina Wildlife Resources Commission 20830 Great Smoky Mtn Expressway Waynesville NC 28786

Ms Cynthia Van Der Wiele North Carolina Department of Environment and Natural Resources Division of Water Quality Wetlands Section 1621 Mail Service Center Raleigh NC 27699 1621

Updated 05/31/2002

U.S. Fish & Wildlife Service

HENDERSON COUNTY



Common Name	Scientific Name	Status
Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Eastern small footed myotis	*Myotis leibii*	FSC
Green salamander	*Aneides aeneus*	FSC
Hellbender	*Cryptobranchus alleganiensis*	FSC
Southern Appalachian woodrat	*Neotoma floridana haematoreia*	FSC
Invertebrates		
Appalachian elktoe	*Alasmidonia raveneliana*	Endangered
Diana fritillary butterfly	*Speyeria diana*	FSC*
French Broad crayfish	*Cambarus reburrus*	FSC*
Oyster mussel	*Epioblasma capsaeformis*	Endangered
Tennessee heelsplitter	*Lasmigona holstonia*	FSC
Vascular Plants		
Bog asphodel	*Narthecium americanum*	C1*
Bunched arrowhead	*Sagittaria fasciculata*	Endangered
Butternut	*Juglans cinerea*	FSC
Divided leaf ragwort	*Senecio millefolium*	FSC*
Fraser s loosestrife	*Lysimachia fraseri*	FSC**
French Broad heartleaf	*Hexastylis rhombiformis*	FSC
Gray s lily	*Lilium grayi*	FSC
Large flowered Barbara s buttons	*Marshallia grandiflora*	FSC*
Mountain catchfly	*Silene ovata*	FSC
Mountain heartleaf	*Hexastylis contracta*	FSC
Mountain sweet pitcher plant	*Sarracenia jonesii*	Endangered
Rough rush	*Juncus caesariensis*	FSC
Schweinitz s sedge	*Carex schweinitzii*	FSC
Small whorled pogonia	*Isotria medeoloides*	Threatened

Sweet pinesap	*Monotropsis odorata*	FSC*
White fringeless orchid	*Plantantherea integrilabia*	FSC
White irisette	*Sisyrinchium dichotomum*	Endangered

KEY

Status	Definition
Endangered	A taxon in danger of extinction throughout all or a significant portion of its range
Threatened	A taxon likely to become endangered within the foreseeable future throughout all or a significant portion of its range
Proposed	A taxon proposed for official listing as endangered or threatened
C1	A taxon under consideration for official listing for which there is sufficient information to support listing
FSC	A Federal species of concern a species 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)
T(S/A)	Threatened due to similarity of appearance (e g American alligator) a species that is threatened due to similarity of appearance with other rare species and is listed for its protection These species are not biologically endangered or threatened and are not subject to Section 7 consultation
EXP	A taxon that is listed as experimental (either essential or nonessential) Experimental nonessential endangered species (e g red wolf) are treated as threatened on public land for consultation purposes and as species proposed for listing on private land

Species with 1 2 3 or 4 asterisks behind them indicate historic obscure or incidental records

*Historic record the species was last observed in the county more than 50 years ago

**Obscure record the date and/or location of observation is uncertain

***Incidental/migrant record the species was observed outside of its normal range or habitat

****Historic record obscure and incidental record

[1]In the November 4 1997 Federal Register (55822 55825) the northern population of the bog turtle (from New York south to Maryland) was listed as T (threatened) and the southern population (from Virginia south to Georgia) was listed as T(S/A) (threatened due to similarity of appearance) The T(S/A) designation bans the collection and interstate and international commercial trade of bog turtles from the southern population The T(S/A) designation has no effect on land management activities by private landowners in North Carolina part of the southern population of the species

Harris

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L S Brook Administrator

Michael F Easley Governor
Lisbeth C Evans Secretary

Division of Archives and History
Jeffrey J Crow Director

February 8 2001

MEMORANDUM

To: William D Gilmore P E Manager
Project Development and Environmental Analysis Branch

From: David Brook RSR for David Brook
Deputy State Historic Preservation Officer

Re: Replace Bridge #320 on SR 1212 over Shaws Creek B 3663 Henderson County ER 01 8266

Thank you for your letter of December 6 2000 concerning the above project

We have conducted a search of our files and are aware of no structures of historical or architectural importance located within the planning area However since a survey has not been conducted in over a decade there may be structures of which we are unaware located within the planning area

There are no recorded archaeological sites within the proposed project area If the replacement is to be located along the existing alignment it is unlikely that significant archaeological resources would be affected and no investigations would be recommended If however the replacement is to be in a new location please forward a map to this office indicating the location of the new alignment so we may evaluate the potential effects of the replacement upon archaeological resources

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

Thank you for your cooperation and consideration If you have questions concerning the above comment contact Renee Gledhill Earley Environmental Review Coordinator at 919/733 4763

cc: Mary Pope Furr NCDOT
Tom Padgett NCDOT

	Location	Mailing Address	Telephone/Fax
Administration	507 N Blount St, Raleigh NC	4617 Mail Service Center Raleigh 27699 4617	(919) 733 4763 715 8653
Restoration	515 N Blount St Raleigh NC	4613 Mail Service Center Raleigh 27699 4613	(919) 733 6547 715 4801
Survey & Planning	515 N Blount St Raleigh NC	4618 Mail Service Center Raleigh 27699-4618	(919) 733-4763 715 4801

Federal Aid # BRZ 1212(4) *TIP #* B 3663 *County* Henderson

CONCURRENCE FORM FOR PROPERTIES NOT ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES

Project Description Replace Bridge No 320 on SR 1212 over Shaws Creek

On 06/18/2002 representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [ ] Federal Highway Administration (FHWA)
- [x] North Carolina State Historic Preservation Office (HPO)
- [ ] Other

Reviewed the subject project at

- [ ] Scoping meeting
- [x] Historic architectural resources photograph review session/consultation
- [ ] Other

