



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

March 8, 2006

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

Attention: Mr. William Wescott  
NCDOT Coordinator

Dear Sir:

Subject: **General Permit 31 Application and Neuse River Buffer Authorization** for the Replacement of Bridge No. 46 on SR 1091 over Wheat Swamp Creek in Greene County. Federal Project No. BRZ- 1091[1], State Project No. 8.2180301, TIP No. B-4125.

Please find enclosed the Pre-Construction Notification form (PCN), permit drawings, Categorical Exclusion (CE), Natural Resource Technical Report (NRTR), and half-size plan sheets for the above referenced project. The North Carolina Department of Transportation (NCDOT) proposes to replace existing Bridge No. 46 on SR 1091 over the Wheat Swamp Creek (DWQ Index # 27-86-24) in Greene County. The project involves replacement of the existing structure with a 105-foot bridge at approximately the same location using top-down construction. The approach roadway will consist of two 12-foot travel lanes with shoulder widths of 6 feet. Permanent impacts will consist of 0.08 acre of to wetlands adjacent to Wheat Swamp Creek, and 2,275 ft<sup>2</sup> of riparian buffer. Traffic will be detoured off-site, along surrounding roads, during construction. The project schedule calls for a May 15, 2007 Let date with a review date of March 27, 2007.

**Impacts To Waters of the United States**

General Description: The project is located in sub-basin 03-04-07 of the Neuse River Basin. A best usage classification of "C Sw NSW" has been assigned to Wheat Swamp Creek. Neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watersheds or WS-II: predominately undeveloped watersheds), listed Section 303(d) impairments, nor Outstanding Resource Waters (ORW) occur within 1.0 mile (1.6 km) of project study area. Wheat Swamp Creek is not designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River.

**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](http://WWW.NCDOT.ORG)

**LOCATION:**  
TRANSPORTATION BUILDING  
1 SOUTH WILMINGTON STREET  
RALEIGH NC

Permanent Impacts: Wheat Swamp Creek and adjacent wetlands will be impacted by the proposed project. Construction of the proposed project will result in a permanent impact of 0.08 acre from roadway fill and mechanized clearing in wetlands (see permit drawings).

Temporary Impacts: No temporary impacts are anticipated due to the project construction.

Utility Impacts: No impacts to jurisdictional resources due to utility relocation.

### **Neuse River Basin Buffer Rules**

This project is located in the Neuse River Basin; therefore, the regulations pertaining to the buffer rules apply. There will be a total of 2,275 ft<sup>2</sup> of impacts to riparian buffers. This includes 741 ft<sup>2</sup> (628 ft<sup>2</sup> in Zone 1 and 113 ft<sup>2</sup> in Zone 2) due to the bridge crossing. 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. Additionally, 1,534 ft<sup>2</sup> (460 ft<sup>2</sup> in Zone 1 and 1,074 ft<sup>2</sup> in Zone 2) of impacts will occur from approach fill and mechanized clearing activities. According to the buffer rules, road crossings are allowable with mitigation. However, mitigation thresholds have not been met for this project, therefore buffer mitigation will not be required. Uses designated as allowable with mitigation may proceed within the riparian buffer provided that there are no practical alternatives to the requested use pursuant to Item (8) of this Rule and an appropriate mitigation strategy has been approved pursuant to Item (10) of this Rule. All practicable measures to minimize impacts within buffer zones were followed.

### **Bridge Demolition**

The existing bridge consists of timber piles with concrete caps and a concrete superstructure with an asphalt-wearing surface. The bridge can be removed without dropping components into Waters of the United States during construction. Best Management Practices for Bridge Demolition and Removal will be followed to avoid any temporary fill from entering Waters of the United States.

### **Avoidance and Minimization**

Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the United States". Due to the presence of surface waters and wetlands within the project study area, avoidance of all impacts is not possible. The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts. Minimization measures were incorporated as part of the project design these included:

- NCDOT is replacing Bridge No. 46 in place and utilizing an off-site detour.
- The bridge will be built using top-down construction.
- NCDOT is utilizing longer spans with fewer bents than the existing bridge.
- Implementation of High Quality Waters Sedimentation and Erosion Control Measures.
- Three to one slopes will be used in jurisdictional areas.

NCDMF recommended a moratorium for anadromous fish in a letter dated June 12, 2002. However in an email (attached) dated July 31, 2006, Sean McKenna with NCDMF deferred the anadromous fish call to NCWRC. According to a letter from the NCWRC, dated June 12, 2002, no in-stream moratoria are proposed for this project.

## Mitigation

Due to the low amount of proposed impacts and associated marginal quality, NCDOT is not proposing mitigation for this site. We are lengthening the bridge by 5 feet and therefore increasing the hydraulic opening.

## Federal Protected Species

As of January 29, 2007, the US Fish and Wildlife Service (USFWS) lists one federally protected species for Greene County. The following table lists this species.

Common Name	Scientific Name	Status	Habitat	Conclusion
Red-cockaded Woodpecker	<i>Picoides borealis</i>	E	No	No Effect

Note: E – endangered

## Regulatory Approvals

Section 404 Permit: All aspects of this project are being processed by the Federal Highway Administration as a “Categorical Exclusion”. The NCDOT requests that these activities be authorized by a General Permit 31.

Section 401 Permit: We anticipate 401 General Certification number 3370 will apply to this project. All general conditions of the Water Quality Certifications will be met. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B.0200 we are providing 5 copies of this application to the NCDWQ, for their review and approval.

Neuse River Basin Buffer Authorization: NCDOT requests that the NCDWQ review this application and issue a written approval for a Neuse River Riparian Buffer Authorization.

A copy of this permit will be posted on the NCDOT web site  
<http://www.doh.dot.state.nc.us/preconstruct/pe/neu/permit.html>

Thank you for your time and assistance with this project. Please contact John Merritt at [jsmerritt@dot.state.nc.us](mailto:jsmerritt@dot.state.nc.us) or (919) 715-5536 if you have any questions or need any additional information.

Sincerely,



for

Gregory J. Thorpe, Ph.D.  
Environmental Management Director, PDEA

Cc: W/attachment:

Mr. John Hennessy, NCDWQ (5 copies)  
Mr. Travis Wilson, NCWRC  
Mr. Gary Jordan, USFWS  
Mr. Ron Sechler, NMFS  
Mr. Michael Street, NCDMF  
Dr. David Chang, P.E., Hydraulics  
Mr. Greg Perfetti, P.E., Structure Design  
Mr. Mark Staley, Roadside Environmental

Mr. C. E. Lassiter, PE, Division 2 Engineer

Mr. Jay Johnson, Division 2 Environmental Officer

W/o attachment

Mr. Scott McLendon, USACE, Wilmington

Mr. Jay Bennett, P.E., Roadway Design

Mr. Majed Alghandour, P. E., Programming and TIP

Mr. Art McMillan, P.E., Highway Design

Mr. John Williams, P.E., 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: GP 31

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

Raleigh, NC

Telephone Number: (919) 733-3141

Fax Number: (919) 733-9794

E-mail Address: \_\_\_\_\_

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: \_\_\_\_\_
2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4125
3. Property Identification Number (Tax PIN): N/A
4. Location  
County: Greene Nearest Town: Hookerton  
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): 35.4096 °N 77.5590 °W
6. Property size (acres): N/A
7. Name of nearest receiving body of water: Wheat Swamp Creek
8. River Basin: Neuse  
(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: Rural with forested areas and scattered residential and farms.  
\_\_\_\_\_  
\_\_\_\_\_

10. Describe the overall project in detail, including the type of equipment to be used: Replacement of the existing bridge structure with a 105-foot bridge at approximately the same location and roadway elevation of the existing structure using top-down construction.

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11. Explain the purpose of the proposed work: The bridge is considered to be structurally deficient and functionally obsolete and the replacement will result in safer traffic operations.

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#### **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

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#### **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

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#### **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: approach fill, hand clearing, mechanized clearing
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)
Site 1	Permanent fill	Herbaceous	Yes	11ft.	0.01
Site 1	Mechanized clearing	Herbaceous	Yes	11ft.	0.02
Site 2	Permanent fill	Bottomland Hardwood	Yes	40ft.	0.02
Site 2	Mechanized clearing	Bottomland Hardwood	Yes	40ft.	0.03
Total Wetland Impact (acres)					0.08

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

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)
N/A						
Total Stream Impact (by length and acreage)					0	0

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)
N/A				
Total Open Water Impact (acres)				



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

Stream Impact (acres):	0.0
Wetland Impact (acres):	0.08
Open Water Impact (acres):	0.0
Total Impact to Waters of the U.S. (acres)	0.08
Total Stream Impact (linear feet):	0

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.

N/A

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.): N/A

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. Use of an off-site detour during construction, construction of a 5-foot longer bridge, Best Management Practices will also be utilized during demolition of the existing bridge and construction of the new bridge.

## 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.

Due to the quality of wetland and limited impacts, NCDOT was not planning on mitigation.  
Hydraulic flow will be improved by lengthening the bridge by 5 feet.

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): 0.08  
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 Neuse)? 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	1,088	3 (2 for Catawba)	0
2	1,187	1.5	0
Total	2,275		0

\* 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.

N/A

**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. Runoff will be handled by grass swells

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**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

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**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/newetlands>. If no, please provide a short narrative description: \_\_\_\_\_

N/A

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**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).

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*E. P. Luck*

for Gregory Thorne, PhD

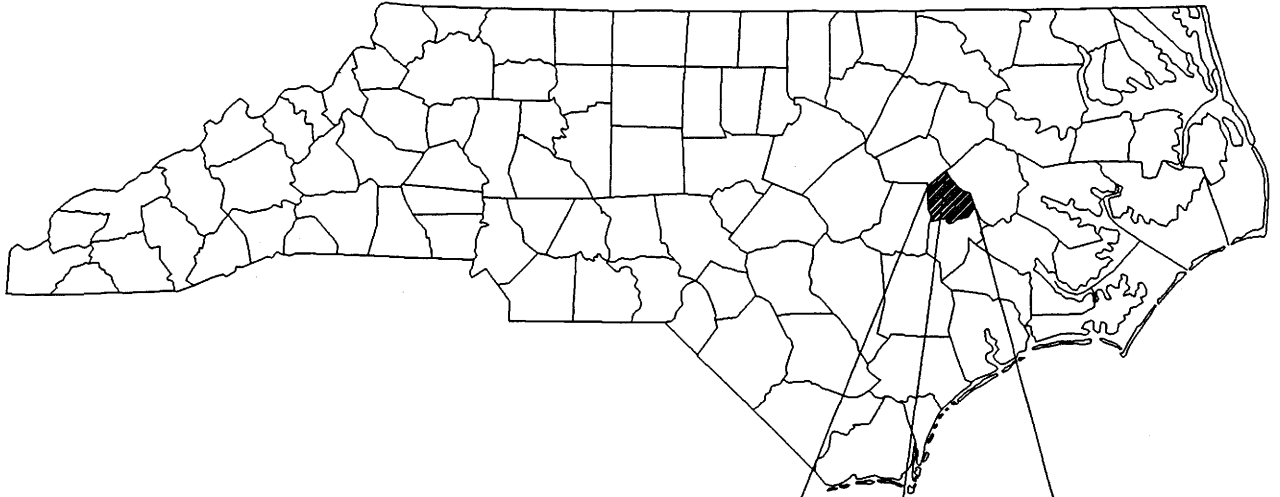
3-8-07

Applicant/Agent's Signature

Date

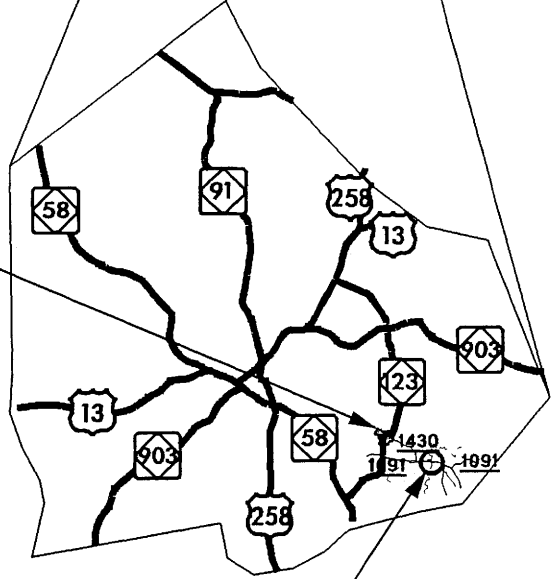
(Agent's signature is valid only if an authorization letter from the applicant is provided.)

