STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 16, 2005

U. S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1000
Washington, NC 27889-1000

Attn: Mr. Bill Biddlecome
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 Permit Application and Buffer Certification** for the replacement of Bridge No. 60 on SR 1223 over Cokey Swamp, Edgecombe County. Federal Aid Project No. BRZ-1223(3), State Project No. 8.2291001, TIP Project No. B-3639.

The North Carolina Department of Transportation (NCDOT) proposes to replace existing Bridge No. 60 on SR 1223 over Cokey Swamp (DWQ Index # 28-83-3, Class "C; NSW") in Edgecombe County. The project involves replacing Bridge No. 60 approximately on the existing alignment. Traffic, during construction, will be maintained with an offsite detour, which will include SR 1224 and SR 1006.

BRIDGE DEMOLITION

Bridge No. 60 is currently a 96-foot, 3-span structure, that consists of a timber deck on steel I-beams. The end bents and interior bents are composed of timber caps on timber piles. Removal of the bridge superstructure and timber piles will occur without dropping any of the components into Waters of the United States.

The NCDOT will adhere to appropriate guidelines for bridge demolition and removal including those presented in "Pre-Construction Guidelines for Bridge Demolition and Removal", "Policy: Bridge Demolition and Removal in Waters of the United States", "Best Management Practices for Bridge Demotion and Removal", and "Best Management Practices for the Protection of Surface Waters".

BRIDGE CONSTRUCTION

Bridge No. 60, a 192-foot long structure, will include four 48-foot spans with a cored slab as superstructure. The substructure will consist of pile end bents and steel pile bents. The Let date is March 21, 2006 with a review date of January 31, 2005. The NC Wildlife Resources Commission requests the use of an in-stream work moratorium from February 15 to June 30

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PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
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LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

during anadromous fish spawning. In addition, NCDOT will implement "Stream Crossing Guidelines for Anadromous Fish Passage".

IMPACTS TO WATERS OF THE UNITED STATES

Permanent Impacts: Stony Creek will be impacted by the proposed project. Less than 0.001 acre of impacts to surface waters will occur from the construction of bridge bents (refer to Buffer Drawings). No jurisdictional wetlands will be impacted by construction of the project.

AVOIDANCE AND MINIMIZATION

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design.

The chosen alternative best minimizes impacts to natural ecosystems in the vicinity of the project site and provides the most economic design. In addition, NCDOT's guidelines for "Best Management Practices for the Protection of Surface Waters will be enforced throughout the duration of the project construction.

TAR-PAMLICO BASIN BUFFER RULES

This project is located in the Tar-Pamlico River Basin (subbasin 03-03-04, TAR4 03020102), therefore the regulations pertaining to the Tar-Pamlico River Buffer Rules (15A NCAC 2B.0259) apply. Buffer impacts associated with this project total 3,659 sq. ft for Zone 1 and 2,352 sq. ft for Zone 2. All practicable measures to minimize impacts within buffer zones were followed. Measures used to minimize impacts to the buffer zone include using the current alignment. According to the buffer rules, bridges are allowable. Uses designated as allowable may proceed within the riparian buffer provided that there are no practical alternatives to the requested use pursuant to Item (8) of this Rule. These uses require written authorization from the Division or the delegated local authority. Therefore, NCDOT requests written authorization for a Buffer Certification from the Division of Water Quality.

FEDERALLY-PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened 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 U.S. Fish and Wildlife Service (USFWS) lists two federally protected species for Edgecombe County (Table 1). Following endangered species surveys of the project site, Biological Conclusions of "No Effect" were rendered for the red-cockaded woodpecker and Tar River spinymussel due to the lack of suitable habitat within the project area.

Table 1. Federally protected species of Edgecombe County.

Scientific Name	Common Name	Federal Status	Biological Conclusion
Elliptio steinstansana	Tar River spinymussel	E	No Effect
Picoides borealis	Red-cockaded woodpecker	E	No Effect

Endangered (E) – is defined as a taxon that is threatened with extinction throughout all or a significant portion of its range.

REGULATORY APPROVALS

Section 404 Permit: This project is 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 number 3403 will apply to this project. In accordance with 15A NCAC 2H .0501(a) we are providing seven copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality (DWQ), for their records.

In accordance with 15A NCAC 2H .0501(a), NCDOT is providing seven copies of this application to the NC Department of Environment and Natural Resources, DWQ for review and issuance of a Tar-Pamlico Buffer Certification for impacts to Tar-Pamlico Buffers in compliance with the Tar-Pamlico Buffer Rules.

A copy of this permit application will be posted on the DOT website at: http://www.ncdot.org/planning/pe/naturalunit/Permit.html. If you have any questions or need additional information, please contact Tyler Stanton at tstanton@dot.state.nc.us or (919) 715-1439.

Sincerely,

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

cc: w/attachment:

Mr. John Hennessy, NCDWQ (7 Copies)
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Ron Sechler, NMFS
Mr. Michael Street, NCDMF
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Jim Trogdon, PE, Division Engineer
Mr. Jamie Shern, DEO

w/o attachment:

Mr. David Franklin, USACE, Wilmington (Cover Letter Only)
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. John Williams, P.E., PDEA

PROJECT COMMITMENTS:

Edgecombe County
Bridge No. 53 on NC 102
Over Cokey Swamp
Federal Aid Project No. BRZ-1223(3)
State Project No. 8.2291001
W.B.S. No. 33187
T.I.P. No. B-3639

All Design Groups/Division Resident Engineer – Anadramous Fish

NCDOT will implement Stream Crossing Guidelines for Anadramous Fish Crossings.

A moratorium from February 15 to June 30 of any given year will be applicable.

To the extent practical, construction should be accomplished without the use of construction pads in the water.

To the extent practical, bridge demolition should occur without getting into the water.

To the extent practical, the footprint of the proposed project should be minimized.

CATEGORICAL EXCLUSION ACTION CLASSIFICATION FORM

TIP Project No.	**B-3639**
State Project No.	**8.2291001**
W.B.S. No.	**33187**
Federal Project No.	**BRZ-1223(3)**

A. Project Description:

This project proposes to replace Bridge No. 60 on SR 1223 over Cokey Swamp in Edgecombe County. The replacement structure will consist of a 135-foot long bridge on approximately the same grade and location. The bridge will be of sufficient width to provide for two 11-foot lanes, a three-foot outside offset and a five-foot inside offset to accommodate curve widening. Traffic will be detoured offsite during construction.

The approaches to the new bridge will be widened to include 22 feet of pavement and five-foot grass shoulders on each side (eight feet where guardrail is required). The approach work will extend 340 feet to the north of the new bridge and 385 feet to the south of the new bridge. This roadway will be designed as a local route with a 55 mile per hour design speed.

B. Purpose and Need:

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 32.6 out of a possible 100 for a new structure. The bridge is considered structurally deficient due to a structure appraisal of 2 out of 9 according to Federal Highway Administration (FHWA) standards and therefore eligible for FHWA's Highway Bridge Replacement and Rehabilitation Program. The bridge has a timber substructure. Timber substructures are not good candidates for rehabilitation. Replacement of this structurally deficient bridge will result in safer traffic operations and lower maintenance costs.

C. Proposed Improvements:

Circle one or more of the following Type II improvements which apply to the project:

1. Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing).

    a. Restoring, Resurfacing, Rehabilitating, and Reconstructing pavement (3R and 4R improvements)
    b. Widening roadway and shoulders without adding through lanes
    c. Modernizing gore treatments
    d. Constructing lane improvements (merge, auxiliary, and turn lanes)

e. Adding shoulder drains
f. Replacing and rehabilitating culverts, inlets, and drainage pipes, including safety treatments
g. Providing driveway pipes
h. Performing minor bridge widening (less than one through lane)
i. Slide Stabilization
j. Structural BMP's for water quality improvement

2. Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.

a. Installing ramp metering devices
b. Installing lights
c. Adding or upgrading guardrail
d. Installing safety barriers including Jersey type barriers and pier protection
e. Installing or replacing impact attenuators
f. Upgrading medians including adding or upgrading median barriers
g. Improving intersections including relocation and/or realignment
h. Making minor roadway realignment
i. Channelizing traffic
j. Performing clear zone safety improvements including removing hazards and flattening slopes
k. Implementing traffic aid systems, signals, and motorist aid
l. Installing bridge safety hardware including bridge rail retrofit

3. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings.

a. Rehabilitating, reconstructing, or replacing bridge approach slabs
b. Rehabilitating or replacing bridge decks
c. Rehabilitating bridges including painting (no red lead paint), scour repair, fender systems, and minor structural improvements
d. Replacing a bridge (structure and/or fill)

4. Transportation corridor fringe parking facilities.

5. Construction of new truck weigh stations or rest areas.

6. Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.

7. Approvals for changes in access control.

8. Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.

9. Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.

10. Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.

11. Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.

12. Acquisition of land for hardship or protective purposes, advance land acquisition loans under section 3(b) of the UMT Act. Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.

13. Acquisition and construction of wetland, stream and endangered species mitigation sites.

14. Remedial activities involving the removal, treatment or monitoring of soil or groundwater contamination pursuant to state or federal remediation guidelines.

D. Special Project Information:

Estimated Costs:

Total Construction	$ 725,000
Right of Way	$ 24,000
Total	$ 749,000

Estimated Traffic:

Current	-	400
Year 2025	-	1000
TTST	-	1%
Dual	-	3%

Accidents: In a check of a recent three-year period, three accidents were reported: one due to a flood, a second due to a deer, and a third the result of a car running off a nearby curve in the road. In this latter case the driver was charged with exceeding a safe speed limit.

Functional Classification: Rural Local Route

School Busses: The School Transportation Director for Edgecombe County has indicated that there are three school busses traveling this road each morning and afternoon during the school year. A temporary offsite detour does not pose a concern for the school system.

Division Office Comments: The Division concurs with the proposed alternate.

Bridge Demolition: Bridge No. 60's superstructure is composed a timber deck on steel I-beams. The substructure is composed of timber caps and timber piles. Conventional practices generally permit the removal of the structure without any resulting debris or fill in the water.

Studied Offsite Detour: The studied offsite detour includes SR 1224, NC 43, SR 1006 and back to SR 1223. The detour would result in 6.3 miles additional travel and approximately 7.5 minutes delay relative to normal travel time. This delay falls just into range where the Department begins to consider an onsite detour. However, in order to minimize impacts to wetlands and project costs, and from written correspondence, there being no objection from Division, Emergency Services, or the county schools, an offsite detour is appropriate for this project.

Design Exception: There will be no design exceptions for this project.

E. Threshold Criteria

The following evaluation of threshold criteria must be completed for Type II actions

ECOLOGICAL		YES	NO
(1)	Will the project have a substantial impact on any unique or important natural resource?		X
(2)	Does the project involve habitat where federally listed endangered or threatened species may occur?		X
(3)	Will the project affect anadromous fish?	X	
(4)	If the project involves wetlands, is the amount of permanent and/or temporary wetland taking less than one-tenth (1/10) of an acre and have all practicable measures to avoid and minimize wetland takings been evaluated?	X	
(5)	Will the project require the use of U. S. Forest Service lands?		X
(6)	Will the quality of adjacent water resources be adversely impacted by proposed construction activities?		X
(7)	Does the project involve waters classified as Outstanding Water Resources (OWR) and/or High Quality Waters (HQW)?		X
(8)	Will the project require fill in waters of the United States in any of the designated mountain trout counties?		X
(9)	Does the project involve any known underground storage tanks (UST's) or hazardous materials sites?		X

PERMITS AND COORDINATION		YES	NO
(10)	If the project is located within a CAMA county, will the project significantly affect the coastal zone and/or any "Area of Environmental Concern" (AEC)?		X
(11)	Does the project involve Coastal Barrier Resources Act resources?		X
(12)	Will a U. S. Coast Guard permit be required?		X
(13)	Will the project result in the modification of any existing regulatory floodway?		X

		YES	NO
(14)	Will the project require any stream relocations or channel changes?		X
	SOCIAL, ECONOMIC, AND CULTURAL RESOURCES	**YES**	**NO**
(15)	Will the project induce substantial impacts to planned growth or land use for the area?		X
(16)	Will the project require the relocation of any family or business?		X
(17)	Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population?		X
(18)	If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor?	X	
(19)	Will the project involve any changes in access control?		X
(20)	Will the project substantially alter the usefulness and/or land use of adjacent property?		X
(21)	Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness?		X
(22)	Is the project included in an approved thoroughfare plan and/or Transportation Improvement Program (and is, therefore, in conformance with the Clean Air Act of 1990)?	X	
(23)	Is the project anticipated to cause an increase in traffic volumes?		X
(24)	Will traffic be maintained during construction using existing roads, staged construction, or on-site detours?	X	
(25)	If the project is a bridge replacement project, will the bridge be replaced at its existing location (along the existing facility) and will all construction proposed in association with the bridge replacement project be contained on the existing facility?	X	
(26)	Is there substantial controversy on social, economic, or environmental grounds concerning the project?		X
(27)	Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project?	X	
(28)	Will the project have an "effect" on structures/properties eligible for or listed on the National Register of Historic Places?		X

(29)	Will the project affect any archaeological remains which are important to history or pre-history?		X
(30)	Will the project require the use of Section 4(f) resources (public parks, recreation lands, wildlife and waterfowl refuges, historic sites, or historic bridges, as defined in Section 4(f) of the U. S. Department of Transportation Act of 1966)?		X
(31)	Will the project result in any conversion of assisted public recreation sites or facilities to non-recreation uses, as defined by Section 6(f) of the Land and Water Conservation Act of 1965, as amended?		X
(32)	Will the project involve construction in, across, or adjacent to a river designated as a component of or proposed for inclusion in the National System of Wild and Scenic Rivers?		X

F. Additional Documentation Required for Unfavorable Responses in Part E
(Discussion regarding all unfavorable responses in Part E should be provided below. Additional supporting documentation may be attached, as necessary.)