All parties present agreed

- [x] There are no properties over fifty years old within the project s area of potential effects
- [x] There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project s area of potential effects
- [ ] There are properties over fifty years old within the project s Area of Potential Effects (APE) but based on the historical information available and the photographs of each property the property identified as _____ is considered not eligible for the National Register and no further evaluation of it is necessary
- [x] There are no National Register listed or Study Listed properties within the project s area of potential effects
- [ ] All properties greater than 50 years of age located in the APE have been considered at this consultation and based upon the above concurrence all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121 12(a) has been completed for this project
- [x] There are no historic properties affected by this project (*Attach any notes or documents as needed*)

Signed

Mary Pope Furr — 6/18/2002
Representative NCDOT — Date

Ruth A — 6/21/02
FHWA for the Division Administrator or other Federal Agency — Date

Clay Swallow — 6/18/02
Representative HPO — Date

David Brook by BJS — 6/19/02
State Historic Preservation Officer — Date

If a survey report is prepared a final copy of this form and the attached list will be included

North Carolina Wildlife Resources Commission

Charles R Fullwood Executive Director

MEMORANDUM

TO William D Gilmore P E Manager
Project Development and Environmental Analysis Branch NCDOT

FROM Owen F Anderson Mountain Region Coordinator
Habitat Conservation Program

DATE January 10 2001

SUBJECT Scoping for Bridge Replacements B3475 B3662 B 3664 B 3665 B 3666 B 3673 and B 3857 Henderson and McDowell Counties

This memorandum responds to your request for our concerns regarding impacts on fish and wildlife resources resulting from the subject projects The North Carolina Wildlife Resources Commission (NCWRC) has reviewed the proposed projects and 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)

The proposed work involves nine bridge replacement projects in western North Carolina Construction impacts on wildlife and fisheries resources will depend on the extent of disturbance in the streambed and surrounding riparian areas We prefer bridge designs that do not alter the natural stream morphology or impede fish passage and provide for wildlife passage under the bridge We prefer that existing bridges be replaced with another spanning structure Bridge designs should also include provisions for the deck drainage to flow through a vegetated upland buffer prior to reaching the subject surface waters In some cases we are specifically concerned about impacts to trout waters Environmental documentation for these projects should include description of any streams or wetlands on the project site and surveys for any threatened or endangered species that may be affected by construction

B 3475 – Bridge No 356 on SR1127 (Caswell Street) over Wash Creek, Henderson County

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat

B 3662 – Bridge No 20 on SR 1006 (Howard Gap Road) over Featherstone Creek in Henderson County

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat

B-3663 – Bridge No 320 on SR 1212 (Old Homestead Road) over Shaws Creek in Henderson County

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat

B-3664 –Bridge No 21 on SR 1528 (Brookside Camp Road) over Mud Creek in Henderson County

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat

B-3665 Bridge No 265 on SR 1791 (Ballenger Road) over North Branch Bat Fork Creek in Henderson County

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat

B 3666 Bridge No 53 on SR 1799 (Deep Gap Road) over Hungry River in Henderson County

This bridge appears to be located at the edge of the Pisgah Game Lands This reach is classified as trout water by the Division of Water Quality and is designated by the NCWRC as Hatchery Supported Waters The new bridge should span the adjacent floodplain and provide sufficient space for wildlife to move under the bridge An inwater work moratorium from October 15 April 15 is requested for this project

B 3673 – Bridge No 17 on US 221 over Second Broad River in McDowell County

This stream is Classified WS IV No specific fish and wildlife concerns other than minimization of impacts to water quality and aquatic and riparian habitat The new bridge should span the adjacent floodplain and/or provide a wildlife movement corridor under the bridge

Because the Corps of Engineers (COE) recognizes all of the above counties as trout water counties , the NCWRC will review any nationwide or general 404 permits for the proposed projects The following conditions are likely to be placed on the subject 404 permits

1 Adequate sedimentation and erosion control measures must be implemented and maintained on the project site to avoid impacts to downstream aquatic resources Structures should be inspected and maintained regularly especially following rainfall events

2 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

3 All work in or adjacent to stream waters should be conducted in a dry work area Sandbags cofferdams or other diversion structures should be used to minimize impacts to downstream aquatic resources Spoil materials and wastewater captured in the cofferdam should be pumped out and disposed of on upland sites

4 If concrete is used during construction a dry work area must be maintained to prevent direct contact between curing concrete and stream water Uncured concrete affects water quality and is highly toxic to fish and other aquatic organisms

5 Grading and backfilling should be minimized and tree and shrub growth should be retained if possible to ensure long term availability of shoreline cover for gamefish and wildlife

6 **In trout waters instream construction is prohibited during the trout spawning period of October 15 to April 15 to avoid impacts on trout reproduction**

7 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

8 If multi celled reinforced concrete box culverts are utilized they should be designed so that all water flows through a single cell (or two if necessary) during low flow conditions This could be accomplished by constructing a low sill on the upstream end of the other cells that will divert water to a single cell during below bankfull events This will facilitate fish passage at low flows

9 Notched baffles should be placed in reinforced concrete box culverts at 15 foot intervals to allow for the collection of sediments in the culvert reduce flow velocities and to provide resting areas for fish moving through the structure

10 Only clean sediment free rock should be used as temporary fill (causeways) and should be removed without excessive disturbance of the natural river bottom when construction is completed Temporary causeways should not block more than 30% of the stream width to prevent an impediment to fish movement

11 Equipment operated near surface waters should be inspected daily and maintained to prevent contamination of waters from leaking fuels lubricants hydraulic fluids or other toxic materials

12 Stormwater should be directed to upland buffer areas or retention basins and should not be discharged directly into streams

Thank you for the opportunity to review and comment during the early stages of these projects If you have any questions regarding these comments please contact me at (828) 452 2546

cc Mr Steven Lund NCDOT Coordinator, COE, Asheville
Ms Stacy Harris P E , PD & EA Branch NCDOT Raleigh
Ms Marella Buncick Biologist USFWS Asheville

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

James B Hunt Jr Governor
Bill Holman Secretary
Kerr T Stevens Director

NCDENR

December 11 2000

MEMORANDUM

To William D Gilmore P E Manager
NCDOT Project Development & Environmental Analysis