# NORTH CAROLINA



GREENE COUNTY  
NEUSE RIVER BASIN

HOOKERTON



PROJECT LOCATION

VICINITY  
MAP

BUFFER PERMIT

NCDOT  
DIVISION OF HIGHWAYS  
GREENE COUNTY  
PROJECT: 33478.1.1 (B-4125)  
REPLACE BRIDGE #46  
OVER WHEAT SWAMP CREEK

ON SR 1091  
Buffer Drawing

Sheet 1 of 2

SHEET OF

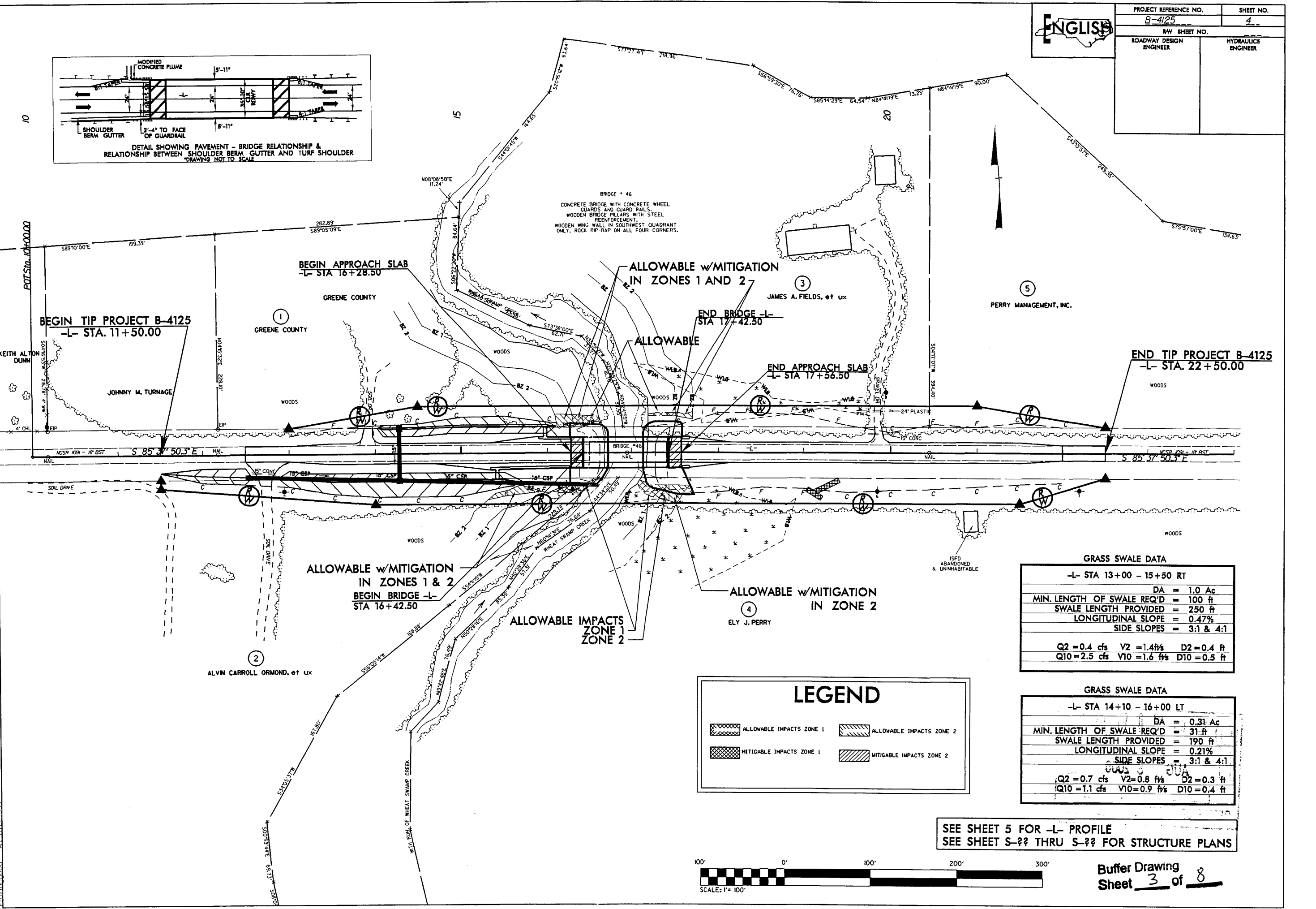
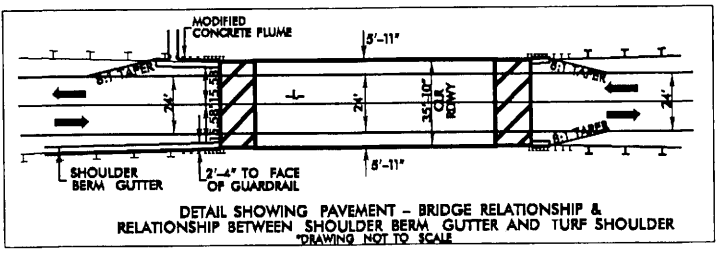


# LOCATION MAP

NCDOT  
 DIVISION OF HIGHWAYS  
 GREENE COUNTY  
 PROJECT: 33478.1.1 (B-4125)  
 REPLACE BRIDGE #46  
 OVER WHEAT SWAMP CREEK  
 ON SR 1091  
 Buffer Drawing  
 Sheet 2 of 8  
 SHEET OF



PROJECT REFERENCE NO. B-4125	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



BRIDGE # 46  
CONCRETE BRIDGE WITH CONCRETE WHEEL GUARDS AND GUARD RAILS. WOODEN BRIDGE PILLARS WITH STEEL REINFORCEMENT. WOODEN WING WALL IN SOUTHWEST QUADRANT ONLY. ROCK RIP-RAP ON ALL FOUR CORNERS.

BEGIN TIP PROJECT B-4125  
-L- STA. 11+50.00

BEGIN APPROACH SLAB  
-L- STA 16+28.50

ALLOWABLE w/MITIGATION  
IN ZONES 1 AND 2

END BRIDGE -L-  
STA 17+42.50

END APPROACH SLAB  
-L- STA 17+56.50

END TIP PROJECT B-4125  
-L- STA. 22+50.00

ALLOWABLE w/MITIGATION  
IN ZONES 1 & 2  
BEGIN BRIDGE -L-  
STA 16+42.50

ALLOWABLE IMPACTS  
ZONE 1  
ZONE 2

ALLOWABLE w/MITIGATION  
IN ZONE 2

LEGEND			
	ALLOWABLE IMPACTS ZONE 1		ALLOWABLE IMPACTS ZONE 2
	MITIGABLE IMPACTS ZONE 1		MITIGABLE IMPACTS ZONE 2

GRASS SWALE DATA	
-L- STA 13+00 - 15+50 RT	
DA	= 1.0 Ac
MIN. LENGTH OF SWALE REQ'D	= 100 ft
SWALE LENGTH PROVIDED	= 250 ft
LONGITUDINAL SLOPE	= 0.47%
SIDE SLOPES	= 3:1 & 4:1
Q2 = 0.4 cfs	V2 = 1.4 ft/s
Q10 = 2.5 cfs	V10 = 1.6 ft/s
D2 = 0.4 ft	D10 = 0.5 ft

GRASS SWALE DATA	
-L- STA 14+10 - 16+00 LT	
DA	= 0.31 Ac
MIN. LENGTH OF SWALE REQ'D	= 31 ft
SWALE LENGTH PROVIDED	= 190 ft
LONGITUDINAL SLOPE	= 0.21%
SIDE SLOPES	= 3:1 & 4:1
Q2 = 0.7 cfs	V2 = 0.8 ft/s
Q10 = 1.1 cfs	V10 = 0.9 ft/s
D2 = 0.3 ft	D10 = 0.4 ft

SEE SHEET 5 FOR -L- PROFILE  
SEE SHEET S-?? THRU S-?? FOR STRUCTURE PLANS

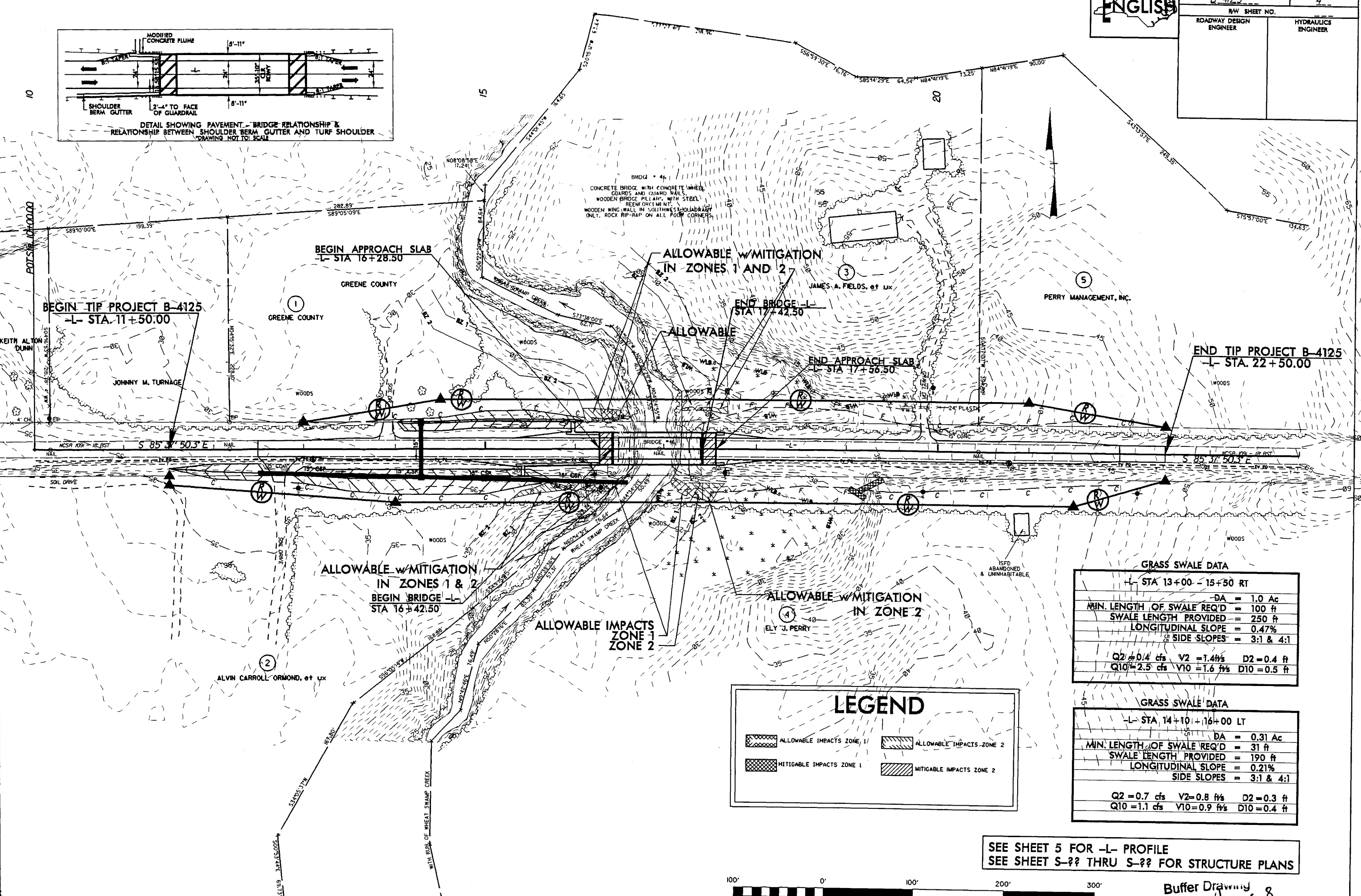
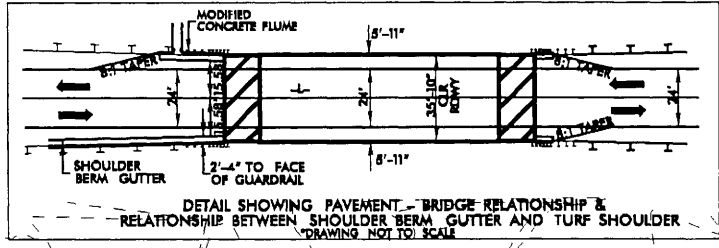