Response to Question 3: The N.C. Wildlife Resource Commission has indicated the presence of anadramous fish at this site. "Stream Crossing Guidelines for Anadramous Fish" are recommended. A moratorium from February 15 to June 30 of any given year will be required.

G. CE Approval

TIP Project No.	**B-3639**
State Project No.	**8.2291001**
W.B.S. No.	**33187**
Federal Project No.	**BRZ-1223(3)**

Project Description:

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Categorical Exclusion Action Classification: (Check one)

____ TYPE II(A)
_X_ TYPE II(B)

Approved:

1/24/05 — Date
Assistant Manager
Project Development & Environmental Analysis Branch

1/24/05 — Date
Project Planning Unit Head
Project Development & Environmental Analysis Branch

____ — Date
N/A
Project Planning Engineer
Project Development & Environmental Analysis Branch

For Type II(B) projects only:

2/11/05 — Date
for John F. Sullivan, III, P.E., Division Administrator
Federal Highway Administration

REPLACE BRIDGE NO. 60 ON SR 1223
OVER COKEY SWAMP
EDGECOMBE COUNTY

TIP NO. B-3639
STATE PROJECT NO. 8.2291001
FEDERAL AID PROJECT NO. BRZ-1223(3)

NATURAL RESOURCES TECHNICAL REPORT

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

ELIZABETH L. LUSK, ENVIRONMENTAL BIOLOGIST

December 31, 2002

TABLE OF CONTENTS

1.0 INTRODUCTION

The following Natural Resources Technical Report (NRTR) is submitted to assist in the preparation of a Categorical Exclusion (CE) for the proposed project. The project is located in the central Edgecombe County (Figure 1).

1.1 Project Description

The proposed project, crossing Cokey Swamp, calls for the replacement of Bridge No. 60 on SR 1223 in Edgecombe County. The current 96-foot long bridge structure was built in 1964 with a bridge roadway width of 24 feet and a deck width of 25 feet. The existing two-lane roadway is within a 50-foot ROW (ditch to ditch). Bridge No. 60 will be replaced with a 130-foot long bridge in the same location and the same grade as the existing structure. Proposed improvements will include a 22-foot roadway with 3-foot shoulders utilizing guardrails within an 80-foot right of way. The proposed structure will have an elevation similar to the existing structure. Project length is 830 feet. Traffic will be detoured offsite during construction.

1.2 Purpose

The purpose of this report is to inventory and describe the natural resources which occur within the proposed right-of-way boundaries and which are likely to be impacted by the proposed action. Assessments of the nature and severity of probable impacts to these natural resources are provided, along with recommendations for measures that will minimize resource impacts. This report identifies areas of particular environmental concern that may affect the selection of a preferred alignment or may necessitate changes in design criteria. Such environmental concerns should be addressed during the preliminary planning stages of the proposed project in order to maintain environmental quality in the most efficient and effective manner. The analyses contained in this document are relevant only in the context of the existing preliminary project boundaries and design. **If design parameters and criteria change, additional field investigations may be necessary.**

1.3 Methodology

Research was conducted prior to field investigations. Published resource information pertaining to the project area was gathered and reviewed. Resources utilized in this preliminary investigation of the project area include:

- U.S. Geological Survey (USGS) quadrangle maps (Pinetops).
- USDA Soil Conservation Service, currently known as Natural Resource Conservation Service, Soil Survey of Edgecombe County, North Carolina (1979).
- NC Center for Geographic Information and Analysis Environmental Sensitivity Base Maps of Edgecombe County (1995).

Water resource information was obtained from publications of the Department of Environment, Health and Natural Resources (DENR, 2002). Information concerning the occurrence of federal and state protected species in the study area was obtained from the U.S. Fish and Wildlife Service (USFWS) list of protected and candidate species (March 7, 2002) and from the N.C. Natural Heritage Program (NCNHP) database of rare species and unique habitats. NCNHP files were reviewed for documented occurrences of state or federally listed species and locations of significant natural areas.

A study corridor of 80 feet equal to the proposed ROW was chosen for natural resource investigation. NCDOT Environmental Biologists Elizabeth Lusk and Hal Bain conducted general field surveys in the proposed project area on November 1, 2001. Water resources were identified and their physical characteristics were recorded. Plant communities and their associated wildlife were also

identified and described. Terrestrial community classifications generally follow Schafale and Weakley (1990) where possible, and plant taxonomy follows Radford, *et al.* (1968). Animal taxonomy follows Martof, *et al.* (1980), Menhenick (1991), Potter, *et al.* (1980), and Webster, *et al.* (1985). Vegetative communities were mapped utilizing aerial photography of the project site. Predictions regarding wildlife community composition involved general qualitative habitat assessment based on existing vegetative communities. Wildlife identification involved using a variety of observation techniques: qualitative habitat assessment based on vegetative communities, active searching, identifying characteristic signs of wildlife (sounds, scat, tracks and burrows). Cursory surveys of aquatic organisms were conducted and tactile searches for benthic organisms were administered as well. Organisms captured during these searches were identified and then released.

Jurisdictional wetland determinations were performed utilizing delineation criteria described in the "Corps of Engineers Wetland Delineation Manual" (Environmental Laboratory, 1987) and rated using the "Guidance for Rating the Values of Wetlands in North Carolina" (Division of Environmental Management 1995). Jurisdictional surface water determinations were performed using guidance provided by the N.C. Division of Water Quality [(DWQ), formerly known as the Division of Environmental Management (DEM)], "Field Location of Streams, Ditches, and Ponding" (NCDENR-DWQ 1997) and DWQ Stream Classification Form (NCDENR-DWQ 1999a).

1.4 Qualifications of Principal Investigator

Investigator:	Elizabeth L. Lusk
Education:	B.A., Davidson College
	Master of Forest Management, Duke University
Certification:	Registered Forester, #995
Experience:	Environmental Biologist, NC DOT, Raleigh, NC, August 1999 to present.
	Biologist, CZR Environmental Consultants, Wilmington, NC, 1994 to1999.
	Service Forester, NC Division of Forest Resources, Charlotte, NC, 1992 to 1993.
	Service Forester, MD Forest Service, Baltimore, MD, 1990 to1992.
Expertise:	Bottomland hardwood mitigation, wetland delineation, hydric soil evaluation, biotic community mapping and assessment, technical report writing.

1.5 Terminology and Definitions

Definitions for aerial descriptions contained in this report are as follows: **Project (Study) Area** denotes the area bounded by the proposed right-of-way limits along the full length of the project alignment; **Project Vicinity** describes an area extending 0.5 miles on all sides of the project study area; and **Project Region** is equivalent to an area represented by a 7.5 minute USGS quadrangle map with the project occupying the central position.

2.0 PHYSICAL RESOURCES

Soil and water resources that occur in the project area are discussed below with respect to possible environmental concerns. Soil properties and site topography significantly influence the potential for soil erosion and compaction, along with other possible construction limitations or management concerns. Water resources within the project area present important management limitations due to the need to regulate water movement and the increased potential for water quality degradation. Excessive soil disturbance resulting from construction activities can potentially alter both the flow and quality of water resources, limiting downstream uses. In addition, soil characteristics and the availability of water directly influence the composition and distribution of flora and fauna in biotic communities, thus affecting the characteristics of these resources.

2.1 Regional Characteristics

The proposed project lies within the coastal plain physiographic region of North Carolina. Edgecombe County is nearly level with some gentle sloping near the drainageways. The county slopes very gently eastward and southeastward. The highest elevation is about 140 feet, along the western boundary, and the lowest is about 10 feet, on the southeastern boundary where the Tar River, the main drainageway, leaves the county. The elevation of Cokey Swamp in the project area is approximately 20 feet. The project study area is primarily agricultural with some scattered residences. Woods dominate the floodplain along the swamp.

2.2 Soils

The central/southwestern portion of Edgecombe County is primarily underlain with soils in the Norfolk-Aycock-Wagram Association. This association is comprised of nearly level to strongly sloping, well-drained soils that have a loamy subsoil. There are two soil types located in the project area. A brief description of each soil type is provided.

- Bibb series (BB) consists of poorly drained soils typically found on flood plains with slopes of less than 2 percent. In the project area, this soil is found in a band along both sides of Cokey Swamp. The surface layer is dark grayish brown loam about 8 inches thick. The underlying material is a gray loam transitioning to a dark gray sandy loam at 38 inches. The organic matter of the surface layer is low. Permeability is moderate and available water capacity is high. Depth to bedrock is more than 5 feet. The seasonal high water table is at a depth of 0.5 to 1.5 feet. These soils are commonly flooded for brief periods. Use limitations include wetness and flooding. This soil is listed as a hydric soil in North Carolina (USDA 1989).

- Lumbee series (Lu) consists of poorly drained soils typically found in broad, smooth flats and in shallow depressions in stream terraces with slopes of 0 to 2 percent. This soil is found in the southern portion of the project area in the floodplain bordering the Bibb loam. The surface layer is a dark grayish brown fine sandy loam about 8 inches thick. The underlying material is sandy clay loam transitioning to white sand at 33 inches. The organic matter of the surface layer is medium. Permeability and available water capacity are both moderate. Depth to bedrock is greater than 5 feet. The seasonal high water table is at or near the surface. Wetness and flooding are the main limitations. This soil is listed as a hydric soil in North Carolina (USDA 1989).

2.3 Water Resources

This section contains information concerning surface water resources likely to be impacted by the proposed project. Water resource assessments include the physical characteristics, best usage standards, and water quality aspects of the water resources, along with their relationship to major regional drainage systems. Probable impacts to surface water resources are also discussed, as are means to minimize impacts.

2.3.1 Waters Impacted and Characteristics

The project study area is located within subbasin 03-03-03 (Mid Tar River from Swift Creek to Conetoe Creek), Hydrologic Unit 03020103 of the Tar-Pamlico River Basin. The Tar-Pamilico River Basin is the fourth largest river basin in North Carolina. This river basin covers an area of 5,440 square miles, encompassing 16 counties and 51 municipalities, including North Carolina's largest natural lake - Lake Mattamuskeet. The Mid Tar River subbasin contains approximately 40-river miles of the Tar River from the confluence of Swift Creek in Edgecombe County to the confluence of Conetoe Creek in Pitt County. This subbasin also includes the entire catchments of Conetoe Creek, Otter Creek, Town Creek and Cokey Swamp. Streams in this subbasin are primarily within the coastal plain ecoregion. The area is characterized by large amounts of agricultural land (41 percent of the land cover is categorized as

cultivated cropland). Tarboro is the largest urban area, but parts of Rocky Mount are also in this subbasin. (NCDENR-DWQ 1999).

Cokey Swamp is the only water resource in the project study area. Although it should be noted that a small unnamed tributary (UT) to Cokey Swamp comes in from the north just west of the proposed ROW. This area was historically a swamp with a minimally defined channel. However, in order to provide additional agricultural area, the swamp was probably channelized and drained. Currently, Cokey Swamp in the vicinity of SR 1223 is approximately 40 feet wide and ranges in depth from 4 to 6 feet. The creek has substrate composed primarily of silt. The water clarity was low, most likely due to the natural tannins in the area. Water flow was slow on the day of the site visit. The stream is wider in the vicinity of the bridge, where water has scoured around the bents eroding the banks. Streambed and bank are well defined. The small UT to Cokey Swamp has similar characteristics although it is narrower, only 1 to 2 feet wide at the top of bank. Flow in the UT was slow.

2.3.2 Clean Water Act Section 303(d) Streams

The DWQ has assembled a list of impaired waterbodies according to the Clean Water Act Section 303(d) and 40 CFR 130.7, hereafter referred to as the NC 2000 Section 303(d) list. The list is a comprehensive public accounting of all impaired waterbodies. An impaired waterbody is one that does not meet water quality standards including designated uses, numeric and narrative criteria and anti-degradation requirements defined in 40 CFR 131. The standards violation may be due to an individual pollutant, multiple pollutants, pollution, or an unknown cause of impairment. The source of impairment could be from point sources, nonpoint sources, and atmospheric deposition. Some sources of impairment exist across state lines. North Carolina's methodology is strongly based on the aquatic life use support guidelines available in the Section 305(b) guidelines (EPA-841-B-97-002A and -002B). Those streams attaining only Partially Supporting (PS) or Not Supporting (NS) status are listed on the NC 2000 Section 303(d) list. Streams are further categorized into one of six parts within the NC 2000 Section 303(d) list, according to source of impairment and degree of rehabilitation required for the stream to adequately support aquatic life. Within Parts 1, 4, 5, and 6 of the list, N.C. has developed a priority ranking scheme (low, medium, high) that reflects the relative value and benefits those waterbodies provide to the State.