Through John Dorney NC Division of Water Quality

From Cynthia F Van Dei Wiele cvdw

Subject Scoping comments on the proposed ieplacement of Bridge No 320 on SR 1212 over Shaw Creek in Henderson County T I P Project B 3663

This memo is in refeience to your correspondence dated December 6 2000 in which you iequested scoping comments for the above pioject The DWQ index number for the stream is 6 50 and is classified as C wateis The Division of Water Quality requests that NCDOT consider the following environmental issues for the proposed project:

A DWQ prefeis replacement of bridges with biidges However if the new structure is to be a culvert it should be countersunk to allow unimpeded fish and other aquatic organisms passage through the crossing Please be aware that floodplain culveits are required under Nationwide 14

B The document should provide a detailed and itemized presentation of the proposed impacts to wetlands and stieams with coiresponding mapping

C There should be a discussion on mitigation plans for unavoidable impacts If mitigation is required it is pieferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation While the NCDWQ realizes that this may not always be practical it should be noted that for pi ojects requiring mitigation appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification

D When practical the DWQ requests that bridges be replaced on the existing location with road closure If a detoui proves necessary remediation measures in accordance with the NCDWQ requirements foi General 401 Certification 2726/Nationwide Permit No 33 (Temporary Construction Access and Dewatering) must be followed

E If applicable DOT should not install the bridge bents in the creek to the maximum extent piacticable

F Wetland and stream impacts should be avoided (including sediment and erosion control structures/measures) to the maximum extent practical If this is not possible alternatives

that minimize wetland impacts should be chosen Mitigation for unavoidable impacts will be required by DWQ for impacts to wetlands in excess of one acre and/or to streams in excess of 150 linear feet

G Borrow/waste areas should not be located in wetlands It is likely that compensatory mitigation will be required if wetlands are impacted by waste or borrow

H If foundation test borings are necessary it should be noted in the document Geotechnical work is approved under General 401 Certification Number 3027/Nationwide Permit No 6 for Survey Activities

I In accordance with the NCDWQ Wetlands Rules {15A NCAC 2H 0506(b)(6)} mitigation will be required for impacts of greater than 150 linear feet to any single perennial stream In the event that mitigation becomes required the mitigation plan should be designed to replace appropriate lost functions and values In accordance with the NCDWQ Wetlands Rules {15A NCAC 2H 0506 (h)(3)} the Wetland Restoration Program may be available for use as stream mitigation

J Sediment and erosion control measures should not be placed in wetlands

K The 401 Water Quality Certification application will need to specifically address the proposed methods for stormwater management More specifically stormwater should not be permitted to discharge directly into the creek Instead stormwater should be designed to drain to a properly designed stormwater detention facility/apparatus

L While the use of National Wetland Inventory (NWI) maps and soil surveys is a useful office tool their inherent inaccuracies require that qualified personnel perform onsite wetland delineations prior to permit approval

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 and designated uses are not degraded or lost If you have any questions or require additional information please contact Cynthia Van Der Wiele at (919) 733 5715

Pc: Steve Lund USACE Asheville Field Office
Marella Buncick USFWS
David Cox NCWRC
File Copy
Central Files

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 29 2002

Memorandum To John Wadsworth P E Project Manager
Consultant Unit

Attention Rachelle Beauregard Permit Specialist

From Tim Savidge Section 7 Strike Team

Subject Freshwater mussel survey report of Shaws Creek for proposed replacement of bridge # 320 on SR 1212 Henderson County TIP # B 3663

The proposed action calls for the replacement of bridge No 320 over Shaws Creek in Henderson County Two federally Endangered freshwater mussel species the Appalachian elktoe (*Alasmidonta raveniliana*) and the oyster mussel (*Epioblasma capsaeformis*) are listed by the US Fish and Wildlife Service as occurring in Henderson County

NCDOT Environmental Specialists Tim Savidge Jeff Burleson and Sharon Snider visited the project site on March 05 2002 Shaws Creek which flows into the French Broad River occurs in an urbanized setting and has noticeably unstable stream banks Freshwater mussel surveys using batiscopes were conducted from approximately 1 000 feet downstream to 100 feet upstream of the existing bridge Substrate at the site was comprised of coarse sand A total of 1 5 man hours were spent during the survey No mussel species were observed

Biological Conclusion: **No Effect**

Given the survey results it is apparent that the Appalachian elktoe and the oyster mussel do not occur in the project stream Additionally there are no known extant populations of these two species in the French Broad River downstream of the project stream It can be concluded that project construction will not impact these two species

cc Stacy Harris P E Consultant Engineering Unit Head
V Charles Bruton Ph D Assistant Branch Manager

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

TELEPHONE 919 733 3141
FAX 919 733 9794

WEBSITE WWW DOH DOT STATE NC US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

HENDERSON COUNTY
OFFICE OF THE COUNTY MANAGER

100 NORTH KING STREET
HENDERSONVILLE N C 28792 5097
PHONE (828) 697 4809 FAX (828) 698 6014
www henderson lib nc us/county

David E Nicholson
County Manager

Avalina Merrill
Administrative Assistant

January 10 2001

William D Gilmore P E Manager
NC Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh NC 27699 1548

Dear Mr Gilmore

I am writing in response to your December 6 2000 letter concerning the bridge replacement projects for Henderson County that are contained within the NCDOT s 2002 2008 Draft Transportation Improvement Program Attached is a report that contains our comments on these projects

Should you have any additional questions please contact me

Sincerely

David E Nicholson
County Manager

DEN/abm

Attachment

Cc Board of Commissioners
Transportation Advisory Committee Members

Henderson County Government Report on

NCDOT BRIDGE REPLACEMENT PROJECTS
B 3475 B 3662 B 3663 B 3665, B 3666 and B 3857

January 10, 2001

Henderson County appreciates the opportunity to study and comment on the proposed bridge replacement projects identified by NCDOT as B 3475 B 3662 B 3663 B 3665 B 3666 and B 3857 The following report contains the County s comments regarding the projects