8/17/99

03-AUG-2006 15:37  
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-locked - AL HY221535



PROJECT REFERENCE NO. B-4125	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



GRASS SWALE DATA

-L- STA 13+00 - 15+50 RT

DA = 1.0 Ac

MIN. LENGTH OF SWALE REQ'D = 100 ft

SWALE LENGTH PROVIDED = 250 ft

LONGITUDINAL SLOPE = 0.47%

SIDE SLOPES = 3:1 & 4:1

Q2 = 0.4 cfs    V2 = 1.4 ft/s    D2 = 0.4 ft

Q10 = 2.5 cfs    V10 = 1.6 ft/s    D10 = 0.5 ft

GRASS SWALE DATA

-L- STA 14+10 + 16+00 LT

DA = 0.31 Ac

MIN. LENGTH OF SWALE REQ'D = 31 ft

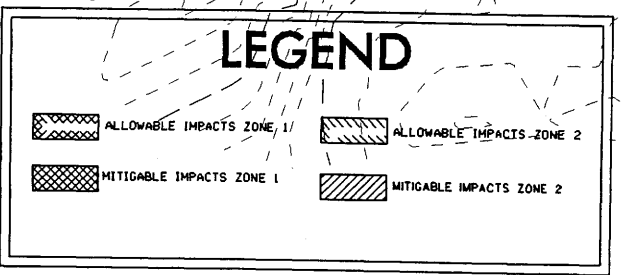
SWALE LENGTH PROVIDED = 190 ft

LONGITUDINAL SLOPE = 0.21%

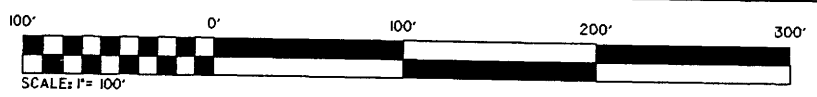
SIDE SLOPES = 3:1 & 4:1

Q2 = 0.7 cfs    V2 = 0.8 ft/s    D2 = 0.3 ft

Q10 = 1.1 cfs    V10 = 0.9 ft/s    D10 = 0.4 ft



SEE SHEET 5 FOR -L- PROFILE  
SEE SHEET S-?? THRU S-?? FOR STRUCTURE PLANS



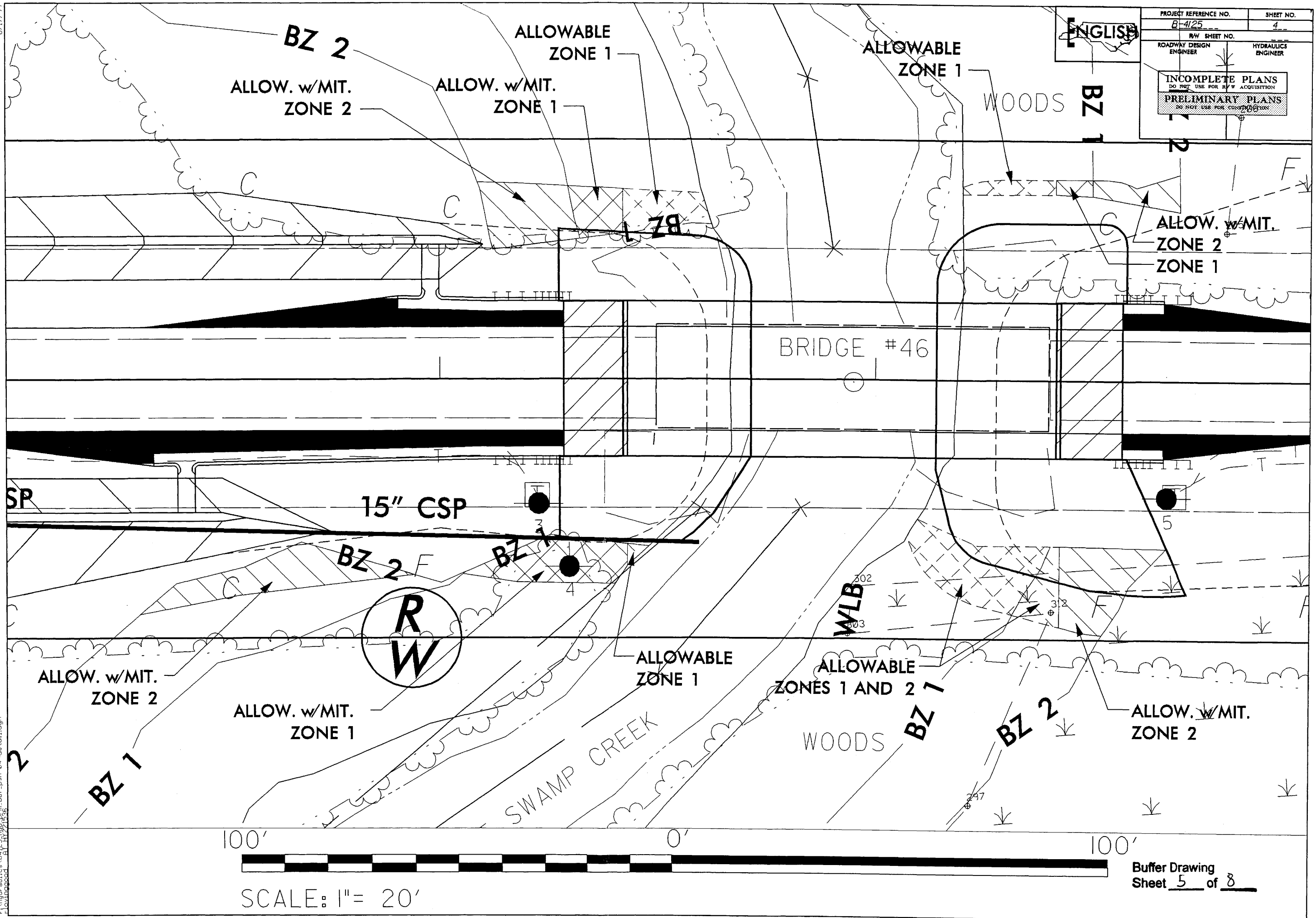
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PROJECT REFERENCE NO. B-4125	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION



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 8/17/99

**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 2000 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 33.7 FT
BASE DISCHARGE	= 3035 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 36.2 FT
OVERTOPPING DISCHARGE	= 1600 CFS
OVERTOPPING FREQUENCY	= 10 YRS
OVERTOPPING ELEVATION	= 32.5 FT

BM-A  
RAILROAD SPIKE SET IN 15' OAK  
-L- STA 15+13.57, 108.61' LT.  
ELEV = 32.91'

THREE SPAN 21" CORED SLAB BRIDGE  
W/ SPAN LENGTHS OF 25', 50', 25'

PI = 21+55.00  
EL = 44.52'  
K = 143  
VC = 86'

PI = 18+62.00  
EL = 33.26'  
K = 138  
VC = 500'

PI = 14+00.00  
EL = 32.20'  
K = 150  
VC = 125'

TIE TO EXISTING  
INCIDENTAL MILLING AS NEEDED

(-10.5650%) (+0.2292%)  
(-11.4700%) (-0.3540%) (-10.0220%) (+0.2780%) (+0.2300%)  
(-11.4700%) (-0.3540%) (-10.0220%) (+0.2780%) (+0.2300%)

TIE TO EXISTING  
INCIDENTAL MILLING AS NEEDED

STRUCTURE EXCAVATION APPROX. 25 CU YDS

STRUCTURE EXCAVATION APPROX. 15 CU YDS

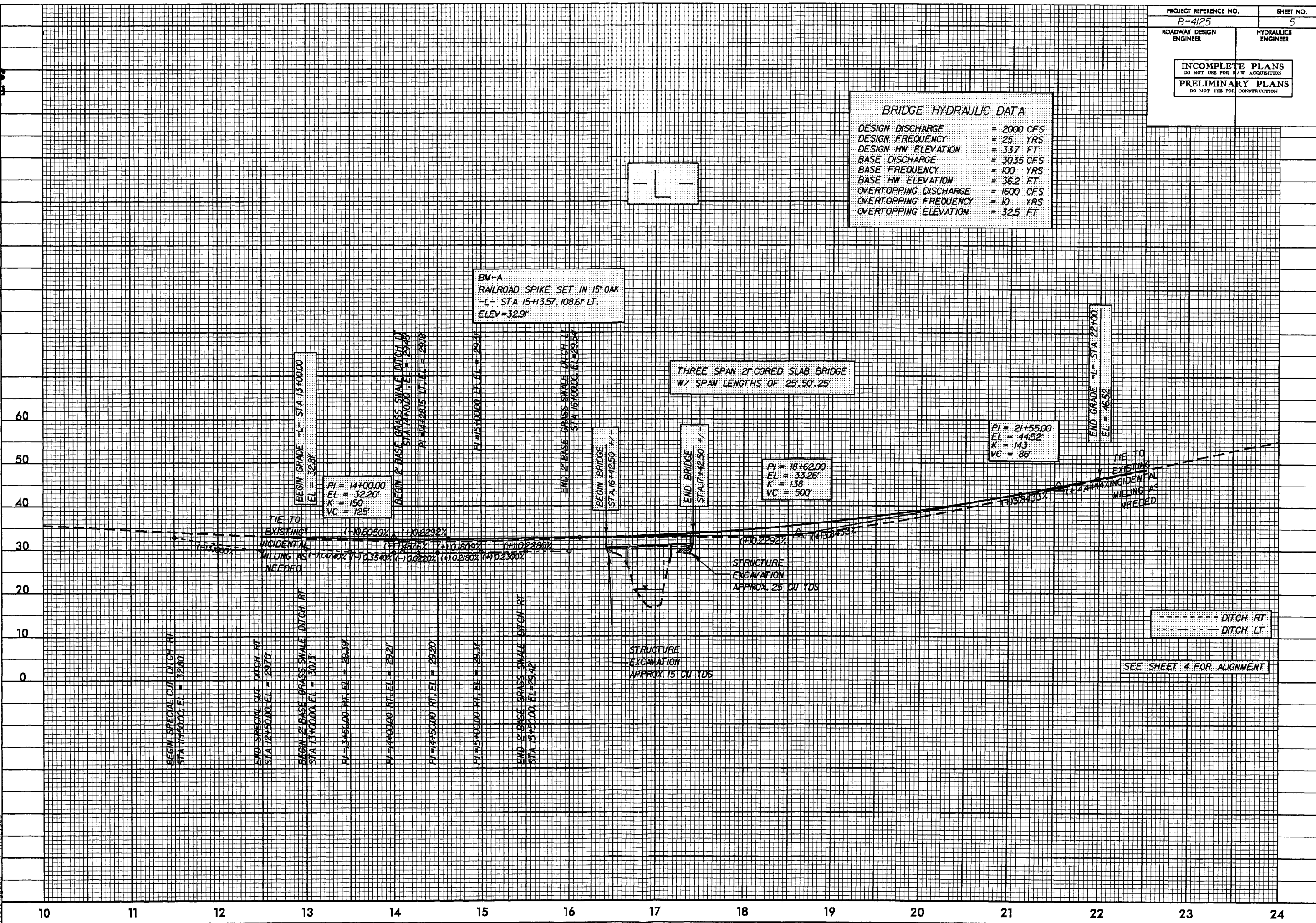
--- DITCH RT  
--- DITCH LT

SEE SHEET 4 FOR ALIGNMENT

Sheet 6 of 8  
Buffer Drawing

5/14/99

03-AUG-2005 11:00  
P:\Roadway\p-co\125\rd\p1\_040212.dgn  
L:\eng\ad\125\rd\p1\_040212.dgn