Cokey Swamp is not currently listed on the NC 2000 Section 303(d) list. The proposed bridge replacement will not significantly jeopardize the water quality of the stream. *Therefore, an Indirect and Cumulative Impacts Analysis of the project to the health of this stream is not necessary.*

2.3.3 Best Usage Classification

Streams have been assigned a best usage classification by the Division of Water Quality (DWQ), formerly Division of Environmental Management (DEM), which reflects water quality conditions and potential resource usage. Unnamed tributaries receive the same classification as the streams to which they flow. The classification for Cokey Swamp [DEM Index No. 28-83-3, 1/1/90] is **C NSW**. Class **C** refers to waters protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture and other uses suitable for Class C. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner. There are no restrictions on watershed development activities. Nutrient Sensitive Waters (**NSW**) is a supplemental classification intended for waters needing additional nutrient management due to their being subject to excessive growth of microscopic or macroscopic vegetation. In general, management strategies for point and nonpoint source pollution control require no increase in nutrients over background levels.

No waters classified as High Quality Waters (HQW), Water Supplies (WS-I or WS-II) or Outstanding Resource Waters (ORW) occur within one mile of the project study area.

2.4 Summary of Anticipated Impacts to Water Resources

Impacts to water resources in the project area are likely to result from activities associated with project construction. Activities likely to result in impacts are clearing and grubbing on streambanks, riparian canopy removal, instream construction, fertilizers and pesticides used in revegetation, and pavement installation. The following impacts to surface water resources are likely to result from the above mentioned construction activities.

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

In order to minimize potential impacts to water resources in the project area, NCDOT's Best Management Practices for the Protection of Surface Waters will be strictly enforced during the construction phase of the project. **In addition, the WRC noted that Cokey Swamp is known to support anadramous fish including striped bass and American shad.** NCDOT will follow Stream Crossing Guidelines for Anadromous Fish Passage and will observe an appropriate moratorium for in-stream work. Limiting instream activities and revegetating stream banks immediately following the completion of grading can further reduce impacts.

3.0 BIOTIC RESOURCES

Biotic resources located in the project area include terrestrial and aquatic communities. This section describes those communities encountered and the relationships between fauna and flora found within these communities. The composition and distribution of biotic communities throughout the project area are reflective of the topography, hydrologic influences, and the project area's past and present land uses. Descriptions of the terrestrial systems are presented in the context of plant community classifications and follow those presented by Schafale and Weakly (1990) where possible. The dominant flora and fauna observed, or likely to occur, in each community are described and discussed.

Scientific nomenclature and the common names (when applicable) are provided for each animal and plant species described. The plant taxonomy generally follows Radford et al (1968). Animal taxonomy follows Borror et al (1970), Lee et al (1982), Menhenick (1991), Martof et al (1980), Peterson (1980), Potter et al (1980), and Webster et al (1985). All subsequent references to the same organism will include the common name only. Fauna that is observed during the site visit is denoted with an asterisk (*). Scat evidence or tracks equate to observation of the species. Published range distributions and habitat analysis are used in estimating fauna expected to be present within the project area.

3.1 Terrestrial Communities

Much of the flora and fauna described from terrestrial communities utilize resources from different communities, making boundaries between contiguous communities difficult to define. Generally,

however, land use defines community boundaries. There are three terrestrial communities located in the project area: bottomland hardwoods, swamp hardwoods, and maintained areas.

3.1.1 Bottomland Hardwood Community

The bottomland hardwood community, found within the southeastern quadrant of the project on an elevated floodplain of Cokey Swamp, is composed of several mature tree species including sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), river birch (*Betula nigra*), winged elm (*Ulmus alata*), and laurel oak (*Quercus laurifolia*). Shrub, herbaceous, and vine species found within the project area include Chinese privett (*Ligustrum* sp.), Japanese honeysuckle (*Lonicera japonica*), blackberry (*Rubus* sp.), and multiflora rose (*Rosa multiflora*).

3.1.2 Swamp Hardwood Community

This wooded community in the northeastern, northwestern, and southwestern quadrants on floodplains with a slightly lower elevation than the previous community is composed mainly of species suited to frequent inundation and saturated soils. The most common mature tree species here include bald cypress (*Taxodium distichum*), green ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), and sweet gum (*Liquidambar styraciflua*). Saplings include regeneration of the previously listed tree species. The shrub layer is dominated by blackberry. Vines present include greenbrier (*Smilax rotundifolia*) and Japanese honeysuckle.

3.1.3 Maintained Community

This community is located in the grassed shoulders on both sides of SR 1223 and will be impacted by the bridge replacement. Because of mowing and the use of herbicides this community is kept in a constant state of early succession. The dominant species in this community are fescue (*Festuca* sp.), henbit (*Lamium amplexicaule*), and wild onion (*Allium canadense*).

3.2 Wildlife

Maintained/disturbed communities adjacent to forested tracts provide rich ecotones for foraging, while the forests provide forage and cover. Common mammals and birds associated with this type of habitat are woodchuck (*Marmota monax*), least shrew (*Crypototis parva*), southern short-tailed shrew (*Blarina carolinensis*), hispid cottonrat (*Sigmodon hispidus*), eastern cottontail rabbit (*Sylvilagus floridanus*), raccoon* (*Procyon lotor*), opposum* (*Didelphis virginiana*), white tailed deer* (*Odocoileus virginianus*), mallard ducks* (*Anas platyrhynchos*), great blue heron* (*Ardea herodias*), red-bellied woodpecker* (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), white-throated sparrow* (*Zonotrichia albicollis*), Carolina chickadee* (*Parus carolinensis*), common yellow throat* (*Geothlypis trichas*), Carolina wren* (*Thryothorus ludovicianus*), Eastern bluebird* (*Sialia sialis)*), yellow-rumped warbler* (*Dendroica coronata*), mockingbird* (*Mimus polygottos*), cardinal (*Cardinalis cardinalis*), common crow* (*Corvus brachyrhynchos*), turkey vulture* (*Carthartes aura*), and white-breasted nuthatch (*Sitta carolinensis*). In addition, a yellowbelly slider* (*Chrysemys scripta*) was observed and several crickets* (*Gryllus* sp.) were heard during the field investigation.

3.3 Aquatic Community

This community is contained within Cokey Swamp. The physical characteristics (size and water quality) of the stream, as well as the adjacent terrestrial community, directly influence faunal composition of this aquatic community. The project area's surface water can be expected to provide habitat for a limited number of aquatic organisms. There were several piles of woody debris, which also provide habitat, shade, and concealment pockets for several aquatic species. Aquatic invertebrates are a major component of river ecosystems, as primary and secondary consumers, and as prey items for organisms higher in the food chain. Insects typically found in this type of community include Mayflies (Ephemeroptera) and midges (*Chinonomidae* sp.), whirly-gig beetles (*Gyrinus limbatus*), dragonflies (*Odonta* sp.), and mosquito larvae (*Culicidae* sp.) Mayflies (Ephemeroptera) and midges (*Chinonomidae* sp.) Fish species likely to be found in Cokey Swamp include blue gill (*Leponis macrochirus*)*,

largemouth bass (*Micropterus salmoides*)*, and mosquito fish (*Ganfusia affinis),* as well as striped bass (*Morone saxatilis*) and American shad (*Alosa sapidissima*), both anadromous fish. Other species likely to be found here include Eastern mud turtle (*Kinosternon subrubrum*), snapping turtle (*Chelydra serpentina*), and the yellow belly slider* (*Chrysemys scripta*). Other aquatic wildlife observed includes the northern cricket frog* (*Acris crepitans)*), mussels* (*Elliptio* spp.), Campeloma snail* (*Campeloma decisum*), and Asiatic clam* (*Corbicula fluminea*).

The aquatic community serves as a major food source for many terrestrial organisms such as raccoons, various species of snakes, birds, turtles, and amphibians. It also serves as a means of predator avoidance for many animals.

3.4 Summary of Anticipated Impacts to Biotic Resources

Construction of the proposed project will have various impacts on the biotic resources and functions described. This section quantifies and qualifies potential impacts to the natural communities within the project area in terms of the area impacted and the organisms affected. Temporary and permanent impacts are considered here as well, along with recommendations to minimize or eliminate impacts.

Impacts to terrestrial communities will result from project construction due to ROW widening. Loss of the bottomland hardwood community could result from conversion of this community to maintained community in order to accommodate the increased ROW width. Table 1 summarizes potential losses to these communities, resulting from project construction. Calculated impacts to terrestrial communities reflect the relative abundance of each community present in the study area. Estimated impacts are derived based on the project lengths described in Section 1.1, and the entire proposed ROW width of 80 feet for the bridge replacement. However, project construction often does not require the entire ROW; therefore, actual impacts may be considerably less.

Table 1. Estimated area impacts to terrestrial communities.

Community	Impacted Area (acres)
Maintained Roadside	0.3
Swamp Hardwood (wetland)	0.1
Bottomland Hardwood	0.1
Total Impacts	**0.5**

4.0 JURISDICTIONAL TOPICS

This section provides inventories and impact analyses pertinent to two significant regulatory issues: Waters of the United States and rare and protected species.

4.1 Waters of the United States

Surface waters and wetlands fall under the broad category of "Waters of the United States" (Waters of the U.S.), as defined in Section 33 of the Code of Federal Register (CRF) Part 328.3. Any action that proposes to dredge or place fill material into surface waters or wetlands falls under the jurisdiction of the U.S. Army Corps of Engineers (COE) under Section 404 of the Clean Water Act (33 U.S.C. 1344). Surface waters include all standing or flowing waters which have commercial or recreational value to the public.

4.1.1 Characteristics of Wetlands and Surface Waters

Potential wetland communities were investigated following the 1987 "Corps of Engineers Wetland Delineation Manual". The three-parameter approach is used where hydric soils, hydrophytic vegetation, and hydrology must all be present for an area to be considered a wetland. There are wetlands in the project area on both sides of Cokey Swamp. According to Cowardin's classification system, the Swamp Hardwood Community in the remaining quadrants around the bridge is a PFO2C wetland type (palustrine, forested, needle-leaved deciduous, seasonally flooded) (Cowardin *et al*, 1979). The wetlands are of medium quality.

4.1.2 Summary of Anticipated Jurisdictional Impacts

Impacts to Waters of the U.S. are calculated based on the acreage of jurisdictional wetlands that are located within the 80-foot proposed right-of-way and the linear feet of the stream that will be culverted or piped rather than bridged. **Approximately 0.1 acres of wetland may be impacted.** The proposed bridge replacement will span Cokey Swamp. While it may be necessary to install bents in the streambed, **stream impacts are expected to be negligible or nonexistent.**

4.1.3 Permits

Impacts to jurisdictional Waters of the U.S. are anticipated from the proposed project. As a result, construction activities will require permits and certifications from various regulatory agencies in charge of protecting the water quality of public water resources.

A Nationwide Permit 23 CFR 330.5(a) (23) is likely to be applicable for all impacts to Waters of the U.S. resulting from the proposed project. This permit authorizes activities undertaken, assisted, authorized, regulated, funded or financed in whole, or part, by another Federal agency or department where that agency or department has determined, (pursuant to the council on environmental quality regulation for implementing the procedural provisions of the National Environmental Policy Act), that:

(1) The activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment, and;

(2) The office of the Chief of Engineers has been furnished notice of the agency' or department's application for the Categorical Exclusion and concurs with that determination.

Under current design, span lengths and superstructure type lend itself to top down construction. However, in the event that a temporary causeway is required to construct the new bridge, a Nationwide Permit 33 CFR 330.5(a) (33) may also be required.

Section 401 of the Clean Water Act requires that the state issue or deny water certification for any federally permitted or licensed activity that may result in a discharge to Waters of the U.S. A Section 401 Water Quality Certification (WQC) allows surface waters to be temporarily impacted for the duration of the construction or other land manipulation. Corresponding WQC's for NWP 23 and 33 are No. 3361 and No. 3366, respectively. However, written concurrence from DWQ is not required provided all standard conditions of this Certification can be met.

Cokey Swamp is subject to the Tar-Pamlico Riparian Buffer Rules. However, as a Road Crossing of a stream subject to the Rules that impacts less than 40 linear feet of stream, this project is exempt. Nevertheless, design and construction should minimize soil disturbance and provide the maximum water quality protection practicable. A DWQ Buffer Certification will be required from the NC Division of Water Quality.

4.1.3.1 Bridge Demolition

Bridge No. 60, built by NCDOT in 1964, is constructed entirely of timber and steel and will be removed with no fill resulting from bridge demolition.