B 3475 Bridge No. 356 on SR 1127 (Caswell Street) over Wash Creek

Bridge No 356 is located in the City of Hendersonville on Caswell Street between Washington Street and Lily Pond Road in an area known as Busy Bend According to the Flood Insurance Rate map for that area the area around and including the bridge is in the flood zone for Wash Creek

The area around the bridge is commercial in character Dal Kawa Cycle Center is located adjacent to the bridge on the south and an automobile detailing business is located next to the bridge to the north There are a number of other small businesses and a couple of churches in the area as well as the Whitmire Activity Building/Tom s Park owned by the City of Hendersonville There is a considerable amount of traffic that enters/exits Hendersonville via Kanuga Road Residents and businesses around the bridge area as well as those that use Kanuga Road to access Hendersonville will be impacted The detour that is shown on the NCDOT map (using Lily Pond Drive West Allen Street and Washington Street) is approximately 0 5 mile in length

Erica Thompson Program Coordinator for the *Start with Your Heart* program with the Henderson County Partnership for Health Inc has been working on a Bicycle/Pedestrian Assessment Project in the Henderson County At her request Henderson County has agreed to ask NCDOT to consider widening the sidewalk on Bridge No 356 when the bridge itself is widened According to Ms Thompson the current sidewalk is too narrow

Henderson County understands that the City of Hendersonville is submitting its own comments regarding the subject bridge project as well

[redacted]ridge No. 20 on SR 1006 (Howard Gap Road) over Featherstone Creek

The subject bridge is located on Howard Gap Road in an area that is mainly residential in character but which also contains several churches small businesses and an industry The intersection of Howard Gap Road and Brookside Camp Road is located to the northwest Vulcan Materials (including the APAC asphalt plant) is located at the intersection of Howard Gap Road and Clear Creek Road to the southeast The Mountain Home Volunteer Fire and Rescue department has a substation located to the southeast of the intersection of Salisbury Road and Howard Gap Road The bridge is located in the Mountain Home Fire District

The studied detour route shown on the map provided by NCDOT requires that one travel approximately 2 5 miles using Brookside Camp Road and Salisbury Road both of which are paved The route passes through a residential area once it leaves Howard Gap Road and it is somewhat hilly and curvy Heavy truck traffic and others that make regular use of Howard Gap

Road as north south route may find US 25 to be a better alternative Access to/from US 25 may be made via the new road to Park Ridge Hospital Brookside Camp Road Clear Creek Road and possibly Balfour Road

Residents and business owners in the area of the proposed bridge project will probably be impacted the most However there may be impacts on alternative routes due to the need to detour trucks including those from Vulcan around the bridge construction project

While it is probably unlikely that NCDOT would undertake the subject project and project B 3664 on Brookside Camp Road simultaneously the County would like to specifically request that the projects be scheduled at different times If they were to occur together the impacts on the area would be intensified particularly because the bridge to be replaced on Howard Gap Road is on the detour route for the Brookside Camp Road bridge project (described below)

B 3663 Bridge No. 320 on SR 1212 (Old Homestead Road) over Shaws Creek

Old Homestead Road located off of US 64 West has a paved surface The subject bridge crosses Shaws Creek adjacent to a Southern Railway track One must cross the bridge then the track There is no railroad crossing signal on the road

There are a number of residences that are served by Old Homestead Road once it crosses Shaws Creek The area is zoned R 30 by the County and is within a WS IV Water Supply Watershed The land immediately adjacent to the bridge is undeveloped According to the Flood Insurance Rate Map of the area Shaws Creek is shown to have a narrow area of flood zone which includes the area around the bridge

As one approaches the bridge from US 64 there is a gravel area adjacent to but at a lower elevation than the left side of the bridge Rocky Hyder Henderson County Fire Marshal/Emergency Management Director identified this as a fire department draft point The draft point would allow water to be drawn from Shaws Creek if needed to fight a fire in the vicinity

Because there is no outlet from Old Homestead Road the NCDOT map does not show a detour route Homes on the southwestern end of Old Homestead Road as well as those on Summer Rain Drive Kilpatrick Road and Abbey Lane will be impacted during replacement of the bridge Henderson County expects that NCDOT will maintain some sort of bridge so residents may continue to use Old Homestead Road while the bridge is upgraded Also the fire department draft point should be taken into consideration during the project

B-3664 Bridge No. 21 on SR 1528 (Brookside Camp Road) over Mud Creek

Bridge No 21 on Brookside Camp Road is located south of the I 26 overpass Double Tee Golf Center is located to the northwest and Wolverine Paintball is located to the northeast Vacant fields are located immediately adjacent to the bridge along Mud Creek The bridge is in a low area that has been subject to flooding in the past The area is within a flood zone according to the Flood Insurance Rate Map It is also in the Mountain Home Fire District

Brookside Camp Road provides access from US 25 to Grimesdale Hickory Hills and several smaller subdivisions It also serves to connect US 25 to Howard Gap Road and the residences and businesses in that area

The detour shown on the map provided by NCDOT is comprised of a loop approximately 6 7 miles in length which uses Brookside Camp Road US 25 Berkeley Road Balfour Road Clear Creek Road and Howard Gap Road The detour passes over another bridge proposed for replacement bridge No 20 over Featherstone Creek (see B 3663 above) It is possible that to avoid some of the curves on Balfour Road some detoured truck traffic may take US 25 to either the new road over I 26 (to Park Ridge Hospital) or to Clear Creek Road to get to Howard Gap Road

The replacement of the bridge may cause some inconvenience to area residents and to business owners According to Rocky Hyder Henderson County Fire Marshal/Emergency Management Director emergency services personnel and local property owners are probably accustomed to using alternate routes because of the flooding history of the road

B 3665 Bridge No. 265 on SR 1791 (Ballenger Road) over North Branch, Bat Fort Creek

Ballenger Road is located to the east of I 26 between Tracy Grove Road and Upward Road Land Uses in the area around the bridge include Lakewood RV Park and some single family dwellings The Flood Insurance Rate Map for the area shows the land in the vicinity of the bridge as being in a flood zone