PROPERTY OWNERS  
NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	Greene County	229 Kinggold Blvd. Snow Hill, NC 28580
2	Alvin Carroll Ormond, et ux	P.O. Box 126 Hookerton, NC 28538
3	James A. Fields, et ux	6899 Hugo Road Hookerton, NC 28538
4	Ely J. Perry	P.O. Box 1475 Kinston, NC 28503

NCDOT  
DIVISION OF HIGHWAYS  
GREENE COUNTY  
PROJECT: 33478.1.1 (B-4125)  
REPLACE BRIDGE #46  
OVER WHEAT SWAMP CREEK  
ON SR 1091  
Buffer Drawing  
Sheet 7 of 8

SHEET OF

## BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE /TYPE	STATION (FROM/TO)	TYPE				IMPACT			BUFFER REPLACEMENT						
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ALLOWABLE			MITTIGABLE		ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )				
						ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )	TOTAL (ft <sup>2</sup> )	ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )			TOTAL (ft <sup>2</sup> )			
1	BRIDGE	16+42.50 to 17+42.50		X		628	113	741								
1		15+30 to 17+70	X						460	1,074	1,534					
<b>TOTAL:</b>						628	113	741	460	1,074	1,534					

NOTE: THE SOUTHEAST CORNER OF THE BRIDGE FILL IS IN WETLAND.  
THE AREA OF BUFFERS THAT OVERLAP WETLANDS ARE LISTED BELOW.

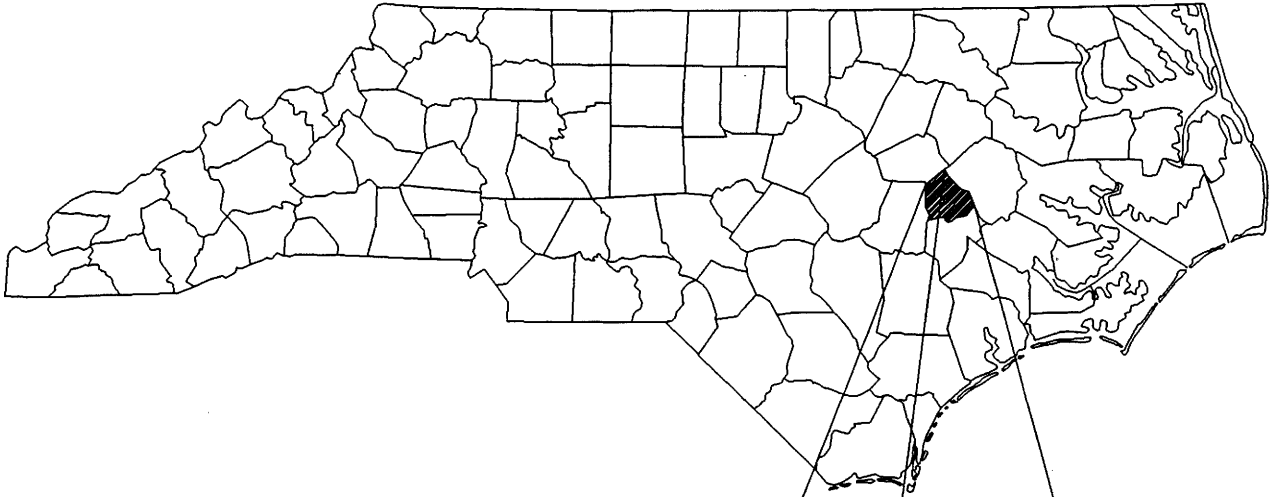
- ZONE 1 ALLOWABLE: 127 SQ. FT.
- ZONE 2 ALLOWABLE: 93 SQ. FT.
- ZONE 1 MITIGABLE: 0 SQ. FT.
- ZONE 2 MITIGABLE: 214 SQ. FT.

N.C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS

GREENE COUNTY  
PROJECT: 33478.1.1 (B-4125)

Buffer Drawing  
Sheet of 8  
of 8

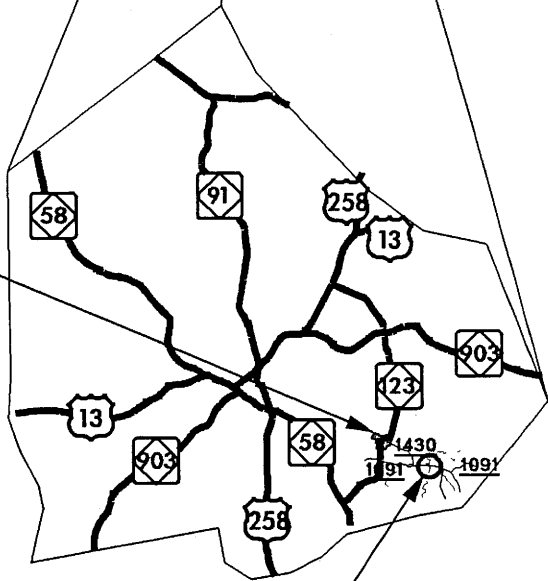
# NORTH CAROLINA



GREENE COUNTY  
NEUSE RIVER BASIN

HOOKERTON

PROJECT LOCATION



VICINITY  
MAP

WETLAND PERMIT

NCDOT  
DIVISION OF HIGHWAYS  
GREENE COUNTY  
PROJECT: 33478.1.1 (B-4125)  
REPLACE BRIDGE #46  
OVER WHEAT SWAMP CREEK  
ON SR 1091

Permit Drawing  
OF Sheet 1 of 6  
SHEET



NOT TO SCALE

# LOCATION MAP

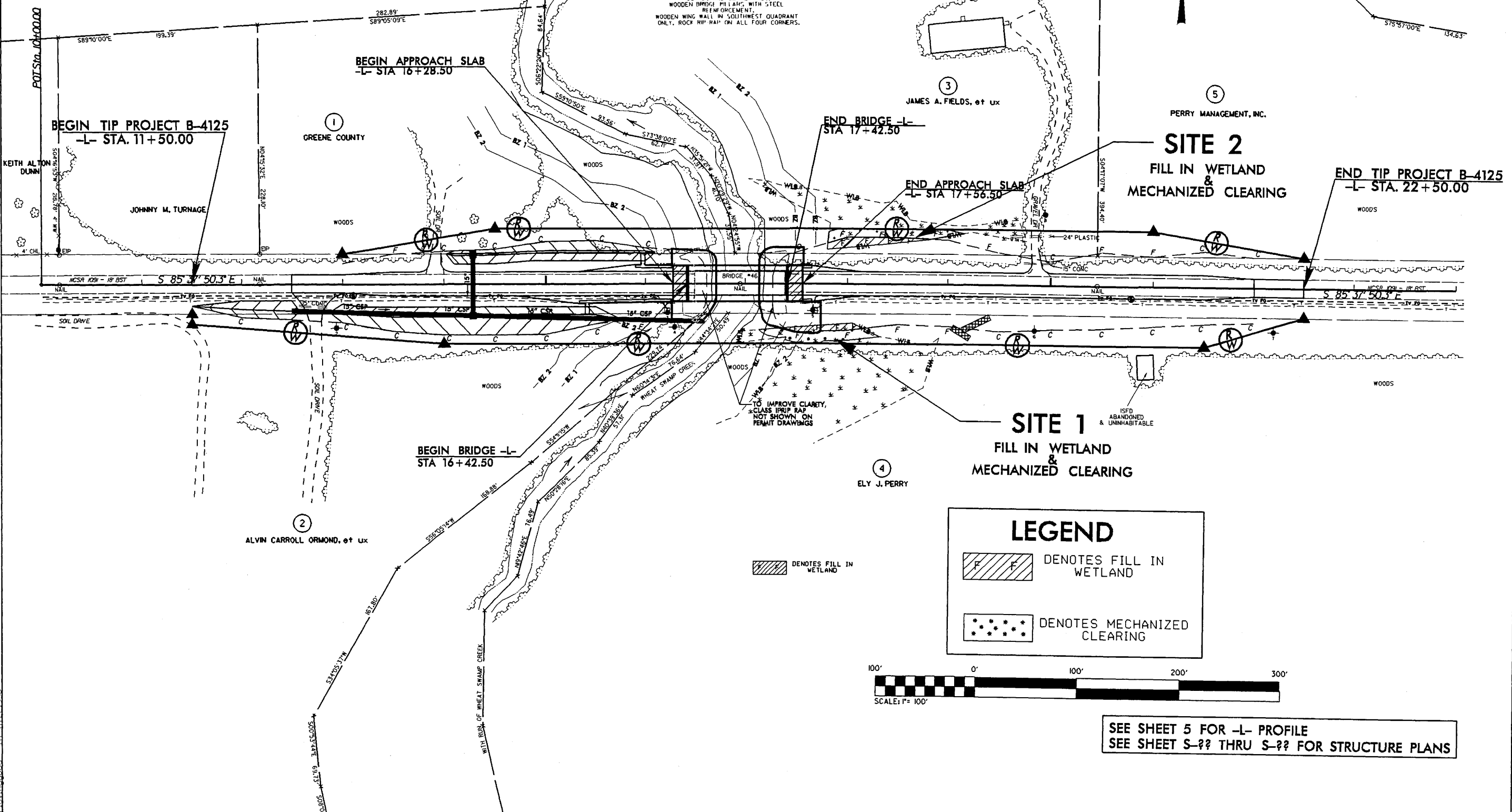
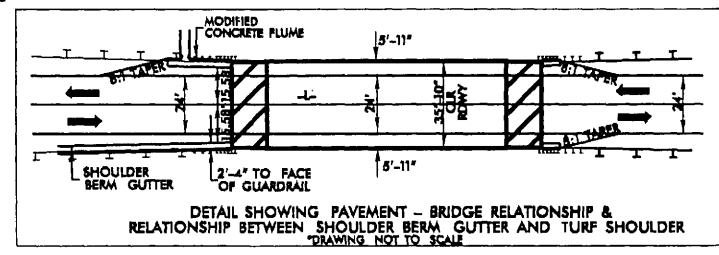
**NCDOT**  
 DIVISION OF HIGHWAYS  
 GREENE COUNTY  
 PROJECT: 33478.1.1 (B-4125)  
 REPLACE BRIDGE #46  
 OVER WHEAT SWAMP CREEK  
 ON SR 1091

Permit Drawing  
 SHEET OF Sheet 2 of 6



ENGLISH

PROJECT REFERENCE NO. B-4125	SHEET NO. 4
Roadway Design Engineer	Hydraulics Engineer



BRIDGE # 46  
CONCRETE BRIDGE WITH CONCRETE WHEEL GUARDS AND GUARD RAILS. WOODEN BRIDGE PILING WITH STEEL REINFORCEMENT. WOODEN WING WALL IN SOUTHWEST QUADRANT ONLY. ROCK RIP RAP ON ALL FOUR CORNERS.