4.1.4 Mitigation

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

4.1.4.1 Avoidance

Avoidance mitigation examines all appropriate and practicable possibilities of averting impacts to Waters of the U.S. According to a 1990 Memorandum of Agreement between the Environmental Protection Agency (EPA) and the USACE, in determining "appropriate and practicable" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology, and logistics in light of overall project purposes. Replacing the existing bridge with another bridge avoids stream impacts. In addition, use of an offsite detour prevents impacts normally resulting from a temporary detour.

4.1.4.2 Minimization

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to Waters of the U.S.. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction to median widths, right-of-way widths, fill slopes and/or road shoulder widths. In order to minimize impacts from the replacement of bridge No. 60, steeper slopes and guardrails will be utilized to lessen the footprint of the project. To minimize wetland impacts the bridge will be 34 feet longer than the existing bridge.

4.1.4.3 Compensatory Mitigation

Compensatory mitigation is not normally considered until anticipated impacts to Waters of the U.S. have been avoided and minimized to the maximum extend possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, creation, and enhancement of Waters of the U.S. Such actions should be undertaken in areas adjacent to or contiguous to the discharge site. Projects authorized under Nationwide Permits that result in the fill or alteration of:

- More than 0.1 acre (0.04 ha) may require compensatory mitigation,
- At least 1.0 acre (0.40 ha) of wetlands will require compensatory mitigation, and/or
- At least 150 linear feet (45.7 meters) of streams will require compensatory mitigation.

The impacts from this project will probably not meet the minimum mitigation threshold of 0.1 acre of wetlands or 150 linear feet of stream. **Therefore, no mitigation requirement is anticipated**. However, final permit/mitigation decisions rest with the USACE.

4.2 Rare and Protected Species

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to exist with human development. Federal law (under the provisions of the Endangered Species Act of 1973, as amended) requires that any action, likely to adversely affect a species classified as federally-protected, be subject to review by the United States Fish and Wildlife Service (USFWS). Other species may receive additional protection under separate state laws.

4.2.1 Federally-Protected Species

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of March 7, 2002, the USFWS lists two federally protected species for Edgecombe County. The Tar spinymussel (*Elliptio steinstansana*) and the red-cockaded woodpecker (*Picoides borealis*) are both currently listed as endangered. The following is a brief description of the characteristics and habitat requirements for these species.

Table 2. Federally Protected Species for Edgecombe County.

Scientific Name	Common Name	Status	Biological Conclusion
Elliptio steinstansana	Tar spinymussel	E	Unresolved
Picoides borealis	red-cockaded woodpecker	E	No Affect

E - denotes a species in danger of extinction throughout all or a significant portion of its range.

Tar river spiny mussel *(Elliptio steinstansana)* Endangered
Listed: 7/29/85

Distribution in NC: Previously this mussel was believed to be endemic to the Tar River system, currently occurring in relatively short stretches of the Tar River and three creeks (Shocco, Sandy/Swift and Little Fishing) in the Tar drainage. Historically the TSM was collected in the Tar River from near Louisburg in Franklin County to Falkland in Pitt County (approximately 78 river miles). Clarke (1983) located TSM in only a 12-mile stretch of the Tar River in Edgecombe County. Recently (1998) the TSM was found in the Little River of the Neuse River Basin

Characteristics: The Tar spinymussel (TSM) grows to an average length of 60 millimeters. Short spines are arranged in a radial row anterior to the posterior ridge on one valve and symmetrical to the other valve. The shell is generally smooth in texture with as many as 12 spines that project perpendicularly from the surface and curve slightly ventrally. However, adult specimens tend to lose their spines as they mature (USFWS 1992a). The TSM is distinguished by its shiny periostricum, parallel pseudocardinal teeth, and the linear ridges on the inside surface of the shell.

Little is known about the reproductive biology of the TSM (USFWS 1992a), however, nearly all freshwater mussel species have similar reproductive strategies, which involves a larval stage (glochidium), that becomes a temporary obligatory parasite on a fish. Many mussel species have specific fish hosts which must be present to complete their life cycle. Pennak (1989) should be consulted for a general overview of freshwater mussel reproductive biology.

Habitat Requirements: The preferred habitat of the TSM in Swift Creek was described as relatively fast flowing, well oxygenated, circumneutral pH water in sites prone to significant swings in water velocity, with a substrate comprised of relatively silt-free loose gravel and/or coarse sand.

Threats to Species: The cumulative effects of several factors, including sedimentation, point and non-point discharge, stream modification (impoundment's, channelization etc.), coupled with the apparent restricted range, have contributed to the decline of this species throughout its range.

When mussel populations are reduced to a small number of individuals and are restricted to short reaches of isolated streams, they are extremely vulnerable to extirpation from a single catastrophic event or activity (Strayer et al. 1996). Catastrophic events may consist of natural events such as flooding, or drought as well as human influenced events such as toxic spills associated with highways or railroads.

Siltation resulting from improper erosion control of various land usage, including agricultural, forestry and development activities has been recognized as a major contributing factor to degradation of mussel populations (USFWS 1996). Siltation has been documented to be extremely detrimental to mussel populations by degrading substrate and water quality, increasing potential exposure to other pollutants and by direct smothering of mussels (Ellis 1936, Marking and Bills 1979). Sediment accumulations of less than 1 inch have been shown to cause high mortality in most mussel species (Ellis 1936). In Massachusetts, a bridge construction project decimated a population of the Endangered dwarf-wedge mussel (*Alasmidonta heterodon*), because of accelerated sedimentation and erosion (Smith 1981).

Sewage treatment effluent has been documented to significantly affect the diversity and abundance of mussel fauna (Goudreau et al. 1988). Goudreau et al. (1988) found that recovery of mussel populations may not occur for up to two miles below points of chlorinated sewage effluent.

The impact of impoundments on freshwater mussels has been well documented (USFWS 1992b, Neves 1993). Construction of dams transforms lotic habitats into lentic habitats, which results in changes with aquatic community composition. These changes associated with inundation adversely affect both adult and juvenile mussels as well as fish community structure, which could eliminate possible fish hosts for glochidia (Fuller 1974). Muscle Shoals on the Tennessee River in northern Alabama, once the richest site for naiads (mussels) in the world, is now at the bottom of Wilson Reservoir and covered with 19 feet of muck (USFWS 1992c).

The introduction of exotic species such as the Asiatic clam (*Corbicula fluminea*) and zebra mussel (*Dreissena polymorpha*) has also been shown to pose significant threats to native freshwater mussels. The Asiatic clam is now established in most of the major river systems in the United States (Fuller and Powell 1973), including those streams still supporting surviving populations of the TSM. Concern has been raised over competitive interactions for space, food and oxygen with this species and native mussels, possibly at the juvenile stages (Neves and Widlak 1987, Alderman 1997).

The zebra mussel, native to the drainage basins of the Black, Caspian and Aral Seas, is an exotic freshwater mussel that was introduced into the Great Lakes in the 1980s and has rapidly expanded its range into the surrounding river basins, including those of the South Atlantic slope (O'Neill and MacNeill 1991). This species competes for food resources and space with native mussels, and is expected to contribute to the extinction of at least 20 freshwater mussel species if it becomes established throughout most of the eastern United States (USFWS 1992c).

Biological Conclusion: ***Unresolved***
Within the project area, Cokey Swamp does not contain ideal habitat for the Tar spinymussel. Water flow is relatively slow with a mucky substrate. However, NCDOT biologists are scheduled to survey for this species. Surveys should be conducted within the two year window prior to bridge replacement.

Red-cockaded woodpecker (*Picoides borealis*) Endangered
Animal Family: Picidae
Date Listed: 10/13/70
Distribution in N.C.: Anson, Beaufort, Bertie, Bladen, Brunswick, Camden, Carteret, Chatham, Columbus, Craven, Cumberland, Dare, Duplin, Forsyth, Gates, Halifax, Harnett, Hertford, Hoke, Hyde, Johnston, Jones, Lee, Lenoir, Montgomery, Moore, Nash, New Hanover, Northhampton, Onslow, Orange, Pamlico, Pender, Perquimans, Pitt, Richmond, Robeson, Sampson, Scotland, Tyrrell, Wake, Wayne, Wilson.

Characteristics: The adult red-cockaded woodpecker (RCW) has a plumage that is entirely black and white except for small red streaks on the sides of the nape in the male. The back of the RCW is black and white with horizontal stripes. The breast and underside of this woodpecker are white with streaked flanks. The RCW has a large white cheek patch surrounded by the black cap, nape, and throat.

Habitat: The RCW uses open old growth stands of southern pines, particularly longleaf pine (Pinus palustris), for foraging and nesting habitat. A forested stand must contain at least 50% pine, lack a thick understory, and be contiguous with other stands to be appropriate habitat for the RCW. These birds nest exclusively in trees that are $\geq$ 60 years old and are contiguous with pine stands at least 30 years of age. The foraging range of the RCW is up to 200.0 hectares (500.0 acres). This acreage must be contiguous with suitable nesting sites.

These woodpeckers nest exclusively in living pine trees and usually in trees that are infected with the fungus that causes red-heart disease. Cavities are located in colonies from 3.6-30.3 m (12-100 ft) above the ground and average 9.1- 15.7 m (30-50 ft) high. They can be identified by a large incrustation of running sap that surrounds the tree. The RCW lays its eggs in April, May, and June; the eggs hatch approximately 10 to 12 days later.

Biological Conclusion ***No Affect***
There is no suitable habitat within the project area. Mature pines do not exist within or near the proposed construction area. Therefore, construction of the proposed project will not affect this species.

4.2.2 Federal Species of Concern and State Listed Species

There are six Federal Species of Concern (FSC) listed by the USFWS for Edgecombe County. Federal species of concern are not afforded federal protection under the Endangered Species Act of 1973, as amended, and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. However, the status of these species is subject to change, and so should be included for consideration. A FSC is defined as a species that is under consideration for listing for which there is insufficient information to support listing. In addition, organisms which are listed as Endangered (E), Threatened (T), or Special Concern (SC) by the North Carolina Natural Heritage Program list of Rare Plant and Animal Species are afforded state protection under the NC State Endangered Species Act and the NC Plant Protection and Conservation Act of 1979,

as amended. A December 31, 2002 review of the NCNHP database of rare species and unique habitats revealed no occurrence of FSC species within one mile the project study area.

Table 1. Federal Species of Concern for Edgecombe County.

Scientific Name	Common Name	NC Status	Habitat Present
Ammodramus henslowii	Henslow's sparrow	SR	No
Heterodon simus	Southern hognose snake	SR/PSC +	No
Lythrurus matutinus	Pinewoods shiner	SR	Yes
Elliptio lanceolata	Yellow lance	T/PE	Yes
Fusconaia masoni	Atlantic pigtoe	T/PE	Yes
Lampsilis cariosa	Yellow lampmussel	T/PE	Yes

T A Threatened species is one which is likely to become endangered species within the foreseeable future throughout all or a significant portion of its range.

E An Endangered species is one which is in danger of extinction throughout all or a portion of its range

SR A Significantly Rare species is one which is very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction, direct exploitation or disease. The species is generally more common elsewhere in its range, occurring peripherally in North Carolina.

/P_ denotes a species which has been formally proposed for listing as Endangered, Threatened, or Special Concern, but has not yet completed the listing process.

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

\+ No date of occurrence is available

5.0 CONCLUSIONS

The proposed project is located in the Tar Pamlico River Basin and is subject to the Tar Pamlico Riparian Buffer Rules. Within the study area for this project, there are wetlands in three of the four quadrants around the bridge. Jurisdictional wetland impacts may be as high as 0.1 acre, but in all probability will be less and will not require mitigation. Cokey Swamp may support anadromous fish, particularly striped bass and American shad. Therefore, an instream moratorium should be in place from February 15 until June 30, inclusive. There are two federally protected species; one of which, the Tar spinymussel, carries an Unresolved Biological Conclusion. Surveys for this mussel should be conducted with two years prior to construction.