The detour shown on the NCDOT map makes use of Tracy Grove Road and McMurray Road both of which are paved Much of the northern end of Mc Murray Road consists of orchards and some single family dwellings As one approaches Upward Road there are some commercial uses including an antique shop a quilt shop a produce stand an RV supply store and the Dish Barn A commercial project is currently underway near the intersection of Upward Road and McMurray Road Since Ballenger Road is not a major thoroughfare the bridge project is more likely to affect local traffic The detour will probably increase the number of vehicles entering/exiting Upward Road near the I 26 ramps

B-3666 - Bridge No. 53 on SR 1799 (Deep Gap Road) over North Branch, Hungry River

The subject bridge on Deep Gap Road is the third bridge as one travels east along the road While the majority of Deep Gap Road is paved the road has a gravel surface beginning at a point just before the subject bridge

The eastern end of Deep Gap Road has a few single family dwellings however much of the land particularly that near the bridge is undeveloped Deep Gap Road has a number of curves as one descends into the river valley Because there is only one way in the NCDOT map does not show a detour route

Since Deep Gap road is not a through road people would need to have a reason to travel its full length That property (or properties) accessed by Deep Gap Road beyond Bridge No 53 will be impacted primarily Hungry River LLC is listed as the owner of approximately 2073 acres at and beyond the subject bridge

B 3857 Bridge No. 8 on SR 1314 (Ladson Road) over Boylston Creek

The subject bridge is located on Ladson Road approximately 0 2 mile from its intersection with NC 191 Land use in the area surrounding the bridge is agricultural except that there is one dwelling just to the southwest of the bridge Other residences are located further along Ladson Road The bridge is located in a flood zone according to the Flood Insurance Rate Map for the

area The area around the bridge is in the County s R 30 zoning district and it is also within the WS IV Water Supply Watershed

The detour route shown on the map provided by NCDOT requires one to travel along Banner Farm Road and Schoolhouse Road which will add several miles to the trip for those who normally use Ladson Road The detour route also passes by Mills River Elementary School

There is a change in fire districts as one travels along Ladson Road Mills River Fire and Rescue services the portion of Ladson Road near the subject bridge while the area further south of the bridge is serviced by Etowah Horse Shoe Fire and Rescue According to Rocky Hyder Henderson County Fire Marshal/Emergency Management Director both departments typically respond to all calls in the area However for the Mills River department to respond to the area in its district that is south of the bridge it will have to use the proposed detour along Schoolhouse Road which will probably increase its response time slightly

Other General Comments

County staff did not have a chance to fully investigate the environmental conditions in the areas around the bridges other than to note areas that may be subject to flooding However as with any projects undertaken near waterways the County expects that NCDOT will use erosion and sedimentation controls and other measures to minimize negative impacts on water quality

Also because of ongoing projects in the County to establish safe pedestrian walkways and bike routes adjacent to roadways the County suggests that when reasonable and feasible NCDOT consider ways to improve the bridges for these purposes as well as for vehicle travel

Finally if it is not already a customary practice Henderson County suggests that some time prior to initiation of each bridge replacement project it would be helpful if NCDOT forwarded information regarding the actual detours to the Superintendent of Henderson County Public Schools in order for County bus routes to be adjusted accordingly In addition such detour information would be helpful to other County departments and agencies Therefore NCDOT should also consider sending such information to the County Manager s office for distribution

Note *Henderson County does not participate in the federal flood insurance program Flood Insurance Rate Maps referenced in comments for projects in the County s jurisdiction (B 3662 B 3663 B 3665 B 3666 and B 3857) are dated March 1 1982 The City of Hendersonville does participate in the federal flood insurance program The Federal Insurance Rate Map referenced in the comments for the project in the City s jurisdiction (B 3475) is dated January 20 1982*

EPARTMENT OF AGRICULTURE
CONVERSION SERVICE

FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS

rt I *(To be Completed by Federal Agency)*	3. Date of Land Evaluation Request 12/17/01	4. Sheet 1 of 1
s of Project B-3663	5. Federal Agency Involved NCDOT, FHWA	
Type of Project BRIDGE REPLACEMENT	6. County and State Henderson, NC	
ART II *(To be completed by SCS)*	1. Date Request Received by SCS 2/14/02	2. Person Completing Form Coy McKenzie
Does the corridor contain prime unique statewide or local important farmland? Yes X (If no the FPPA does not apply – Do not complete additional parts of this form No ____)	4. Acres Irrigated 0	Average Farm Size 91
Major Crop(s) Grass	6. Farmable Land in Government Jurisdiction: 21780	7. Amount of Farmland As Defined in FPPA 82824
Name of Land Evaluation System Used LESA	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by SCS 4/11/02

ART III *(To be completed by Federal Agency)*		Alternative Corridor for Segment			
		Corridor A	Corridor B	Corridor C	Corridor D
. Total Acres to be Converted Directly		0.22	0.64	1.02	
. Total Acres to be Converted Indirectly or to Receive Services					
. Total Acres in Corridor		0.22	0.64	1.02	
ART IV *(To be completed by SCS)* Land Evaluation Information					
. Total Acres Prime and Unique Farmland		0	0	0	
. Total Acres Statewide and Local Important Farmland		.22	.64	1.02	
. Percentage of Farmland in County or Local Govt. Unit to be Converted		.0000101	.0000293	.0000468	
. Percentage of Farmland in Govt. Jurisdiction with Same or Higher Relative Value		75	75	75	
ART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value of Farmland to be Serviced or Converted (Scale of 0-100 Points)		25	25	25	
ART VI *(To be completed by Federal Agency)* Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))	Maximum Points				
. Area in Nonurban Use	15	15	15	15	
. Perimeter in Nonurban Use	10	10	10	10	
. Percent of Corridor Being Farmed	20	0	0	0	
. Protection Provided by State and Local Government	20	0	0	0	
. Size of Present Farm Unit Compared to Average	10	3	3	3	
. Creation of Nonfarmable Farmland	25	0	0	0	
7. Availability of Farm Support Services	5	4	4	4	
8. On-Farm Investments	20	0	0	0	
9. Effects of Conversion On Farm Support Services	25	0	0	0	
10. Compatibility with Existing Agricultural Use	10	0	0	0	
TOTAL CORRIDOR ASSESSMENT POINTS	160	32	32	32	
PART VII *(To be completed by Federal Agency)*					
Relative Value of Farmland (From Part V)	100	25	25	25	
Total Corridor Assessment (Form Part VI above or a local site assessment)	160	32	32	32	
TOTAL POINTS (Total of above 2 lines)	260	57	57	57	

1. Corridor Selected: B	2. Total Acres of Farmlands to be Converted by Project: 0.64	3. Date of Selection: 11/5/2001	4. Was a Local Site Assessment Used? Yes ____ No X

5. Reason for Selection:
Improves Existing Horizontal Alignment, Maintains Traffic on Existing Structure During Construction.