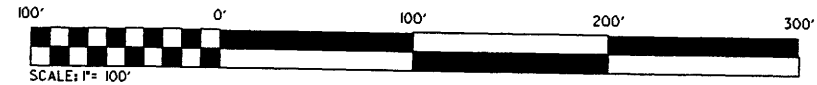
**SITE 2**  
FILL IN WETLAND & MECHANIZED CLEARING

**SITE 1**  
FILL IN WETLAND & MECHANIZED CLEARING

**LEGEND**

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

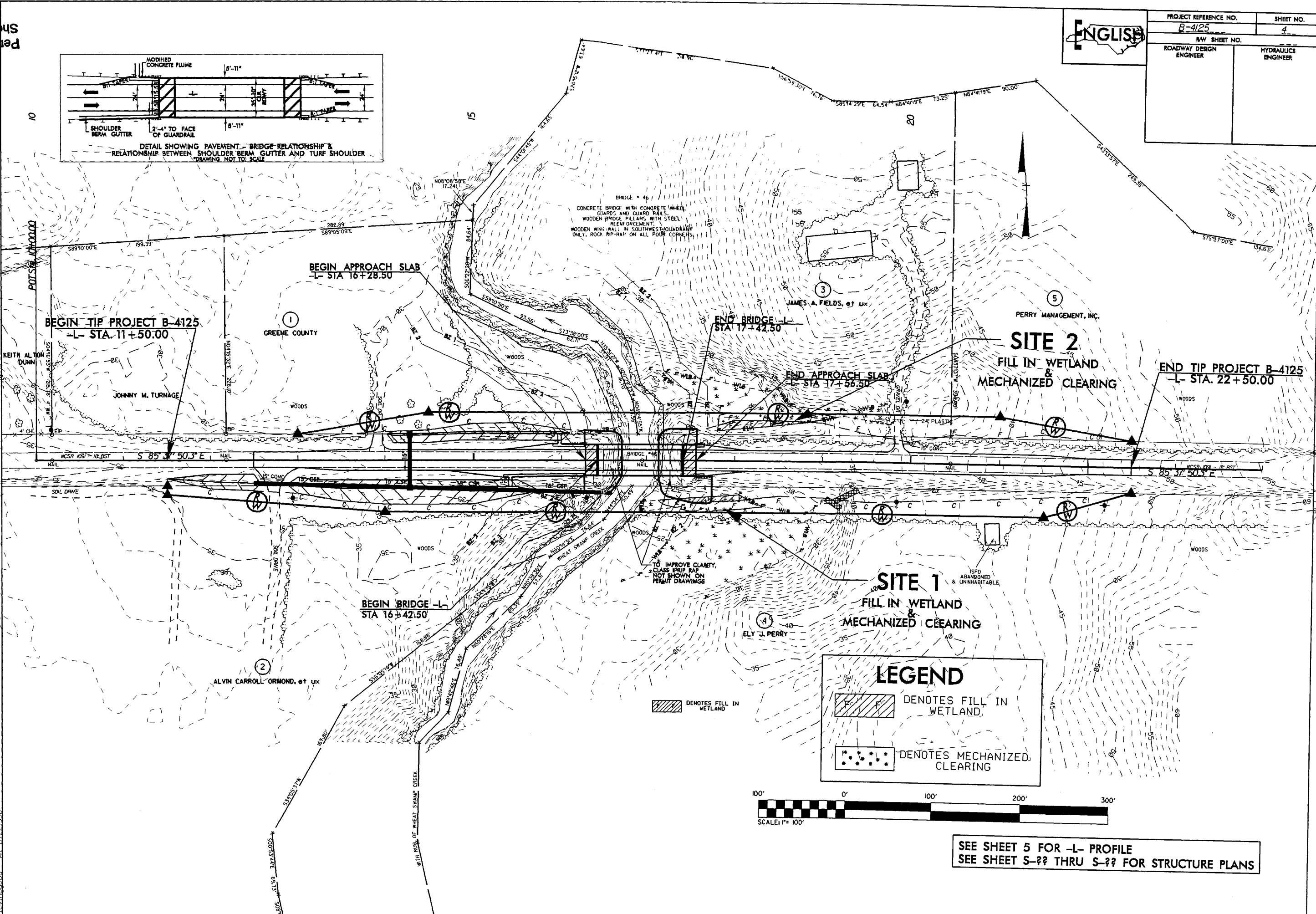
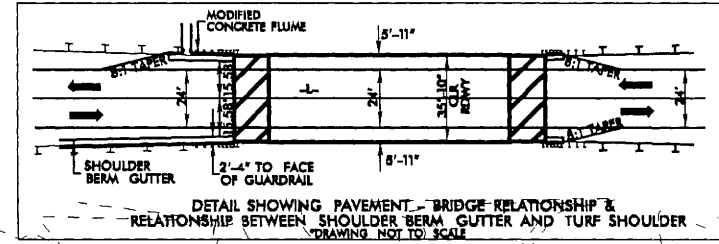


SEE SHEET 5 FOR -L- PROFILE  
SEE SHEET S-?? THRU S-?? FOR STRUCTURE PLANS

03-AUG-2006 11:11  
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PROJECT REFERENCE NO. B-4125	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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**WETLAND PERMIT IMPACT SUMMARY**

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS										
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)					
1	-L- Sta 17+03 Rt. to -L- Sta 18+32 Rt.	Roadway Fill	0.01			0.02											
2	-L- Sta 17+78 Lt. to -L- Sta 20+17 Lt.	Roadway Fill	0.02			0.03											
TOTALS:			0.03			0.05											

N.C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GREENE COUNTY  
 PROJECT: 33478.1.1 (B-4125)  
 DATE: **Permit Drawing**  
 SHEET **5** of **6**

PROPERTY OWNERS  
NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
3	James A. Fields, et ux	6899 Hugo Road Hookerton, NC 28538
4	Ely J. Perry	P.O. Box 1475 Kinston, NC 28503

NCDOT

DIVISION OF HIGHWAYS  
GREENE COUNTY

PROJECT: 33478.1.1 (B-4125)

REPLACE BRIDGE #46

OVER WHEAT SWAMP CREEK

ON SR 1091

Permit Drawing

SHEET OF Sheet 6 of 6

**Subject: Re: B-4125 & B-4127**

**Date:** Mon, 31 Jul 2006 08:41:18 -0400

**From:** Sean McKenna <Sean.McKenna@ncmail.net>

**To:** "John S. Merritt" <jsmerritt@dot.state.nc.us>

Hey John, That's correct, DMF deferred the anadromous fish call to WRC.  
Sean

John S. Merritt wrote:

>Hi Sean.

>

>Just writing this to confirm our phone conversation on 7/19/06  
>concerning the recommended anadromous fish moratoriums dated  
>6/12/02 for B-4125 bridge over Swamp Creek and B-4127 bridge over  
>Rainbow Creek in Greene Co. Per our conversation you deferred  
>the call for a fish moratoriums on these two projects to WRC.  
>WRC did not ask for a moratorium and the DOT will proceed  
>accordingly. Please send a quick email back to make sure we are  
>the same page.

>

>Thanks for your help,

>

>John Merritt

>

>

## CATEGORICAL EXCLUSION ACTION CLASSIFICATION FORM

TIP Project No.	<u>B-4125</u>
State Project No.	<u>8.2180301</u>
WBS No.	<u>33478.1.1</u>
Federal Project No.	<u>BRZ-1091(1)</u>

A. Project Description:

The purpose of this project is to replace Greene County Bridge No. 46 on SR 1091 over Wheat Swamp Creek. The replacement structure will be a Bridge 105 feet long and 30 feet wide. The cross section will include two 12-foot lanes and 3-foot offsets. The west approach will be approximately 160 feet long and the east approach will be approximately 442 feet long. The approach cross section will include 12-foot lanes and 6-foot shoulders. Traffic will be detoured offsite during construction (see Figure One). The roadway will be designed with a 60 mile per hour design speed.

B. Purpose and Need:

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 21.7 out of a possible 100 for a new structure. The bridge has timber piles that can not reasonably be rehabilitated. Bridge 46 has a Structural Appraisal of 2 out of 10 making it both Structurally Deficient and Functionally Obsolete. For these reasons Bridge No. 46 needs to be replaced.

C. Proposed Improvements:

The following Type II improvements which apply to the project are circled:

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)
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

be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.

D. Special Project Information:

**Estimated Costs:**

Total Construction	\$ 650,000
Right of Way	\$ 26,000
Total	\$ 676,000

**Estimated Traffic:**

Current	-	1300
Year 2025	-	2500
TTST	-	3%
Dual	-	2%

**Accidents:** In a check of a recent three-year period, one accident occurred due to a collision with a deer crossing the road.

**Design Speed:** 60 mph

**Functional Classification:** Rural Minor Collector

**School Busses:** During the school year there are six school bus crossings per day at this location. The Transportation Director for Greene County Public Schools would prefer not to detour offsite. However he acknowledged the environmental concerns and the cost of building and onsite detour (apx. \$300,000). He therefore requested that NCDOT keep construction time to a minimum and overlap as much of the summer as possible when students are out of school.

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

**Bridge Demolition:** Bridge 46 is composed timber piles with concrete caps and a concrete superstructure. It is likely that all components can be removed without any appreciable debris falling into the water.

**Studied Offsite Detour:** The offsite detour includes roads in Greene and Lenoir Counties as follows: Greene SR 1429, Lenoir SR 1706, Lenoir SR 1704, Lenoir SR 1705, Greene SR 1432, Greene SR 1430, back to Greene SR 1091. The detour would result in 3.5 miles additional travel and approximately 5.5 minutes delay of normal travel time. This delay falls just into range where the Department begins to consider an onsite detour. However, because there are mitigating factors with regard to High Quality Wetlands and anadromous fish, and because there is not strong objection from Emergency Services, the Division, or the County School Transportation Director, an offsite detour is appropriate for this project.

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

- |      |   |                          |          |
|------|---|--------------------------|----------|
|      | regulatory floodway?  | <input type="checkbox"/> | <u>X</u> |
| (14) | Will the project require any stream relocations or channel changes? | <input type="checkbox"/> | <u>X</u> |

**SOCIAL, ECONOMIC, AND CULTURAL RESOURCES**

- |      |   | <u>YES</u>               | <u>NO</u>                |
|------|---|--------------------------|--------------------------|
| (15) | Will the project induce substantial impacts to planned growth or land use for the area?   | <input type="checkbox"/> | <u>X</u>                 |
| (16) | Will the project require the relocation of any family or business?  | <input type="checkbox"/> | <u>X</u>                 |
| (17) | Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population?   | <input type="checkbox"/> | <u>X</u>                 |
| (18) | If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor?  | <u>X</u>                 | <input type="checkbox"/> |
| (19) | Will the project involve any changes in access control?   | <input type="checkbox"/> | <u>X</u>                 |
| (20) | Will the project substantially alter the usefulness and/or land use of adjacent property?   | <input type="checkbox"/> | <u>X</u>                 |
| (21) | Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness?  | <input type="checkbox"/> | <u>X</u>                 |
| (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)?  | <u>X</u>                 | <input type="checkbox"/> |
| (23) | Is the project anticipated to cause an increase in traffic volumes?   | <input type="checkbox"/> | <u>X</u>                 |
| (24) | Will traffic be maintained during construction using existing roads, staged construction, or on-site detours?   | <u>X</u>                 | <input type="checkbox"/> |
| (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? | <u>X</u>                 | <input type="checkbox"/> |
| (26) | Is there substantial controversy on social, economic, or environmental grounds concerning the project?  | <input type="checkbox"/> | <u>X</u>                 |
| (27) | Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project?   | <u>X</u>                 | <input type="checkbox"/> |

G. CE Approval

TIP Project No.	<u>B-4125</u>
State Project No.	<u>8.2180301</u>
WBS No.	<u>33478.1.1</u>
Federal-Aid Project No.	<u>BRZ-1091(1)</u>

Project Description:

The purpose of this project is to replace Greene County Bridge No. 46 on SR 1091 over Wheat Swamp Creek. The replacement structure will be a Bridge 105 feet long and 30 feet wide. The cross section will include two 12-foot lanes and 3-foot offsets. The west approach will be approximately 160 feet long and the east approach will be approximately 442 feet long. The approach cross section will include 12-foot lanes and 6-foot shoulders. Traffic will be detoured offsite during construction (see Figure One). The roadway will be designed with a 60 mph design speed.