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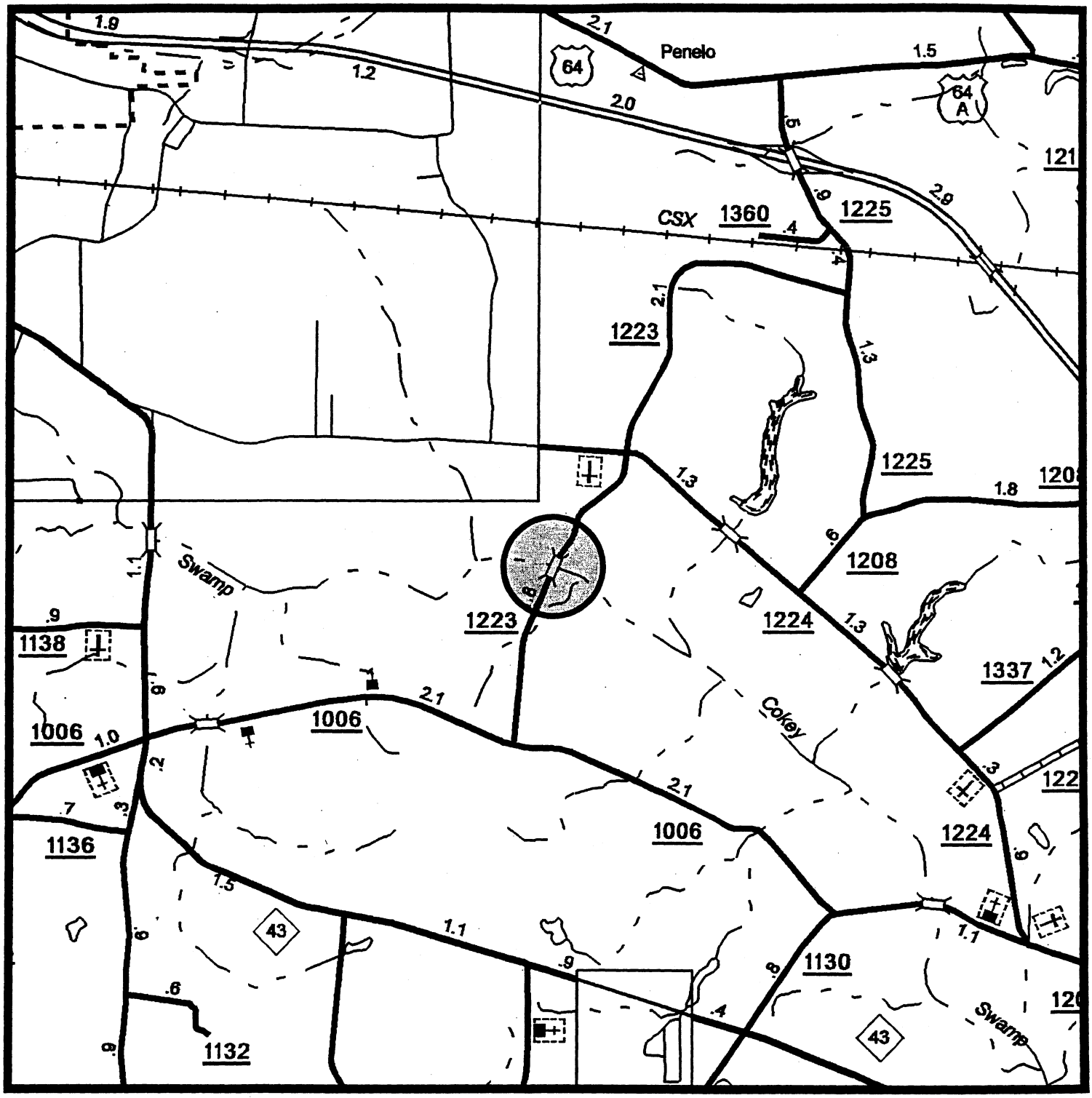
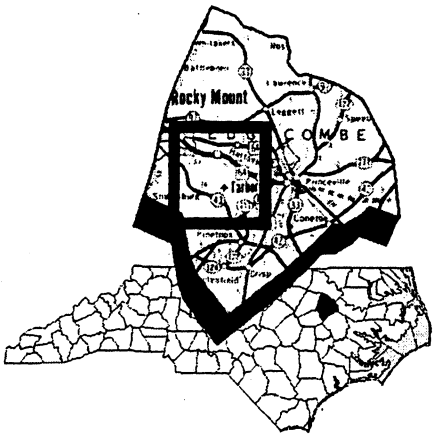




NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

EDGECOMBE COUNTY
REPLACE BRIDGE NO. 60 ON SR 1223
OVER COKEY SWAMP
B-3639

Figure 1

North Carolina Wildlife Resources Commission

512 N. Salisbury Street, Raleigh, North Carolina 27604-1188, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

TO: John Williams, Project Planning Engineer
Project Development & Environmental Analysis Branch, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: December 3, 1999

SUBJECT: NCDOT Bridge Replacements in Edgecombe and McDowell counties.
TIP Nos. B-3639 and B-3674.

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

On bridge replacement projects of this scope our standard recommendations are as follows:

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

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

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

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

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

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

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

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

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

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

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

1. The culvert must be designed to allow for fish passage. Generally, this means that the culvert or pipe invert is buried at least 1 foot below the natural stream bed. If multiple cells are required the second and/or third cells should be placed so that their bottoms are at stream bankful stage (similar to Lyonsfield design). This will allow sufficient water depth in the culvert or pipe during normal flows to accommodate fish movements. If culverts are long, baffle systems are required to trap gravel and provide resting areas for fish and other aquatic organisms.

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

3. Culverts or pipes should be situated so that no channel realignment or widening is required. Widening of the stream channel at the inlet or outlet of structures usually causes a decrease in water velocity causing sediment deposition that will require future maintenance.

4. Riprap should not be placed on the stream bed.

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to

avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. If the area that is reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be used as wetland mitigation for the subject project or other projects in the watershed.

Project specific comments:

1. B-3639 – Edgecombe County – Bridge No. 60 over Cokey Swamp. Cokey Swamp is known to support runs of anadromous fish including striped bass and American shad. NCDOT should follow commitments included in the NCDOT officially adopted document "Stream Crossing Guidelines for Anadromous Fish Passage". We specifically request that a bridge be constructed at this site.

2. B-3674 – McDowell County – Bridge No. 13 over Second Broad River. We do not anticipate any impacts to trout at this location. However, to minimize impacts to aquatic resources, we recommend the following: 1) Disturbance of the stream channel must be limited to only what is necessary to construct the bridge. Bridge replacement should maintain upstream and downstream conditions at preconstruction widths and depths for bedload transport and aquatic life migration. 2) Use of riprap to armor the inlet and outlet ends of the bridge should be kept to a minimum. Natural bank sloping and native plant revegetation should be used to stabilize banks where possible to minimize thermal impacts.

We request that NCDOT routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. The NCDOT should install and maintain sedimentation control measures throughout the life of the project and prevent wet concrete from contacting water in or entering into these streams. Replacement of bridges with spanning structures of some type, as opposed to pipe or box culverts, is recommended in most cases. Spanning structures allow wildlife passage along streambanks, reducing habitat fragmentation and vehicle related mortality at highway crossings.

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

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

December 2, 1999

Nicholas L. Graf
Division Administrator
Federal Highway Administration
Department of Transportation
310 New Bern Avenue
Raleigh, N.C. 27601-1442

Re: Replacement of Bridge No. 60 on SR 1223, TIP No. B-3639, Edgecombe County, ER 00-7871

Dear Mr. Graf:

On November 16, 1999, April Alperin of our staff met with North Carolina Department of Transportation (NCDOT) staff for a meeting of the minds concerning the above project. We reported our available information on historic architectural and archaeological surveys and resources along with our recommendations. NCDOT provided project area photographs and aerial photographs at the meeting.

Based upon our review of the photographs and the information discussed at the meeting, we offer our preliminary comments regarding this project.

In terms of historic architectural resources, we are aware of no historic structures located within the area of potential effect. We recommend that no historic architectural survey be conducted for this project.

There are no known archaeological sites within the proposed project area. Based on our present knowledge of the area, it is unlikely that any archaeological resources which may be eligible for inclusion in the National Register of Historic Places will be affected by the project construction. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

Having provided this information, we look forward to receipt of either a Categorical Exclusion or Environmental Assessment which indicates how NCDOT addressed our comments.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800.

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
ARCHAEOLOGY	421 N. Blount St., Raleigh NC	4619 Mail Service Center, Raleigh NC 27699-4619	(919) 733-7342 • 715-2671
RESTORATION	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4618 Mail Service Center, Raleigh NC 27699-4618	(919) 733-6545 • 715-4801