Signature of Person Completing this Part:	Date
	5/29/02

NOTE: Complete a form for each segment with more than one Alternative Corridor

Henderson County
SR 1212 (Old Homestead Road)
Bridge No. 320 Over Shaw Creek
Federal-Aid Project No. BRZ-1212(4)
State Project No. 8.2951801
T.I.P. No. B-3663

ADDENDUM TO

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

09.15.03
DATE

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

9/23/03
DATE

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

Henderson County
SR 1212 (Old Homestead Road)
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Federal-Aid Project No. BRZ-1212(4)
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ADDENDUM TO
CATEGORICAL EXCLUSION

September 2003

Documentation Prepared by:
Mulkey Engineers & Consultants
Cary, North Carolina

Clifton T. Register, PE
Project Manager

9/12/2003
Date

For the North Carolina Department of Transportation

John Wadsworth, PE
Project Manager
Consultant Engineering Unit

9-15-2003
Date

SUMMARY OF ENVIRONMENTAL COMMITMENTS

Henderson County
SR 1212 (Old Homestead Road)
Bridge No. 320 Over Shaw Creek
Federal-Aid Project No. BRZ-1212(4)
State Project No. 8.2951801
T.I.P. No. B-3663

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, Design Standards for Sensitive Watersheds, Best Management Practices for Bridge Demolition and Removal, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

The following measures will be carried out for the replacement of Bridge No. 320

Project Development and Environmental Analysis Branch:

A copy of the addendum to the environmental planning document will be submitted to the Tennessee Valley Authority (TVA) and United States Army Corps of Engineers (COE).

Hydraulics Unit / Structure Design Unit:

This project will be reviewed under Section 26a of the Tennessee Valley Authority (TVA) Act. The final bridge plans, hydraulic analysis of the effects of the replacement structure on the 100-year flood elevation, and notice of compliance with the Historic Preservation Act of 1966 will be forwarded to TVA for approval.

Roadway Design Unit / Division Construction:

Access to the fire departments draft point will be provided.

Henderson County
SR 1212 (Old Homestead Road)
Bridge No. 320 Over Shaw Creek
Federal-Aid Project No. BRZ-1212(4)
State Project No. 8.2951801
T.I.P. No. B-3663

I. BACKGROUND

The replacement of Bridge No. 320 is included in the North Carolina Department of Transportation (NCDOT) 2002-2008 Transportation Improvement Program (T.I.P.) and in the Federal-Aid Bridge Replacement Program. The bridge location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

A Categorical Exclusion for the subject project was approved January 15, 2003. The recommended alternate was to replace Bridge No. 320 with a triple barrel culvert on the existing alignment. Traffic was to be maintained by an on-site detour located west (downstream) of the existing bridge as shown by Alternate A in Figure 2. Subsequent to that time, additional detailed studies have determined that a more feasible alternate exists. This currently recommended alternate replaces Bridge No. 320 with a cord slab bridge on the existing alignment. Traffic will be maintained by an on-site detour located west (downstream) of the existing bridge as shown by Alternative A Revised in Figure 2A

II. DISCUSSION

Alternate A replaces Bridge No. 320 with a triple barrel 8-foot x 8-foot (2.4-meters by 2.4 meters) reinforced concrete box culvert on the existing alignment (Figure 2). Traffic will be maintained by an on-site detour located west (downstream) of the existing bridge. The proposed approach roadway will consist of two 9-foot (2.7-meter) travel lanes and 2-foot (0.6 meter) turf shoulders. The proposed grade will be approximately the same as the existing roadway.

The detour structure will consist of three 72-inch (1800-millimeter) corrugated metal pipes (CMP) approximately 52 feet (15.8 meters) in length. The on-site detour approaches will consist of two 9-foot travel lanes (2.7 meters) 2-foot (0.6 meter) turf shoulders. The total length of Alternate A is approximately 315 feet (96 meters).

During the final design process a detailed hydraulic analysis was performed. The proposed culvert (Alternative A) raised the water surface elevations during the smaller flood events, design discharge frequencies of 10 years and under. Several culvert sizes were studied and none matched or improved existing flood surface water elevations for all storm events. Therefore, Alternative A was revised utilizing a cord slab bridge.

III. PREFERRED ALTERNATIVE

Alternate A (Revised) replaces Bridge No. 320 with a single span cord slab bridge on the existing alignment (Figure 2A). The proposed bridge will be approximately 42 feet (12.8 meters) in length. The proposed bridge will consist of two 9-foot (2.7 meter) travel lanes and 2-foot (0.6 meter) shoulders.

The proposed approach roadway will consist of two 9-foot (2.7-meter) travel lanes and 2-foot (0.6 meter) turf shoulders. The north approach is approximately 135 feet (41 meters) in length. The south approach is approximately 140 feet (42 meters) in length. The proposed grade will be approximately the same as the existing roadway.

Traffic will be maintained by an on-site detour located west (downstream) of the existing bridge. The detour structure will consist of three 72-inch (1800-millimeter) corrugated metal pipes (CMP) approximately 52 feet (15.8 meters) in length. The on-site detour approaches will consist of two 9-foot travel lanes (2.7 meters) 2-foot (0.6 meter) turf shoulders.