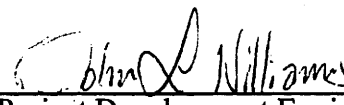
Categorical Exclusion Action Classification:

<u>      </u>	TYPE II(A)
<u>  X  </u>	TYPE II(B)

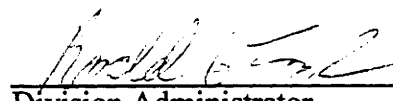
Approved:

<u>12-18-03</u>	
Date	Assistant Manager Project Development & Environmental Analysis Branch

<u>12-18-03</u>	
Date	Project Planning Unit Head Project Development & Environmental Analysis Branch

<u>12-18-03</u>	
Date	Project Development Engineer Project Development & Environmental Analysis Branch

For Type II(B) projects only:

<u>12-18-03</u>	
Date	Division Administrator Federal Highway Administration

## **PROJECT COMMITMENTS:**

**Greene County  
Bridges 46 on SR 1091  
Over Wheat Swamp Creek  
Federal Project BRSTP-1091(1)  
State Project 8.2180301  
WBS 33478.1.1  
TIP # B-4125**

### **Anadramous Fish**

**Moratorium:** The North Carolina Division of Marine Fisheries has indicated that a moratorium on in-water construction will be in place from February 1 to September 30 of any given year.

**Top-Down Construction:** To the extent that it is practical, top-down construction will be implemented to minimize impacts on the stream.

**Bridge Demolition:** To the extent possible, the bridge shall be removed without dropping debris into the water. To the extent that it is practical, the bridge down without the use of temporary causeways.

**Erosion Control:** High Quality Waters Sedimentation and Erosion Control Measures will be required for this project.

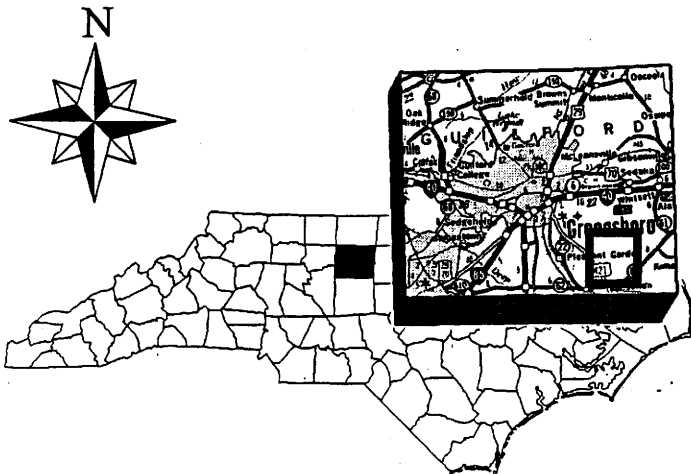
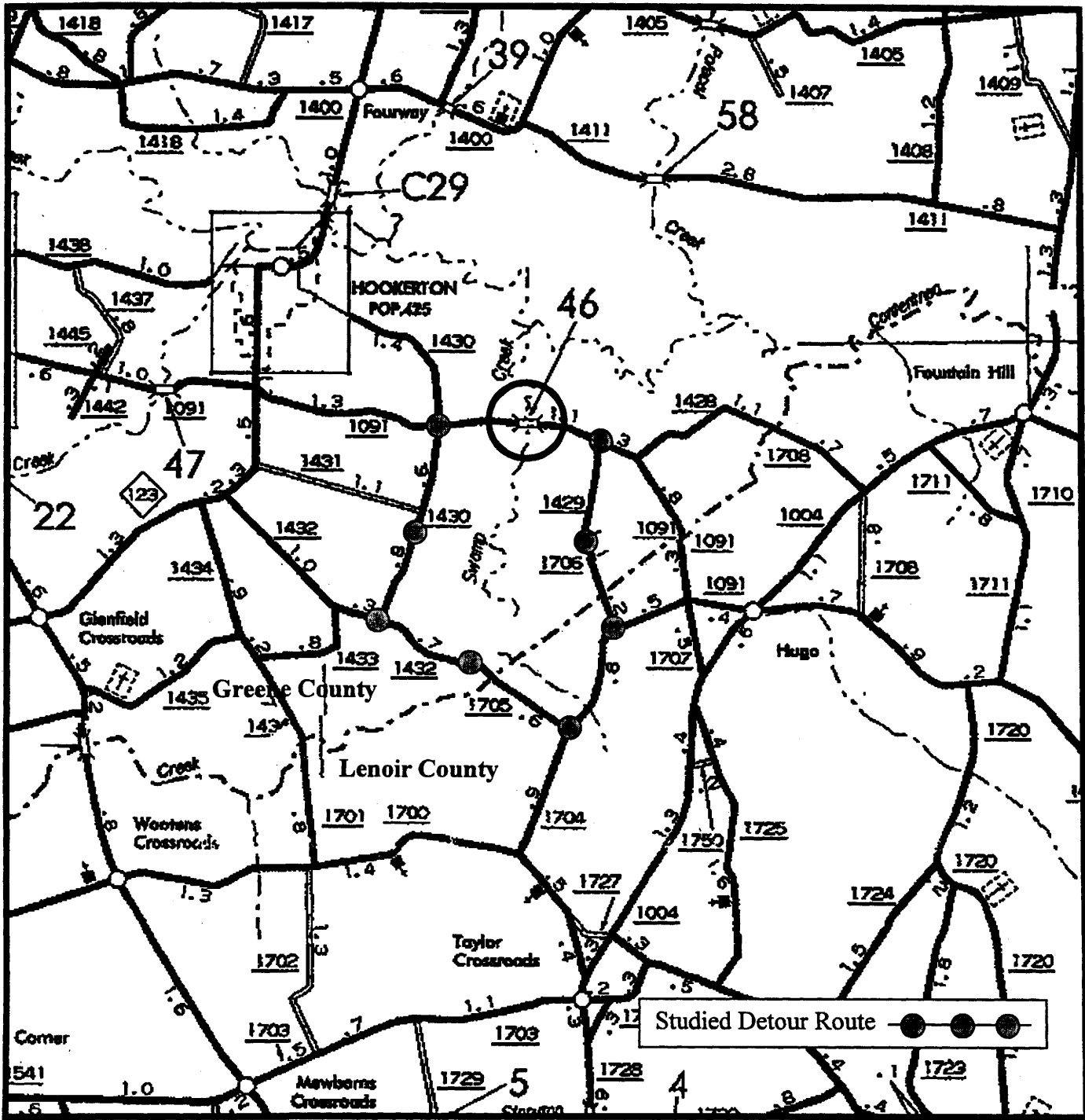
**Design:** Bearing in mind that top-down construction is preferred, the new bridge shall be designed such that it spans the stream, at normal water elevation, entirely if possible or to the greatest extent practical.

**Exception to Moratorium:** Preliminary planning and design suggests that it may be possible to utilize top-down demolition and construction not requiring any causeways or temporary fill in the channel. It also suggests that the new bridge would include a center span that completely spans the channel. If, **and only if**, these things remain true such that **the only in-water activity is cutting off the existing piers**, the North Carolina Division of Marine Fisheries has given verbal indication that construction beginning in July would be acceptable. Any other construction scenario shall be subject to the full moratorium listed earlier.

### **Length of Construction**

In order to minimize inconveniences to road users and to address specific requests from the School Transportation Director, NCDOT will set the minimum reasonable contract time to reduce the period of road closure.





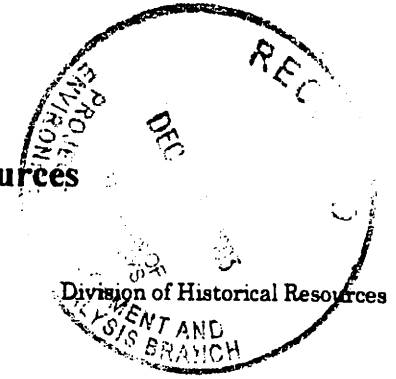
	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION PROJECT DEVELOPMENT &amp; ENVIRONMENTAL ANALYSIS BRANCH</p>
<p><b>GREENE COUNTY REPLACE BRIDGE 46 ON SR 1091 OVER WHEAT SWAMP CREEK B-4125</b></p>	
<p>Figure One</p>	



## North Carolina Department of Cultural Resources

### State Historic Preservation Office

David L. S. Brook, Administrator



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

November 24, 2003

#### MEMORANDUM

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

FROM: David Brook *DLB David Brook*

SUBJECT: Replacement of Bridge No. 46 on SR 1091 (Hugo Road) over Wheat  
Swamp Creek, B-4125, Greene County, ER02-8562

Thank you for your e-mail of October 23, 2003, concerning the above project.

We have conducted a review of the proposed undertaking and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the undertaking as proposed.

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

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

cc: Mary Pope Furr, NCDOT  
John Williams, NCDOT  
Matt Wilkerson, NCDOT

[www.hpo.dcr.state.nc.us](http://www.hpo.dcr.state.nc.us)

	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
RESTORATION	515 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-6545 • 715-4801

**NATURAL RESOURCES TECHNICAL REPORT**

**for the**

**REPLACEMENT OF BRIDGE NO. 46 ON SR 1091  
OVER WHEAT SWAMP CREEK  
GREENE COUNTY, NORTH CAROLINA**

TIP No. B-4125  
State Project No. 8.2180301

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
Project Development and Environmental Analysis Branch  
Natural Resources, Permits and Mitigation Unit  
One South Wilmington Street, Post Office Box 25201  
Raleigh, North Carolina 27611

Issued: February 2002



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## 1.0 INTRODUCTION

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

### 1.1 Project Description

The proposed project calls for the replacement of Bridge No. 46 on State Road 1091, over Wheat Swamp Creek. The project length is approximately 850.00 ft (259.08 m).

### 1.2 Purpose

The purpose of this technical report is to inventory, catalog, and describe the various natural resources that may be impacted by the proposed action. Recommendations are made for measures that will minimize resource impacts. **These descriptions and estimates are relevant only in the context of the recommended project area. If the project area changes, additional field investigations may need to be conducted.**

### 1.3 Methodology

Research was conducted prior to field investigations. Information sources used in this pre-field investigation of the project area include: Hookerton (1982) U.S. Geological Survey (USGS) quadrangle map, Hookerton (1994) U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory Map, Natural Resources Conservation Service (NRCS) soil maps, and NCDOT aerial photographs of the project area (1:1,200). Water resource information was obtained from Department of Environment and Natural Resources publications (DENR, 1998). Federal and State protected species information was gathered from the U.S. Fish and Wildlife Service (FWS) list of protected species and species of concern, and the N.C. Natural Heritage Program (NHP) database of rare species and unique habitats.

LandMark Design Group environmental scientists Ryan Smith and Corri Faquin conducted field surveys along the proposed alignment on July 12, 2001. James Shern, Environmental Project Manager, subsequently performed an additional site visit during the week of August 27, 2001, for quality assurance purposes. Plant communities and their associated wildlife were identified and recorded. Wildlife identification involved using one or more of the following observation techniques: active search and capture, visual observations, and identification of characteristic signs of wildlife (sounds, scat, tracks, and burrows). Jurisdictional wetland delineations were performed utilizing the criteria prescribed in the Corps of Engineers *Wetlands Delineation Manual* (Environmental Laboratory, 1987).