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

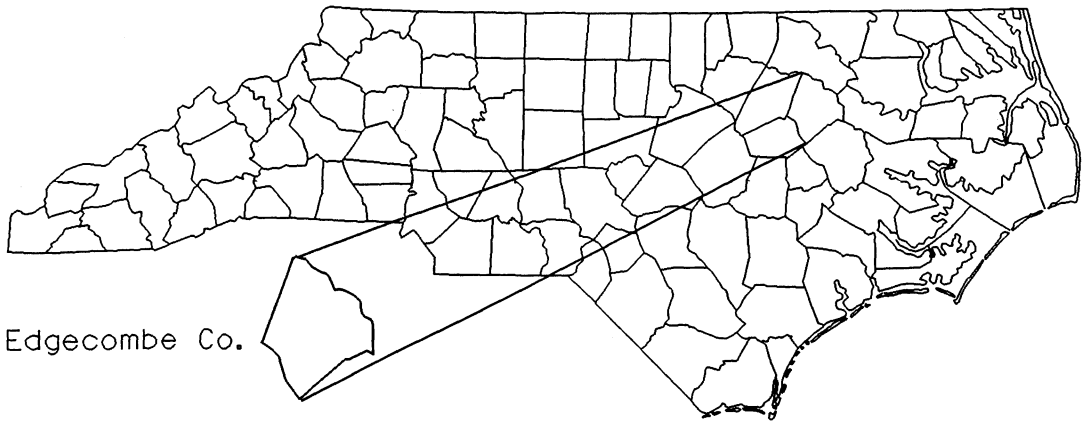
Sincerely,

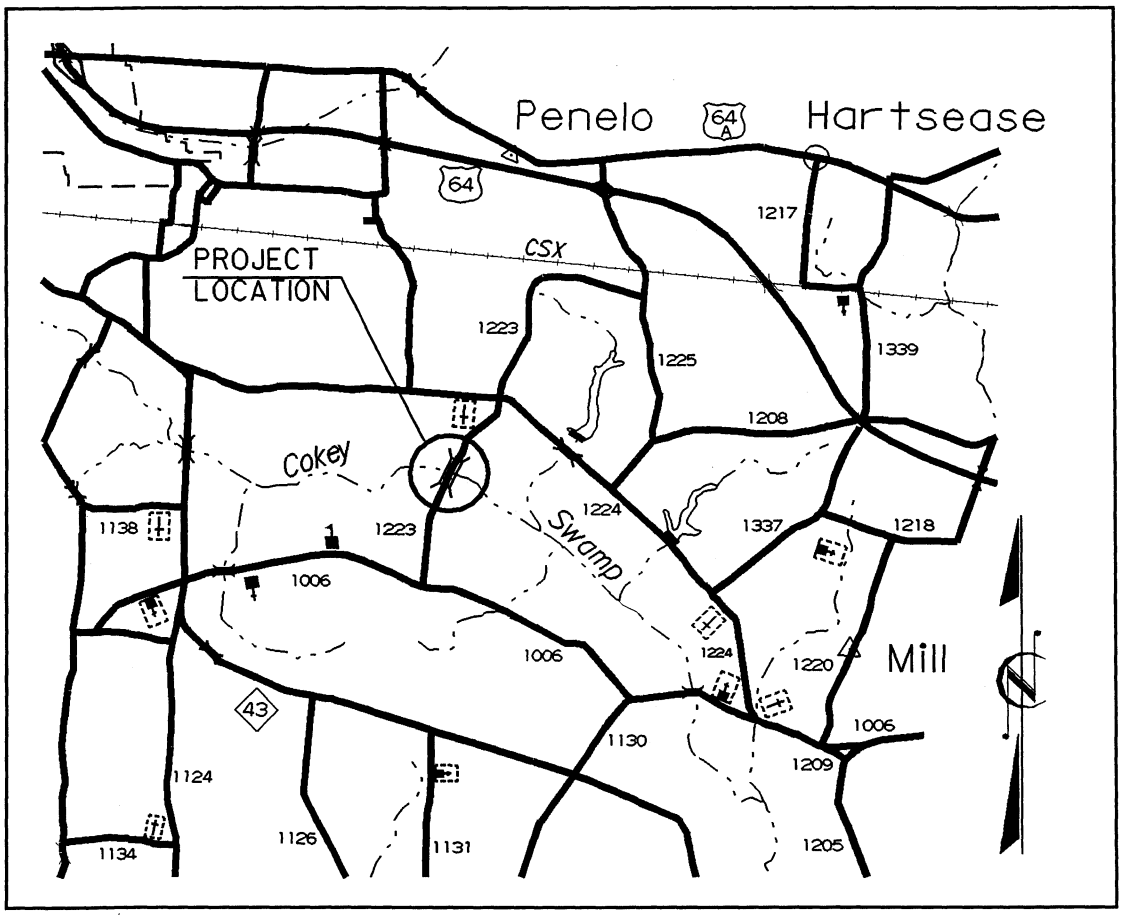
Renee Gledhill-Earley

David Brook
Deputy State Historic Preservation Officer

cc: W. D. Gilmore
B. Church
T. Padgett

NORTH CAROLINA





NOT TO SCALE

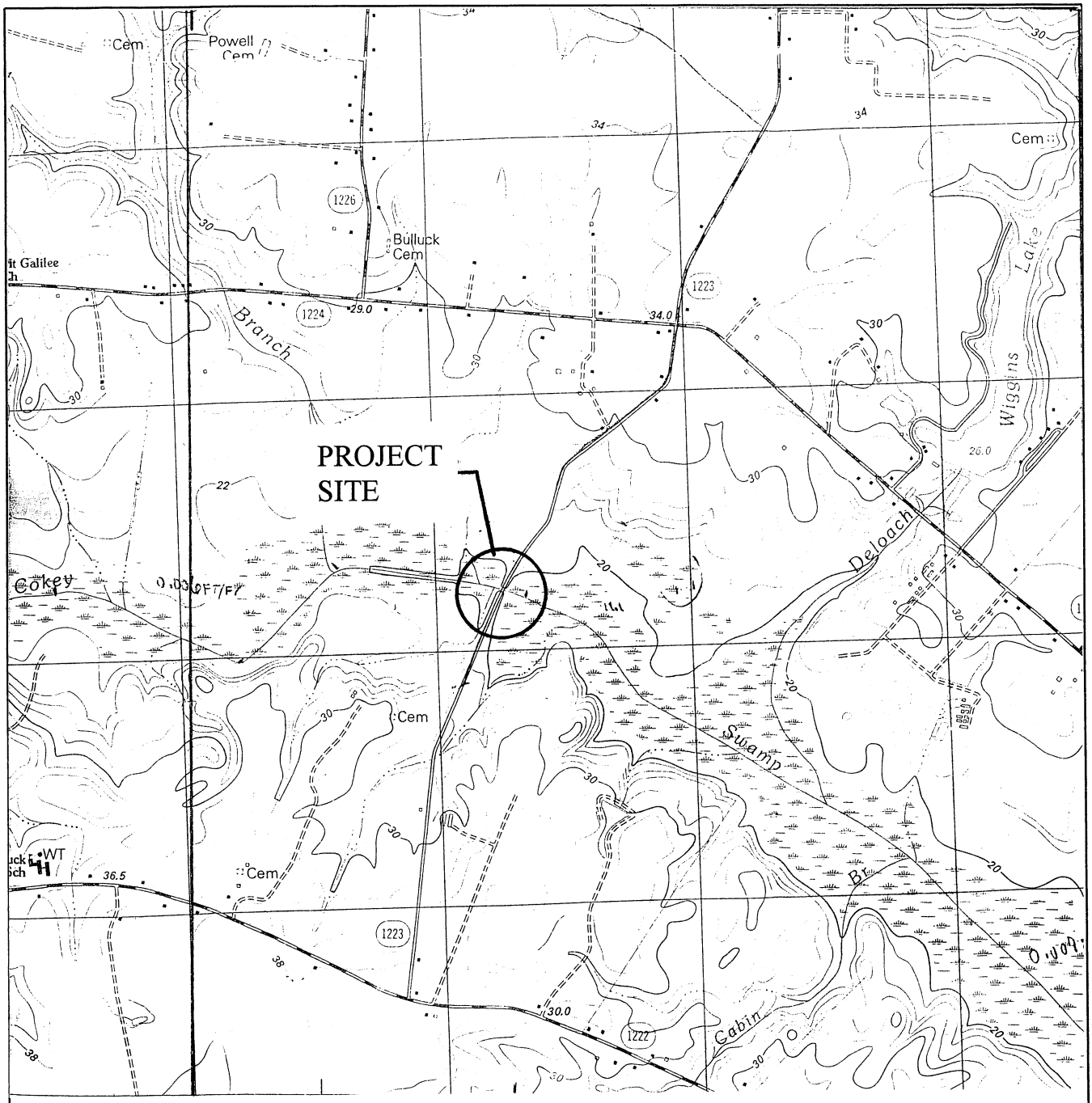
TAR PAMLICO BUFFER
LOCATION MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
EDGECOMBE COUNTY

PROJECT: 8.2291001 (B3639)

REPLACEMENT OF BRIDGE #60
ON SR1223 OVER COKEY SWAMP

SHEET 1 OF 6 4/25/05



NOT TO SCALE

TAR PAMLICO BUFFER

VICINITY MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
EDGECOMBE COUNTY

PROJECT: 8.2291001 (B3639)

REPLACEMENT OF BRIDGE #60
ON SR1223 OVER COKEY SWAMP

SHEET 2 OF 6

BUFFER LEGEND

WLB WETLAND BOUNDARY

WETLAND

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

BZ RIPARIAN BUFFER ZONE

BZ1 RIPARIAN BUFFER ZONE 1
30 ft (9.2m)

BZ2 RIPARIAN BUFFER ZONE 2
20 ft (6.1m)

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

COIR FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

DITCH/ GRASS SWALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 8.24060701 (B-3527)

BRIDGE NO. 437
OVER LOWER BARTONS CREEK
ON SR 1831

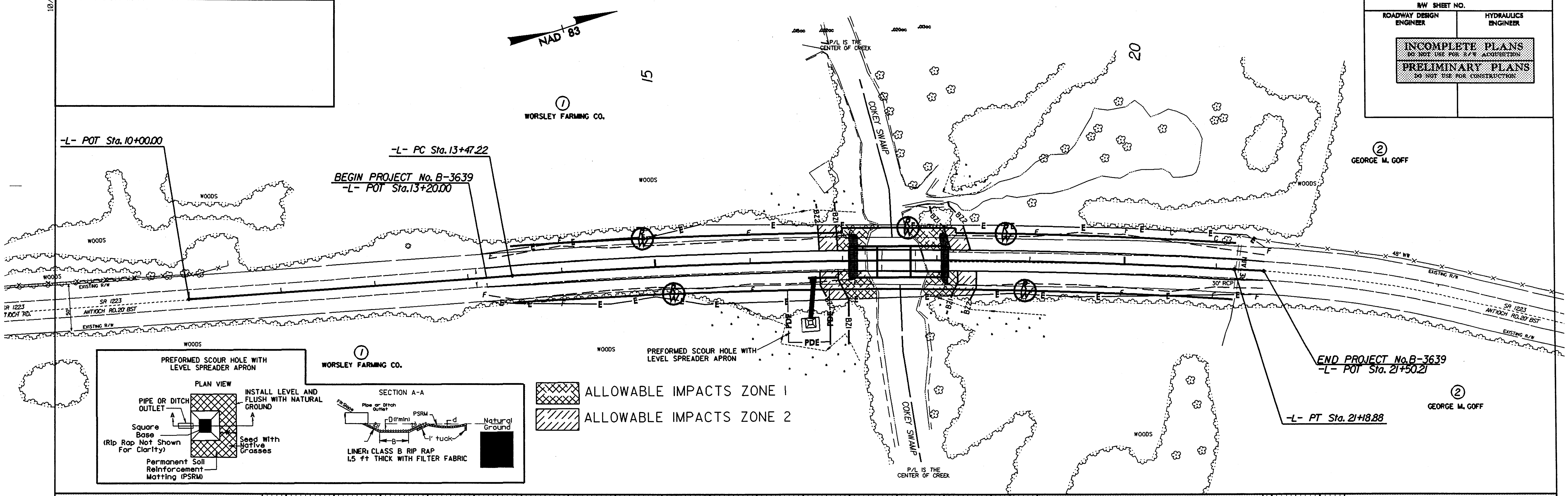
SHEET 3 OF 6 **4/25/05**

PROJECT REFERENCE NO.	SHEET NO.
B-3639	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

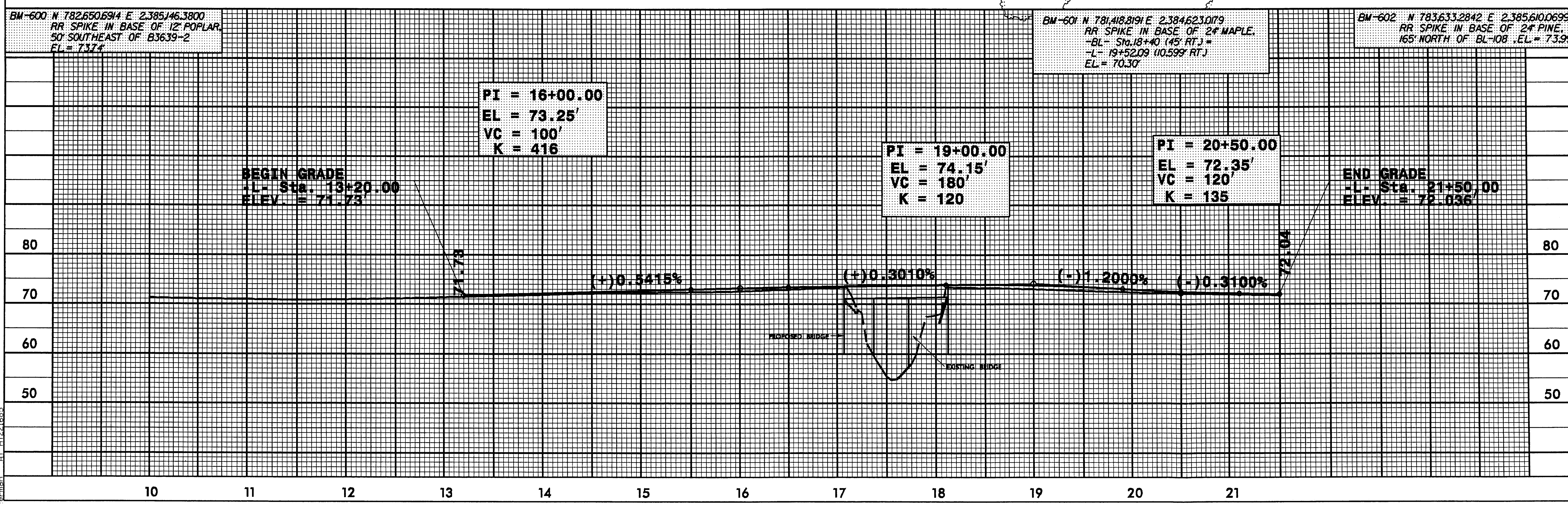
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



NAD 83
WORSLEY FARMING CO.
GEORGE M. GOFF
-L- POT Sta. 10+00.00
-L- PC Sta. 13+47.22
BEGIN PROJECT No. B-3639
-L- POT Sta. 13+20.00
P/L IS THE CENTER OF CREEK
COKEY SWAMP
WOODS
SR 1223 ANTIOCH RD. 20' BST
EXISTING R/W
PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON
END PROJECT No. B-3639
-L- POT Sta. 21+50.21
-L- PT Sta. 21+18.88
30" RCP
48" WW
PDE
PLAN VIEW
PIPE OR DITCH OUTLET
INSTALL LEVEL AND FLUSH WITH NATURAL GROUND
Square Base (Rip Rap Not Shown For Clarity)
Seed With Native Grasses
Permanent Soil Reinforcement Matting (PSRM)
SECTION A-A
LINER: CLASS B RIP RAP 1.5 ft THICK WITH FILTER FABRIC
Natural Ground
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2



BM-600 N 782,650.6914 E 2,385,146.3800
RR SPIKE IN BASE OF 12" POPLAR,
50' SOUTHEAST OF B3639-2
EL = 73.74'
BM-601 N 781,418.8191 E 2,384,623.0179
RR SPIKE IN BASE OF 24" MAPLE,
-BL- Sta. 18+40 (45' RT.) =
-L- 19+52.09 (10.599' RT.)
EL = 70.30'
BM-602 N 783,633.2842 E 2,385,610.0699
RR SPIKE IN BASE OF 24" PINE,
165' NORTH OF BL-108, EL = 73.99'
PI = 16+00.00
EL = 73.25'
VC = 100'
K = 416
PI = 19+00.00
EL = 74.15'
VC = 180'
K = 120
PI = 20+50.00
EL = 72.35'
VC = 120'
K = 135
BEGIN GRADE
-L- Sta. 13+20.00
ELEV. = 71.73'
END GRADE
-L- Sta. 21+50.00
ELEV. = 72.036'
71.73
72.04
(+)0.5415%
(+)0.3010%
(-)1.2000%
(-)0.3100%
PROPOSED BRIDGE
EXISTING BRIDGE
80
70
60
50
10
11
12
13
14
15
16
17
18
19
20
21