The project length is approximately 600 feet (183 meters).

Alternative A (Revised) was selected as the preferred alternative because of the following reasons:

- A spanning structure provides a minimum match to existing water surface elevations during all flood events,
- A bridge will span from top of bank to top of bank and avoids changes to the existing channel,
- Minimize stream impacts,
- Use of a bridge will not reduce sediment transport capacity of the stream,
- Lessens impacts to potential environmental and archaeological resources.

The estimated cost of the preferred alternative has been revised since the original Categorical Exclusion was published. In the early stages of project development, estimates were based on the assumption that the replacement structure would be a culvert. The revised alternative maintains the existing alignment and replaces the structure with a cored slab bridge.

The revised estimated construction cost of the preferred alternative is as follows:

	Alternative A	**Alternate A Revised (Preferred)**
Structure Removal (Existing)	$ 6,400	$ 6,400
Structure Proposed	90,300	66,500
Roadway Approaches	181,050	187,600
Temp. Detour Structure	22,500	22,500
Temp. Detour Approaches	160,500	136,000
Miscellaneous and Mobilization	179,250	161,000
Engineering Contingencies	110,000	95,000
ROW/Const. Easements/Utilities	77,000	77,000
TOTAL	$827,000	$752,000

IV. SUMMARY OF ENVIRONMENTAL IMPACTS

Impacts on plant communities are reflective of the relative abundance of each system present in the study area. Estimated impacts were derived using the entire proposed right-of-way. Project construction does not require the entire right-of-way and therefore actual impacts may be less. Potential plant community impacts which could result from the proposed bridge replacement are as follows: Potential Impacts, areas given in acres (hectares):

	Plant community		
Alternative Corridors	Impact Type	Successional Field	Roadside/ Disturbed Land
Alternative A	Temporary	0.42 (0.17)	0.26 (0.10)
	Permanent	0.01 (0.004)	0.01 (0.004)
	Total	0.43 (0.21)	0.27 (0.11)
Preferred Alternative A (Revised)	Temporary	.38 (0.15)	0.26 (0.10)
	Permanent	0.01 (0.004)	0.01 (0.004)
	Total	0.39 (0.19)	0.27 (0.11)

Potential Open Water Impacts (area and linear distance of stream impacts) are approximated based on proposed construction impacts. Existing Bridge No. 320 shades approximately 19 linear feet (5.9 meters) of stream and approximately 0.01 acre (0.004 hectare) of stream area. Areas are depicted in acre (hectare) and linear distances are depicted in feet (meters).

Alternative Corridors	Impact Type	Stream Area Acres (Hectares)	Stream Linear distance Feet (Meters)
Alternative A	Temporary	0.014 (0.006)	52 (15.8)
	Permanent	0.02 (0.01)	53 (16.2)
	Total	0.034 (0.016)	105 (32)
Preferred Alternative A (Revised)	Temporary	0.013(0.005)	52 (15.8)
	Permanent	0.007 (0.003)	25.6 (7.8)
	Total	0.02 (0.008)	77.6 (23.6)