## 1.4 Qualifications of Investigators

- 1) Investigator: Ryan Smith, Environmental Scientist,  
LandMark Design Group Inc., September 1999 to Present  
Education: B.S. Natural Resources: Ecosystem Assessment,  
Minor in Environmental Science, North Carolina State University, 1999  
Experience: Project Coordinator, Environmental Impact, Inc. Aberdeen, NC, May 1999 to  
August 1999  
Forestry Technician, N.C. Forest Service, Summer 1998
- 2) Investigator: Corri Faquin, Environmental Scientist,  
LandMark Design Group Inc., April 2001 to Present  
Education: B.S. Natural Resources: Ecosystem Assessment,  
Minor in Environmental Science, North Carolina State University, 2000  
B.S. Biological Science, North Carolina State University, 2001  
Experience: Associate Scientist, Biolex, Inc. Pittsboro, NC, January 2000 to March 2001  
Laboratory Technician, Department of Forestry, North Carolina State University,  
January 1999 to May 2000
- 3) Investigator: James F. Shern, Senior Environmental Scientist,  
LandMark Design Group Inc., November 1996 to Present  
Education: B.S. Forestry, North Carolina State University, 1992

## 1.5 Definitions

Definitions for area descriptions used in this report are as follows: **Project Area** denotes the area bounded by proposed construction limits; **Project Vicinity** describes an area within a 0.50 mi (0.81 km) radius 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. Soils and availability of water directly influence composition and distribution of flora and fauna in any biotic community.

The project area lies within the Coastal Plain Physiographic Province. The topography in this section of Greene County is characterized as nearly level or gently sloping. Project elevation is approximately 10.00 ft (3.05 m) above mean sea level (msl).

## 2.1 Soils

Three soil phases occur within the project area: Bibb loam, Cowarts sandy loam, Kalmia loamy sand, and Kenansville fine sand. Soil description information was obtained from the Soil Survey of Greene County, North Carolina (1980). They are as follows:

- Bibb loam (hydic) with 0.00 to 1.00 percent slopes is a frequently flooded, nearly level, poorly drained soil located on flood plains. Infiltration is moderate, surface runoff is very slow, permeability is moderate, and the seasonal high water table is at or near the surface for most of the year. The main limitations for this soil type are wetness and flooding.
- Cowarts sandy loam (non-hydic) with 6.00 to 12.00 percent slopes, is a well drained soil commonly found on side slopes of uplands. Infiltration is moderate, surface runoff is rapid, permeability is moderate, and the seasonal high water table occurs below 6.00 ft (1.83 m) for most of the year. Erosion and rapid runoff are the main limitations for this soil type.
- Kenansville fine sand (hydic) with 0.00 to 3.00 percent slopes, is a well drained soil found on low ridges and undulating stream terraces. Infiltration is rapid, surface runoff is slow, permeability is moderately rapid, and the seasonal high water table occurs below 6.00 ft (1.83 m) of the surface. Seepage and caving of ditch banks and trench walls are the main limitations for this soil type.

## 2.2 Water Resources

This section contains information concerning those water resources within the project area. Water resource information encompasses physical aspects of the resource, its relationship to major water systems, Best Usage Standards, and water quality of the resources. Surface water resources and minimization methods are also discussed.

### 2.2.1 Surface Water Characteristics

Wheat Swamp Creek and a tributary of the Creek are the only surface water resources within the project area. The section of the Creek in the project area is located in sub-basin 03-04-07 of the Neuse River Basin. The average baseflow width of the Creek is approximately 33.00 ft (10.06 m), with an average depth of approximately 4.00 ft (1.22 m). The substrate of Wheat Swamp Creek is composed of loamy sand. The average baseflow width of the tributary is approximately 2.5 ft (0.76 m), with an average depth of approximately 0.25 ft (0.08 m). The substrate of the tributary is composed of loam and flow was moderate upon site inspection. Water clarity was fair.

### 2.2.2 Best Usage Classification

All streams have been assigned a best usage classification by the N.C. Division of Water Quality. The classification of Wheat Swamp Creek in the project area is **C Sw NSW** (NCDWQ, 1998). Class **C** refers to waters suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. The supplemental classification of **Sw** denotes waters that have low velocities and characteristics different from most water bodies including a low pH, low dissolved



oxygen, and high organic content. The supplemental classification of NSW denotes Nutrient Sensitive Waters that require additional nutrient management because they are subject to excessive growth of microscopic and/or macroscopic vegetation.

**Neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watersheds or WS-II: predominately undeveloped watersheds) nor Outstanding Resource Waters (ORW) occur within 1.00 mi (1.61 km) of the project area.**

### 2.2.3 Water Quality

The DWQ has initiated a basin-wide approach to water quality management for each of the 17 river basins within the state. To accomplish this goal the DWQ collects biological, chemical, and physical data that can be used in basinwide assessment and planning. All basins are reassessed every five years. Prior to the implementation of the basinwide approach to water quality management, the Benthic Macroinvertebrate Ambient Network (BMAN) assessed water quality by sampling for benthic macroinvertebrate organisms at fixed monitoring sites throughout the state. **There is one BMAN station located on Wheat Swamp Creek within 1.00 mi (1.61 km) of the project area. The station (DEM No. B-12, DEM Index No. 27-86-24) is located on Wheat Swamp Creek at State Road 1091 in Greene County and was not assigned a biological classification in July 1991 and February 1992.**

Many benthic macroinvertebrates have life cycle stages that can last from six months to one year. Therefore, the adverse effects of a toxic spill may not be overcome until the next generation. Different taxa of macroinvertebrates have different tolerances to pollution, therefore, long-term changes in water quality conditions can be identified by population shifts from pollution sensitive to pollution tolerant organisms (and vice versa). Overall, the species present, the population diversity, and the biomass are reflections of long-term water quality conditions.

In North Carolina, point source dischargers are permitted through the National Pollutant Discharge Elimination System (NPDES) Program. Permits are required for all point source discharges. **There are no point source discharges on Wheat Swamp Creek within 1.00 mi (1.61 km) upstream of the project area.**

### 2.2.4 Ecological Impacts

Replacing an existing structure in the same location with a road closure during construction is almost always preferred. It poses the least risk to aquatic organisms and other natural resources. Bridge replacement at a new location usually results in greater impacts. Usually, project construction does not disturb the entire area; therefore, actual impacts will be less than reported in Table 1.

Project construction may result in the following impacts to surface waters:

1. Increased sedimentation and siltation from demolition debris and/or erosion resulting from vegetation removal and soil disturbance during construction,

2. Changes in light incidence and water clarity due to increased sedimentation and vegetation removal,
3. Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction,
4. Changes in water temperature due to increased sun and wind exposure resulting from streamside vegetation removal,
5. Increased nutrient loading from stormwater runoff of areas disturbed during construction, and/or
6. Increased input of toxic compounds from demolition, construction, toxic spills, and highway runoff.

**Precautions must be taken to minimize impacts to water resources in the project area. The NCDOT's Best Management Practices (BMP) for the Protection of Surface Waters must be strictly enforced during the construction stage of the project. Guidelines for these BMPs include, but are not limited to minimizing built upon area and diverting stormwater away from surface water supply waters as much as possible. Provisions to prevent water resource contamination by toxic substances during the demolition and construction phases must also be strictly enforced.**

### **3.0 BIOTIC RESOURCES**

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

Scientific nomenclature and common names (when applicable) are provided for each plant and animal species described. Plant taxonomy generally follows Radford *et al.* (1968). Animal taxonomy follows Martof *et al.* (1980), Potter *et al.* (1980), and Webster *et al.* (1985). Subsequent references to the same organism will include the common name only. Fauna observed during the site visits are denoted with an asterisk (\*). Published range distributions and habitat analysis are used in estimating fauna expected to be present within the project area.

### 3.1 Terrestrial Communities

Eight distinct terrestrial communities are identified in the project area (Figure 2): Dry Oak-Hickory Forest, Coastal Plain Bottomland Hardwoods, Coastal Plain Levee Forest, agriculture, maintained yard, maintained/disturbed, maintained road, and a powerline corridor. Community boundaries within the project area are well defined as shown in Figure 2. Faunal species likely to occur within the project area will exploit all community types for shelter, foraging opportunities, and/or as wildlife corridors.

#### 3.1.1 Dry Oak-Hickory Forest

The Dry Oak-Hickory Forest is present south of State Road 1091 and the powerline corridor on both sides of Wheat Swamp Creek and north of State Road 1091 east of Wheat Swamp Creek and the Bottomland Hardwoods. The canopy is dominated by loblolly pine (*Pinus taeda*) and also contains water oak (*Quercus nigra*), white oak (*Quercus alba*), willow oak (*Quercus phellos*), southern red oak (*Quercus rubra*), sweet-gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), and hickory (*Carya* sp.). The sapling layer includes saplings of the canopy layer as well as sassafras (*Sassafras albidum*), dogwood (*Cornus florida*), and ironwood (*Carpinus caroliniana*). Shrubs within this community include Chinese privet (*Ligustrum sinense*) and devil's walking stick (*Aralia spinosa*). Vines within the Dry Oak-Hickory Forest include muscadine (*Vitis rotundifolia*), greenbrier (*Smilax rotundifolia*), and Virginia creeper (*Parthenocissus quinquefolia*).

Avian species associated with this community type include: turkey vulture (*Cathartes aura*), wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), Swainson's warbler (*Limnothlypis swainsonii*), American coot (*Fulica americana*), pied-billed grebe (*Podilymbus podiceps*), tufted titmouse (*Baccolophus bicolor*), and turkey (*Meleagris gallopavo*).

Wildlife species associated with this community type include white-tailed deer (*Odocoileus virginianus*), gray squirrel (*Sciurus carolinensis*), marsh rabbit (*Sylvilagus palustris*), golden mouse (*Ochrotomys nuttali*), bobcat (*Felis rufus*), southeastern shrew (*Sorex longirostris*), mink (*Mustela vison*), and raccoon (*Procyon lotor*).

#### 3.1.2 Coastal Plain Bottomland Hardwoods (Blackwater Subtype)

The Coastal Plain Bottomland Hardwoods are present on both sides of Wheat Swamp Creek on the north side of State Road 1091, and to the east of Wheat Swamp Creek on the south side of State Road 1091 and the powerline corridor. The canopy of this community contains ironwood, red maple, river birch (*Betula nigra*), sycamore (*Platanus occidentalis*), sweet-gum, and American elm (*Ulmus americana*). The sapling layer consists of saplings of the canopy trees. The herb layer consists of lizard's tail (*Saururus cernuus*), and false nettle (*Boehmeria cylindrica*). The vine layer consists of trumpet creeper (*Campsis radicans*), and greenbrier (*Smilax bona-nox*). Faunal species within the Coastal Plain Bottomland Hardwoods would include those species utilizing the Dry Oak-Hickory Forest.

### **3.1.3 Coastal Plain Levee Forest (Blackwater Subtype)**

The Coastal Plain Levee Forest is present north of State Road 1091 and east of Wheat Swamp Creek. The Coastal Plain Levee forest is also present south of State Road 1901 and east of Wheat Swamp Creek. The canopy of this community is composed of river birch, sweet-gum, and sycamore. The sapling layer consists of saplings of the canopy trees. Vines within this community include greenbrier. Faunal species utilizing the Coastal Plain Levee Forest include those species within the Dry Oak-Hickory Forest.

### **3.1.4 Agriculture**

The agricultural field is present south of State Road 1091 and the maintained/disturbed community and west of Wheat Swamp Creek and the powerline corridor. This community is composed primarily of a large-scale agricultural system used for the cultivation of crops. Faunal species frequenting this community will be largely those species inhabiting the Dry Oak-Hickory Forest.