10/26/98

23-MAY-2005 09:01
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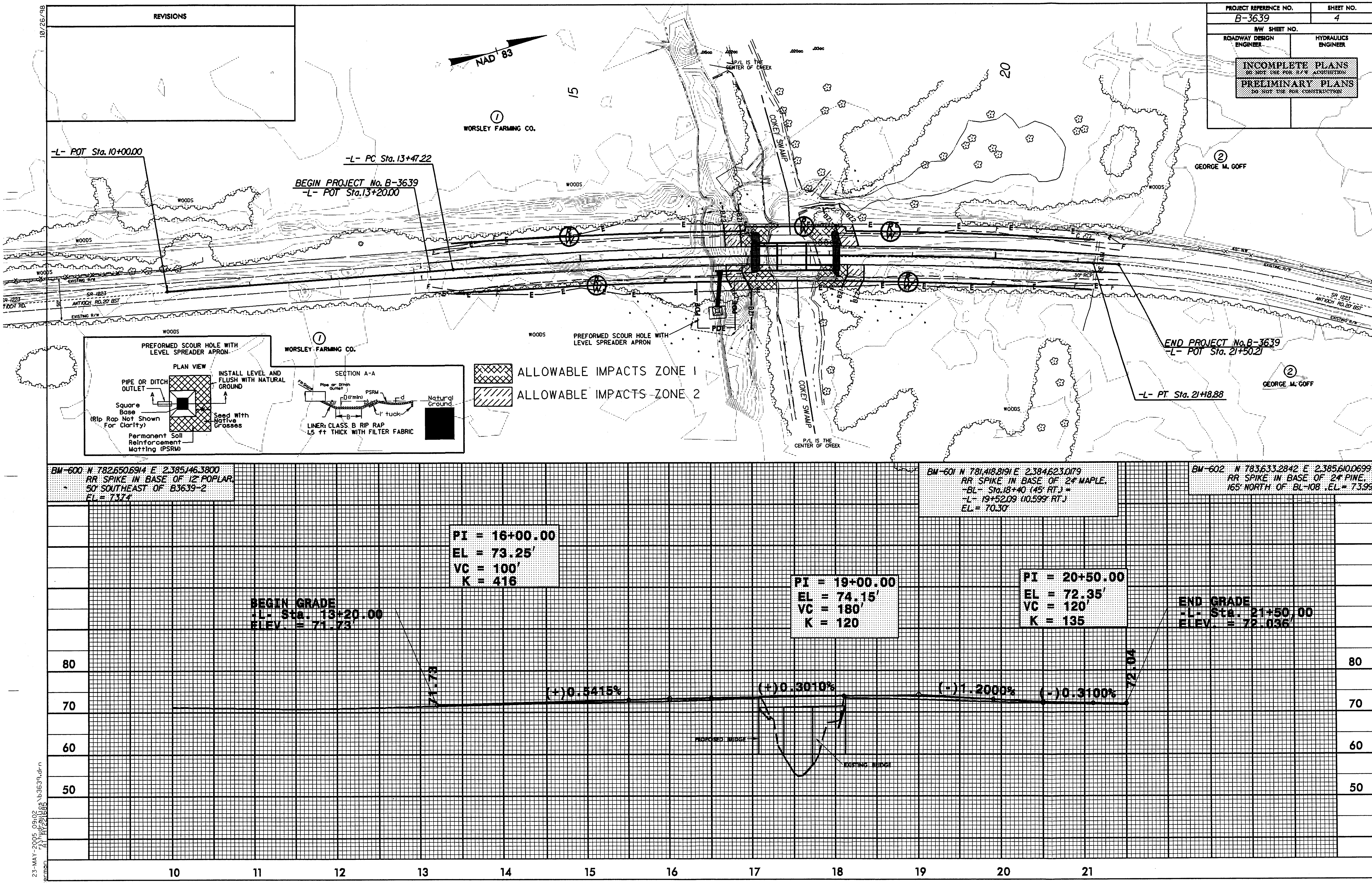


PROJECT REFERENCE NO. B-3639
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
REVISIONS
NAD 83
WORSLEY FARMING CO.
GEORGE M. GOFF
-L- POT Sta. 10+00.00
-L- PC Sta. 13+47.22
BEGIN PROJECT No. B-3639 -L- POT Sta. 13+20.00
END PROJECT No. B-3639 -L- POT Sta. 21+50.21
-L- PT Sta. 21+18.88
P/L IS THE CENTER OF CREEK
COKEY SWAMP
SR 1223 ANTIOCH RD. 20' BST
PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON
PLAN VIEW
SECTION A-A
PIPE OR DITCH OUTLET
INSTALL LEVEL AND FLUSH WITH NATURAL GROUND
Square Base (Rip Rap Not Shown For Clarity)
Seed With Native Grasses
Permanent Soil Reinforcement Matting (PSRM)
LINER: CLASS B RIP RAP 1.5 ft THICK WITH FILTER FABRIC
Natural Ground
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
BM-600 N 782,650.6914 E 2,385,146.3800 RR SPIKE IN BASE OF 12" POPLAR, 50' SOUTHEAST OF B3639-2 EL= 73.74'
BM-601 N 781,418.8191 E 2,384,623.0179 RR SPIKE IN BASE OF 24" MAPLE, -BL- Sta. 18+40 (45' RT.) = -L- 19+52.09 (10.599' RT.) EL.= 70.30'
BM-602 N 783,633.2842 E 2,385,610.0699 RR SPIKE IN BASE OF 24" PINE, 165' NORTH OF BL-108 .EL.= 73.99'
PI = 16+00.00 EL = 73.25' VC = 100' K = 416
PI = 19+00.00 EL = 74.15' VC = 180' K = 120
PI = 20+50.00 EL = 72.35' VC = 120' K = 135
BEGIN GRADE -L- Sta. 13+20.00 ELEV. = 71.73'
END GRADE -L- Sta. 21+50.00 ELEV. = 72.036'
(+)0.5415%
(+)0.3010%
(-)1.2000%
(-)0.3100%
PROPOSED BRIDGE
EXISTING BRIDGE
80
70
60
50
10
11
12
13
14
15
16
17
18
19
20
21

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT TYPE: ROAD CROSSING	IMPACT TYPE: PARALLEL IMPACT	ALLOWABLE: ZONE 1 (ft^2)	ALLOWABLE: ZONE 2 (ft^2)	ALLOWABLE: TOTAL (ft^2)	MITIGABLE: ZONE 1 (ft^2)	MITIGABLE: ZONE 2 (ft^2)	MITIGABLE: TOTAL (ft^2)	BUFFER REPLACEMENT: ZONE 1 (ft^2)	BUFFER REPLACEMENT: ZONE 2 (ft^2)
1	Bridge	16+74 to 18+42L-	X		3,659.0	2,352.0	6,011.0					
TOTAL:					3,659.0	2,352.0	6,011.0					

Note: Less than 0.001 acre of permanent impacts to surface waters will occur from construction of bridge bents.

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

EDGECOMBE COUNTY
PROJECT: 8.2291001 (B-3639)
Bridge # 60 on SR 1223 over Cokey Swamp

4/20/2005
SHEET 5 OF 6

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	W.L. MAYBERRY	940 HILL ST. ROCKY MOUNT, NC 27801
2	GEORGE GOFF	RT. 2 BOX 286 ROCKY MOUNT, NC 27801

N.C. DEPT. OF TRANSPORTATION

DIVISION OF HIGHWAYS

EDGECOMBE COUNTY

PROJECT: 8.2291001 (B-3639)

REPLACEMENT OF BRIDGE NO.60

ON SR1223 OVER COKEY SWAMP

CONTRACT: C201470 TIP PROJECT: B-3639

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3639	1	

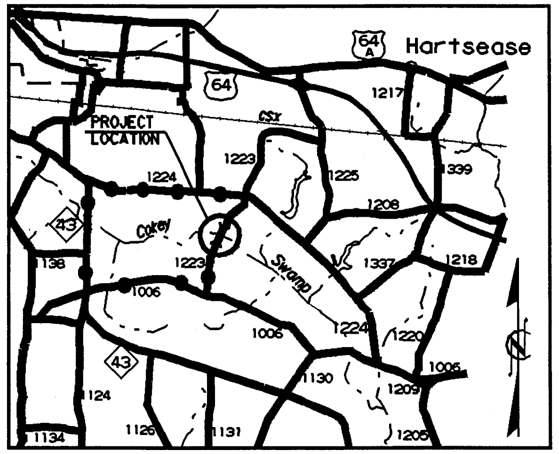
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33187.1.1	BRZ-1223(3)	P.E.
33187.2.2	BRZ-1223(3)	R/W, UTILITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
EDGECOMBE COUNTY

LOCATION: BRIDGE No. 60 OVER COKEY SWAMP ON SR 1223 (ANTIOCH ROAD)

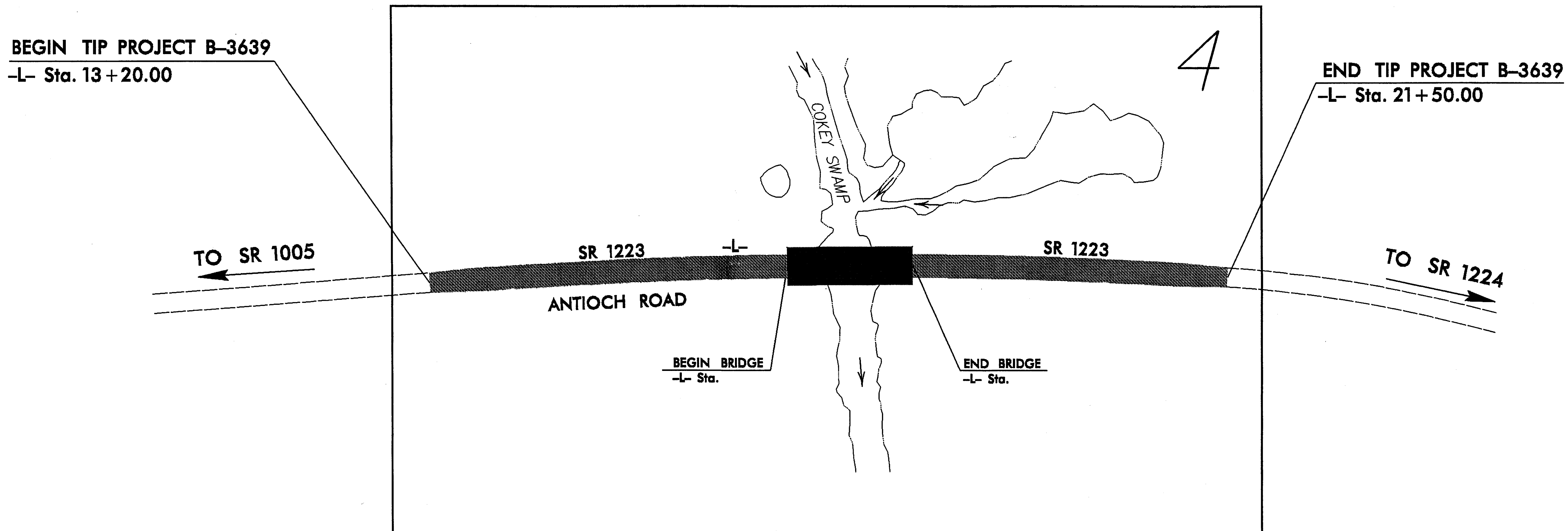
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

NAD 83



VICINITY MAP

OFFSITE DETOUR ROUTE



Method of Clearing III

THIS PROJECT IS NOT WITHIN THE CITY LIMITS OF ANY MUNICIPALITY

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2004 = 520 vpd
ADT 2025 = 1000 vpd
DHV = 12 %
D = 55 %
T = 5 % *
V = 55 MPH

* TTST 1 % DUAL 4 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3639 = Mile
LENGTH STRUCTURES TIP PROJECT B-3639 = Mile
TOTAL LENGTH TIP PROJECT B-3639 = 0.157 Mile

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 30, 2005

LETTING DATE:
MARCH 21, 2006

JAMES A. SPEER, P.E.
PROJECT ENGINEER

JOHN LANSFORD, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

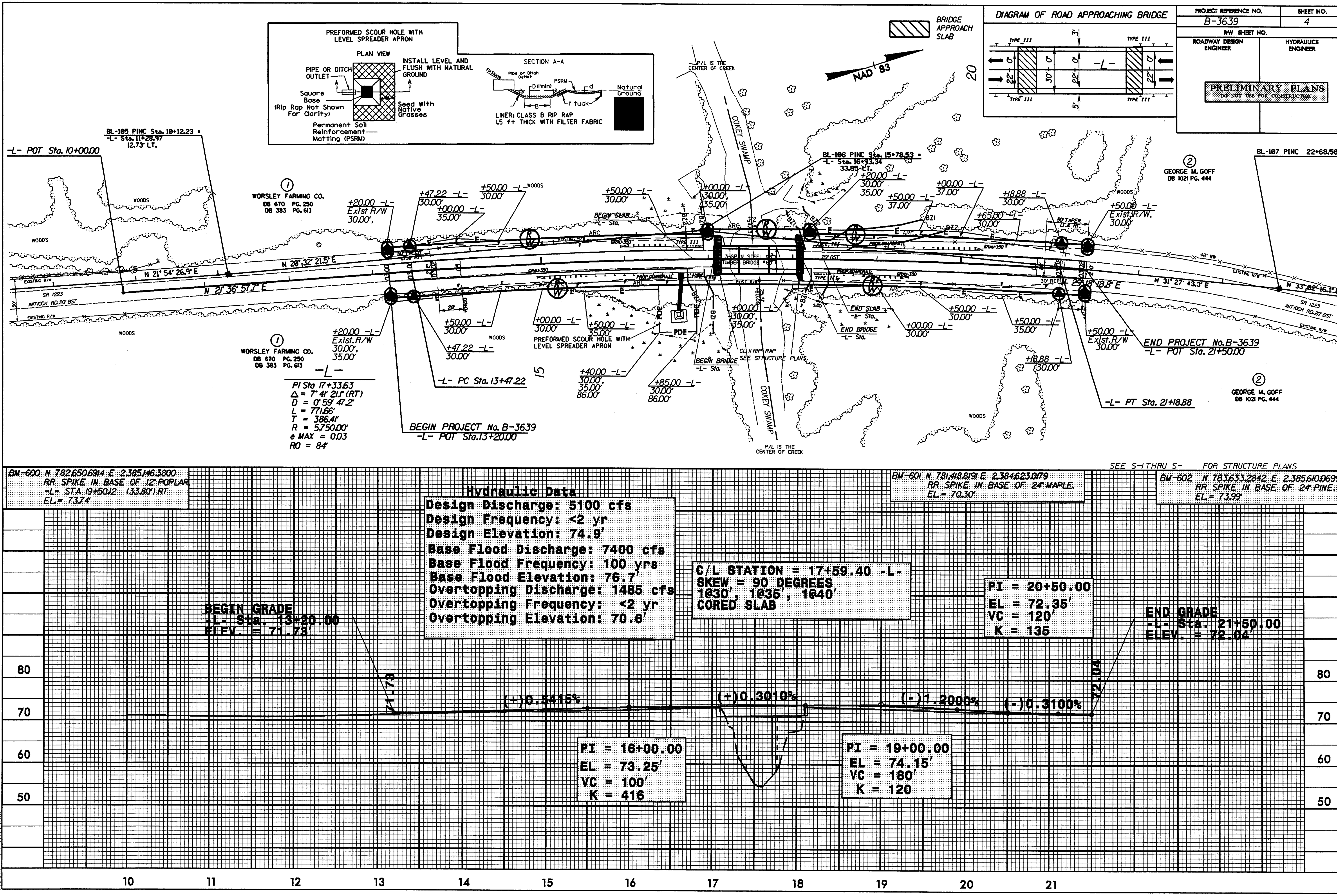
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE



PROJECT REFERENCE NO. B-3639
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DIAGRAM OF ROAD APPROACHING BRIDGE
BRIDGE APPROACH SLAB
PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON
PLAN VIEW
SECTION A-A
INSTALL LEVEL AND FLUSH WITH NATURAL GROUND
PIPE OR DITCH OUTLET
Square Base (Rip Rap Not Shown For Clarity)
Seed with Native Grasses
Permanent Soil Reinforcement Matting (PSRM)
LINER: CLASS B RIP RAP 1.5 ft THICK WITH FILTER FABRIC
Natural Ground
NAD 83
P/L IS THE CENTER OF CREEK
COKEY SWAMP
-L- POT Sta. 10+00.00
BL-105 PINC Sta. 10+12.23 = -L- Sta. 11+28.97 12.73' LT.
BL-106 PINC Sta. 15+78.53 = -L- Sta. 16+93.34 33.85' LT.
BL-107 PINC 22+68.58
WORSLEY FARMING CO. DB 670 PG. 250 DB 383 PG. 613
GEORGE M. GOFF DB 1021 PG. 444
WOODS
N 21° 54' 26.9" E
N 21° 36' 51.7" E
N 20° 32' 21.5" E
N 29° 18' 18.8" E
N 31° 27' 43.3" E
N 33° 02' 16.1" E
SR 1223 ANTIOCH RD. 20' BST
3-SPAN STEEL & TIMBER BRIDGE "83"
PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON
BEGIN BRIDGE -L- Sta.
END BRIDGE -L- Sta.
BEGIN SLAB -L- Sta.
END SLAB -L- Sta.
CL II RIP RAP SEE STRUCTURE PLANS
-L- PI Sta 17+33.63 Δ = 7° 41' 21.1" (RT) D = 0° 59' 47.2" L = 771.66' T = 386.41' R = 5,750.00' e MAX = 0.03 RO = 84'
-L- PC Sta. 13+47.22
-L- PT Sta. 21+18.88
BEGIN PROJECT No. B-3639 -L- POT Sta. 13+20.00
END PROJECT No. B-3639 -L- POT Sta. 21+50.00
SEE S-1 THRU S- FOR STRUCTURE PLANS
BM-600 N 782,650.6914 E 2,385,146.3800 RR SPIKE IN BASE OF 12" POPLAR -L- STA 19+50.12 (33.80') RT EL = 73.74'
BM-601 N 781,418.8191 E 2,384,623.0179 RR SPIKE IN BASE OF 24" MAPLE. EL = 70.30'
BM-602 N 783,633.2842 E 2,385,610.0699 RR SPIKE IN BASE OF 24" PINE. EL = 73.99'
Hydraulic Data
Design Discharge: 5100 cfs
Design Frequency: <2 yr
Design Elevation: 74.9'
Base Flood Discharge: 7400 cfs
Base Flood Frequency: 100 yrs
Base Flood Elevation: 76.7'
Overtopping Discharge: 1485 cfs
Overtopping Frequency: <2 yr
Overtopping Elevation: 70.6'
C/L STATION = 17+59.40 -L-
SKEW = 90 DEGREES
1@30', 1@35', 1@40'
CORED SLAB
BEGIN GRADE -L- Sta. 13+20.00 ELEV. = 71.73'
END GRADE -L- Sta. 21+50.00 ELEV. = 72.04'
PI = 16+00.00 EL = 73.25' VC = 100' K = 416
PI = 19+00.00 EL = 74.15' VC = 180' K = 120
PI = 20+50.00 EL = 72.35' VC = 120' K = 135
(+)0.5415%
(+)0.3010%
(-)1.2000%
(-)0.3100%
71.73
72.04
80
70
60
50
10
11
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10/26/98
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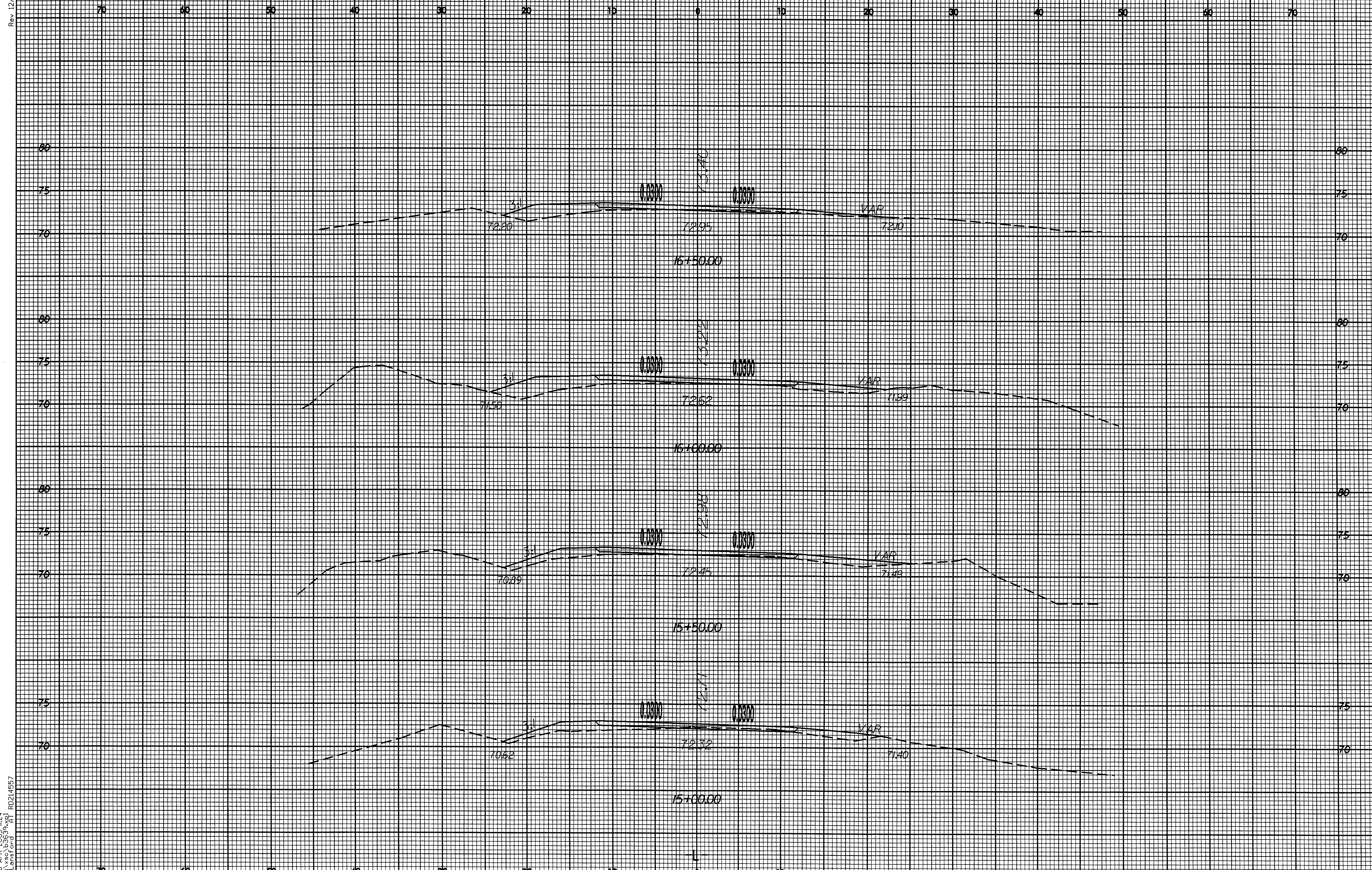
PROJ. REFERENCE NO.	SHEET NO.
B-3639	X-3



Rev 12/12/00

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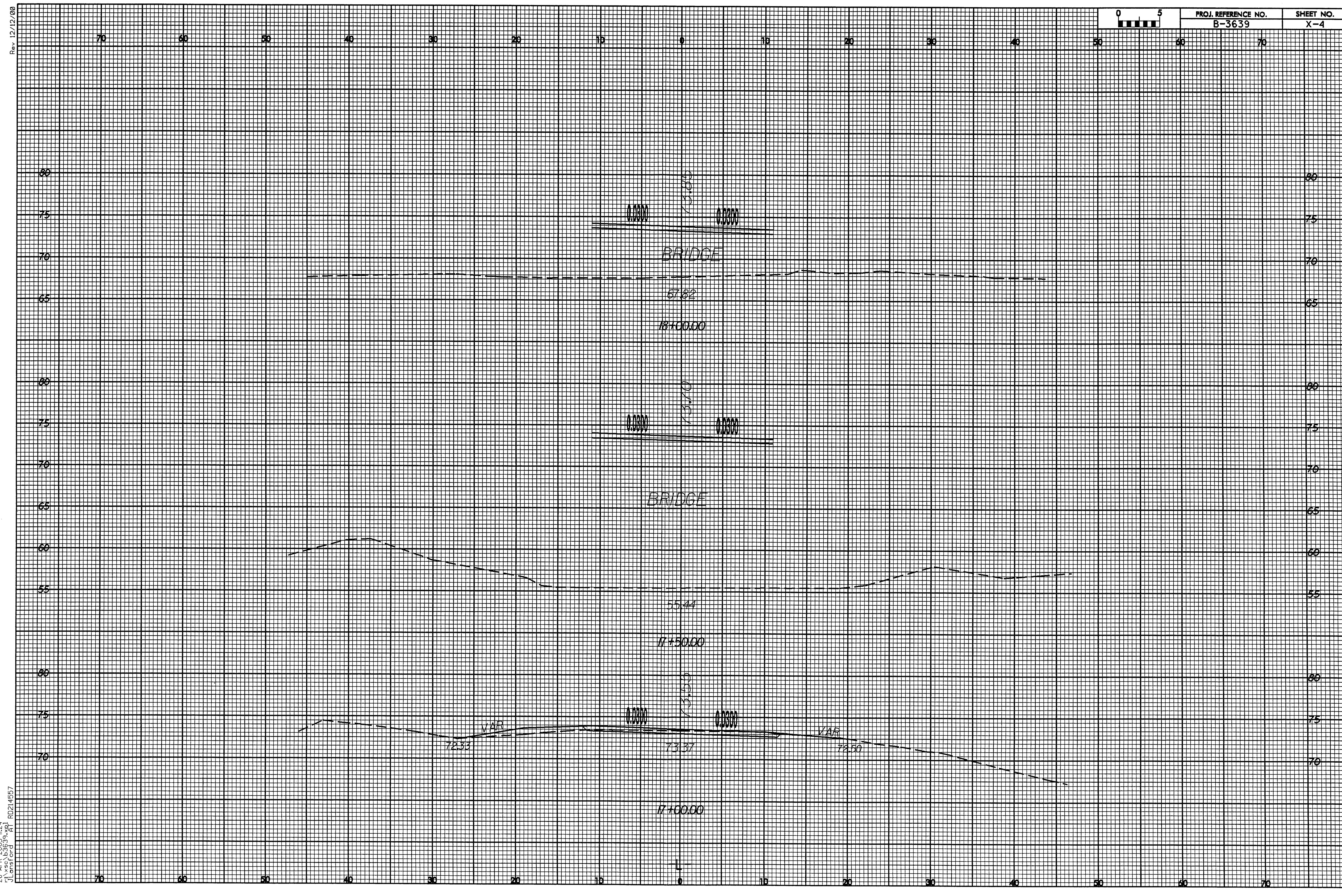
PROJ. REFERENCE NO.	SHEET NO.
B-3639	X-4

Rev 12/12/00



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Jlansford AT RD214557

PROJ. REFERENCE NO.	SHEET NO.
B-3639	X-5