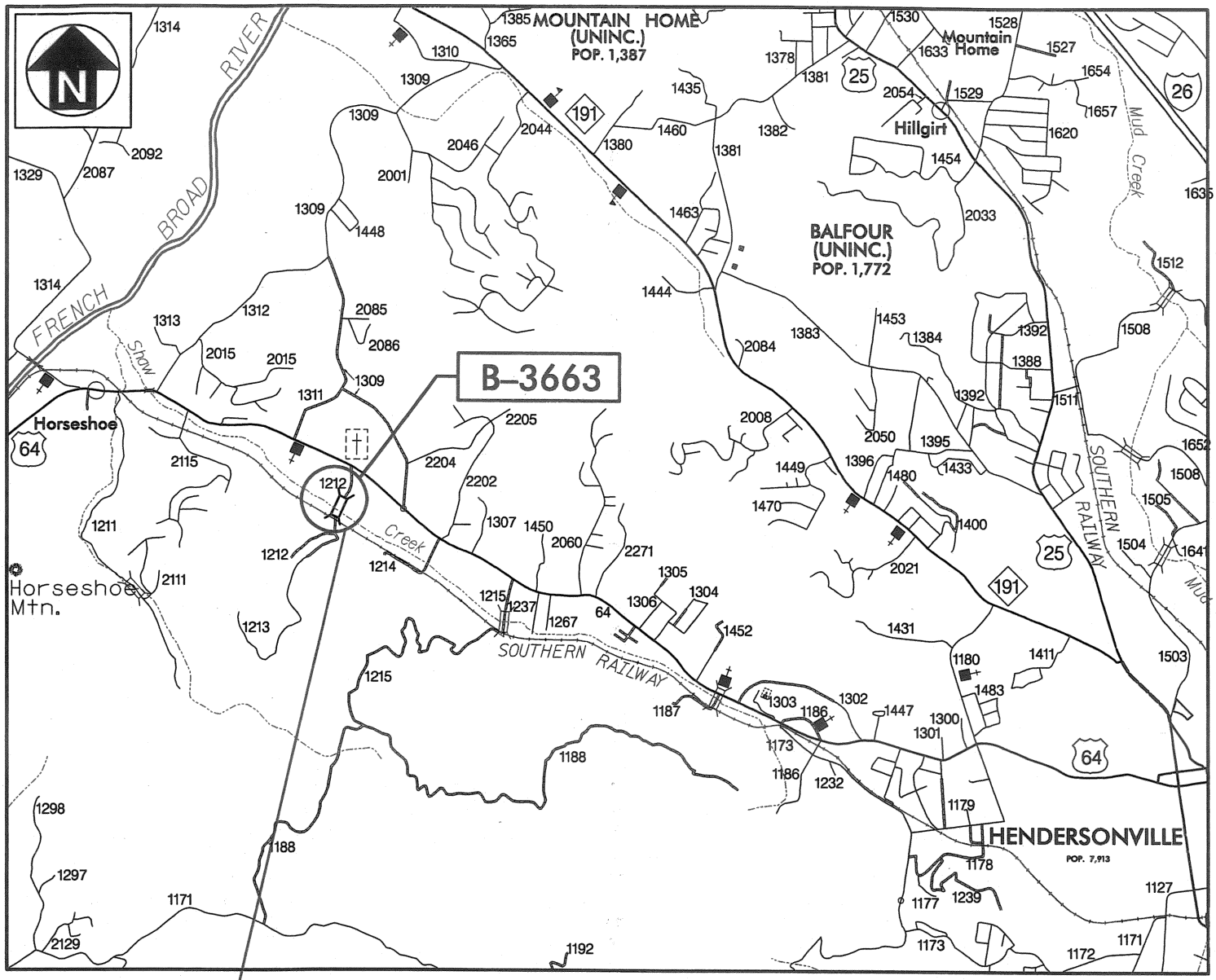
Federally Protected Species

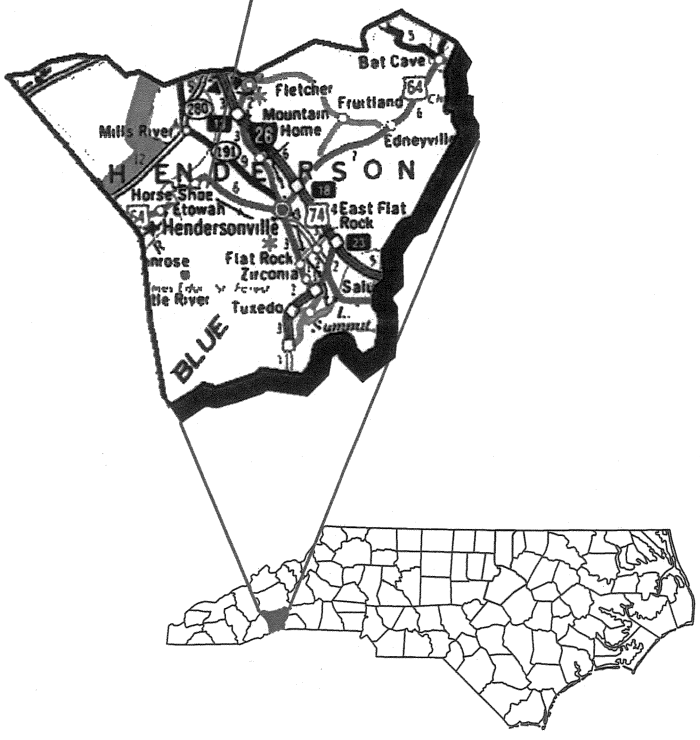
Species with the federal classification of Endangered (E), Threatened (T), Threatened due to Similarity of Appearance (T [S/A]), or officially Proposed (P) for such listing are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The term "Endangered Species" is defined as "any species which is in danger of extinction throughout all or a substantial 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 substantial portion of its range" (16 U.S.C. 1532). The term "Threatened due to Similarity of Appearance" is defined as a species which is not "Endangered" or "Threatened," but "closely resembles an Endangered or Threatened species" (16 U.S.C. 1532). Federally protected species listed for Henderson County (February 24, 2003 FWS list) are presented below:

Federally Protected Species listed for Henderson County (February 24, 2003 FWS list).

Common Name	Scientific Name	Status*	Biological Conclusion
Bog turtle	*Clemmys muhlenbergii*	T(S/A)	N/A
Appalachian elktoe	*Alasmidonta raveneliana*	E	No Effect
Oyster mussel	*Epioblasma capsaeformis*	E	No Effect
Swamp pink	*Helonias bullata*	T	No Effect
Small-whorled pogonia	*Isotria medeoloides*	T	~~No Effect~~ MI, NLTAA
Bunched arrowhead	*Sagittaria fasciculata*	E	No Effect
Mountain sweet pitcher plant	*Sarracenia jonesii*	E	No Effect
White irisette	*Sisyrinchium dichotomum*	E	~~No Effect~~ ME, NLTAA

There have been no additions to the federally protected species listed for Henderson County since May 31, 2002. The biological conclusions in the Categorical Exclusion signed in January 2003 are still valid.





North Carolina Department of Transportation
Project Development & Envrionmental Analysis

HENDERSON COUNTY
BRIDGE NO. 320 ON SR 1212
OVER SHAWS CREEK
B-3663

0 kilometers 1.6 kilometers 3.2
0 miles 1.0 miles 2.0

FIGURE 1

B-3663
ALTERNATE A

North Carolina Department Of Transportation
Project Development & Environmental Analysis

HENDERSON COUNTY
BRIDGE NO. 320
ON SR 1212 (OLD HOMESTEAD ROAD)
OVER SHAW CREEK
B-3663

50' 0 50'
15.2 m SCALE 15.2 m

FIGURE 2

B–3663
ALTERNATE A (Revised)
PREFERRED

NAD 83

–L– STA 11+35.00 BEGIN STATE PROJECT NO. 8.2951801
–L– STA 11+35.00 BEGIN F. A. PROJECT NO. BRZ-1212(4)

–L– STA 14+50.00 END STATE PROJECT NO. 8.2951801
–L– STA 14+50.00 END F. A. PROJECT NO. BRZ-1212(4)

SHAW CREEK

10+00

15+00

TEMP. SANDBAG HW

3 @ 72" CMP

GRAVEL DR.

Fire Dept. Access

BEGIN BRIDGE
–L– STA 12+73.77

END BRIDGE
–L– STA 13+15.77

BRIDGE No. 320
42' x 22'

BEGIN DETOUR
–L– POC 10+42.71 =
–DET– PCC 10+42.71

END DETOUR
–L– PT 16+07.70 =
–DET– POT 16+40.90

SR 1212 (Old Homestead Road)

SHAW CREEK

North Carolina Department Of
Transportation
Project Development &
Environmental Analysis

HENDERSON COUNTY
BRIDGE NO. 320
ON SR 1212 (OLD HOMESTEAD ROAD)
OVER SHAW CREEK
B–3663

50 0 50
15.2 m SCALE 15.2 m

FIGURE 2 A