### **3.1.5 Maintained Yard**

The maintained yard includes the area north of State Road 1091, and west of Wheat Swamp Creek and the Bottomland Hardwoods. The community is primarily composed of fescue (*Festuca* sp.), willow oak, hickory, loblolly pine, water oak, and red maple. Wildlife species utilizing the maintained yard include species that occupy the Dry Oak-Hickory Forest.

### **3.1.6 Powerline Corridor**

The powerline corridor is present south of State Road 1091 and the maintained/disturbed community, and on both sides of Wheat Swamp Creek. The powerline corridor is composed of Japanese honeysuckle (*Lonicera japonica*), rose (*Rosa* sp.), blackberry (*Rubus argutus*), red maple, muscadine, greenbrier, poison ivy, dog fennel, sweet-gum, grasses (*Festuca* sp.), sycamore, and devil's walking stick. The wetlands within the powerline corridor also contain lizard's tail, trumpet creeper, false nettle, black willow (*Salix nigra*), knotweed (*Polygonum* sp.) and dogwood (*Cornus amomum*). Faunal species utilizing the powerline corridor will include those species inhabiting the Dry Oak-Hickory Forest.

### **3.1.7 Maintained/Disturbed**

The maintained/disturbed community exists along both sides of State Road 1091 for the entire length of the project area. Species within the maintained/disturbed community include fescue, dog fennel, and ragweed (*Ambrosia* sp.). Wildlife species utilizing the maintained/disturbed include species that occupy the Dry Oak-Hickory Forest.

### 3.1.8 Maintained Road

The maintained road is present north of State Road 1091 and the Bottomland Hardwoods and east of Wheat Swamp Creek and the Dry Oak-Hickory Forest. The maintained road lacks vegetation and is utilized as an access road.

### 3.2 Aquatic Communities

Two aquatic communities, Wheat Swamp Creek and a tributary of Wheat Swamp Creek are located within the project area. Physical characteristics of a water body and the condition of the water resource influence faunal composition of aquatic communities. Terrestrial communities adjacent to a water resource also greatly influence aquatic communities. Vegetation within the aquatic communities includes those species present in the Bottomland Hardwoods, the Levee Forest, the powerline corridor, and the Dry Oak-Hickory Forest.

Fauna associated with these aquatic communities includes various invertebrate and vertebrate species. Aquatic species likely to occur in Wheat Swamp Creek include catfish (*Ameiurus* sp.), bluegill (*Lepomis macrochirus*), water snake (*Nerodia* sp.), spotted turtle (*Clemmys guttata*), southern leopard frog (*Rana sphenoccephala*), and dwarf salamander (*Eurycea quadridigitata*). Invertebrates that would be present include various species of caddisfly (Trichoptera), mayfly (Ephemeroptera), crayfish (Decapoda), dragonfly (Odonata), and damselfly (Odonata).

### 3.3 Habitat Summary

Construction of the subject project will have various impacts on the biotic resources described. Any construction related activities in or near these resources have the potential to impact biological functions. Table 1 quantifies the habitat communities within the project area.

**Table 1. Habitat Within Project Area.**

Community	Surface Water	Wetland	Upland	Totals
Dry Oak-Hickory Forest	-	-	0.31 ac (0.13 ha)	<b>0.31 ac (0.13 ha)</b>
Bottomland Hardwoods	-	0.28 ac (0.11 ha)	0.26 ac (0.11 ha)	<b>0.54 ac (0.22 ha)</b>
Levee Forest	-	-	0.08 ac (0.03 ha)	<b>0.08 ac (0.03 ha)</b>
Agriculture	-	-	0.03 ac (0.01 ha)	<b>0.03 ac (0.01 ha)</b>
Maintained Yard	-	-	0.37 ac (0.15 ha)	<b>0.37 ac (0.15 ha)</b>
Powerline Corridor	-	0.11 ac (0.05 ha)	0.58 ac (0.24 ha)	<b>0.69 ac (0.29 ha)</b>
Maintained/Disturbed	-	-	0.53 ac (0.22 ha)	<b>0.53 ac (0.22 ha)</b>
Maintained Road	-	-	0.03 ac (0.01 ha)	<b>0.03 ac (0.01 ha)</b>
Tributary	0.01 ac (0.004 ha)	-	-	<b>0.01 ac (0.004 ha)</b>
Wheat Swamp Creek	0.22 ac (0.09 ha)	-	-	<b>0.22 ac (0.09 ha)</b>
<b>Total</b>	<b>0.23 ac (0.094 ha)</b>	<b>0.39 ac (0.16 ha)</b>	<b>2.19 ac (0.90 ha)</b>	<b>2.81 ac (1.154 ha)</b>

Plant communities found within the proposed project area serve as nesting and sheltering habitat for various wildlife species. Replacing Bridge No. 46 and its associated improvements may reduce habitat

for some faunal species. However, due to the size and scope of this project, it is anticipated that impacts to fauna will be minimal.

Areas modified by construction (but not paved) will become road shoulders and early succession habitat. Reduced habitat may displace some wildlife further from the roadway while attracting other wildlife by the creation of early successional habitat. Animals temporarily displaced by construction activities may repopulate areas suitable for the species.

Aquatic communities are sensitive to even small changes in their environment. Stream channelization, scouring, siltation, sedimentation, and erosion from project-related work may affect water quality and biological constituents. Although direct impacts may be temporary, environmental impacts from these construction processes may result in long term or irreversible effects.

Impacts often associated with in-stream construction include increased channelization and scouring of the streambed. In-stream construction alters the stream substrate and may remove streamside vegetation at the site. Disturbances to the substrate will produce siltation, which in excessive amounts can clog the gills and/or feeding mechanisms of benthic organisms (sessile filter-feeders and deposit-feeders), fish, and amphibian species. Benthic organisms may also be covered by excessive amounts of sediment. Some of these organisms may be slow to recover or repopulate a stream.

The removal of streamside vegetation and placement of fill material at the construction site alters the terrain. Alterations of the streambank enhance the likelihood of erosion and sedimentation. Revegetation stabilizes the soil thus mitigating these processes. Erosion and sedimentation carry soils, toxic compounds, and other materials into aquatic communities at the construction site. These processes increase turbidity and can cause the formation of sandbars at the site and downstream, thereby altering water flow and the growth of vegetation. Streamside clearing also leads to more direct sunlight penetration causing elevations in water temperatures, which may impact some species. **Based on the potential for increased sedimentation, it is recommended that silt curtains be used during construction.**

#### **4.0 JURISDICTIONAL TOPICS**

This section provides descriptions, inventories, and impact analysis pertinent to two important issues: "Waters of the United States" and rare and protected species.

##### **4.1 Waters of the United States**

Surface waters and jurisdictional wetlands fall under the broad category of "Waters of the United States," as defined in Section 33 of the Code of Federal Register (CFR) Part 328.3. Wetlands, defined in 33 CFR 328.3, are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Any action that proposes to place fill into these areas 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).

#### 4.1.1 Wetlands and Surface Waters

Potential wetland communities were investigated pursuant to the 1987 Corps of Engineers *Wetlands Delineation Manual*. The three-parameter approach was used. Hydric soils, hydrophytic vegetation, and certain specific hydrologic characteristics must **all** be present for an area to be considered a wetland. **Wetlands are present within the Coastal Plain Bottomland Hardwoods and the powerline corridor. The total area of wetlands within the project area is 0.39 ac (0.16 ha).**

Wheat Swamp Creek and a tributary of the Creek are jurisdictional surface waters under Section 404 of the Clean Water Act (33 USC 1344). Wheat Swamp Creek covers 0.22 ac (0.09 ha) and 226.00 lf (68.88 lm) of the project area. The tributary covers 0.01 ac (0.004 ha) and 194.00 lf (59.13 lm) of the project area. Discussion of the biological, physical, and water quality aspects of all surface waters in the project area are presented in previous sections of this report.

#### 4.1.2 Permits

Nationwide Permit 23 (33 CFR 330.5(a) (23)) is likely to be applicable for all impacts to "Waters of the United States" 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 that pursuant to the Council on Environmental Quality regulation for implementing the procedural provisions of the National Environmental Policy Act:

- 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
- the office of the Chief of Engineers has been furnished notice of the agency's or department's application for the categorical exclusion and concurs with that determination.

A Nationwide Permit 33 may be required if the construction plans require a temporary structure that is not covered in the NEPA document.

This project will also require a 401 Water Quality Certification from the DWQ prior to the issuance of the Nationwide Permit. 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 United States." Section 401 Certification allows surface waters to be temporarily impacted for the duration of the construction or other land manipulation. The issuance of a 401 permit from the DWQ is a prerequisite to issuance of a Section 404 permit.

Projects located within the Neuse River Basin are subject to the Neuse River Buffer Rules, administered by the DWQ. These rules address loss of stream channel buffers for field verified streams appearing on the USGS Topographic Quad and/or the NRCS Soil Survey. Bridge construction is allowable provided that there are "no practical alternatives." Written authorization is required from the DWQ. A request to the DWQ for the authorization should be included in the cover letter of the permit application package.

### **4.1.3 Bridge Demolition**

Bridge demolition information will be provided in the NEPA Document.

### **4.1.4 Mitigation**

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

#### **4.1.4.1 Avoidance**

Avoidance mitigation examines all appropriate and practicable possibilities of averting impacts to "Waters of the United States." According to a 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and the COE, 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.

#### **4.1.4.2 Minimization**

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to "Waters of the United States." Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction of median widths, right-of-way widths, fill slopes, and/or road shoulder widths. Other practical mechanisms to minimize impacts to "Waters of the United States" crossed by the proposed project include: strict enforcement of sedimentation control BMP's for the protection of surface waters during the entire life of the project; reduction of clearing and grubbing activity; reduction/elimination of direct discharge into streams; reduction of runoff velocity; re-establishment of vegetation on exposed areas; judicious pesticide and herbicide usage; minimization of "in-stream" activity; and litter/debris control.

#### **4.1.4.3 Compensatory Mitigation**

Compensatory mitigation is not normally considered until anticipated impacts to "Waters of the United States" have been avoided **and** minimized to the maximum extent practicable. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation may be required for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been performed. Compensatory actions often include restoration, creation, and enhancement of "Waters of the United States." Such



actions should be undertaken in areas adjacent to or contiguous to the discharge site whenever practicable. Compensatory mitigation is not usually necessary with a Nationwide Permit No. 23, however final mitigation requirements rest with the COE.

**Impact thresholds for mitigation are as follows:**

- 0.10 to 1.00 ac (0.04 to 0.40 ha) of wetland impacts may require mitigation;
- 1.00 ac (0.40 ha) or more of wetland impacts will require mitigation;
- 150.00 lf (45.72 lm) or more of stream impacts will require mitigation.

## 4.2 Rare and Protected Species

Some populations of flora and fauna have been in, or are in, the process of decline either due to natural forces or their inability to coexist with human activities. 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 U.S. Fish and Wildlife Service (FWS). 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 22, 2001, the FWS lists one federally-protected species for Greene County (Table 2). A brief description of the characteristics and habitat requirements for these species along with a conclusion regarding potential project impacts follows.

**Table 2. Federally-protected species of Greene and Lenoir Counties.**

Scientific Name	Common Name	Federal Status
<i>Picoides borealis</i>	Red-cockaded woodpecker	Endangered

Endangered – A taxon “in danger of extinction throughout all or a significant portion of its range.”

***Picoides borealis* (red-cockaded woodpecker) Endangered**

Animal Family: Picidae

Date Listed: October 13, 1970

The red-cockaded woodpecker (RCW) once occurred from New Jersey to southern Florida and west to eastern Texas. It occurred inland in Kentucky, Tennessee, Arkansas, Oklahoma, and Missouri. The RCW is now found only in coastal states of its historic range and inland in southeastern Oklahoma and southern Arkansas. In North Carolina moderate populations occur in the sandhills and southern coastal plain. The few populations found in the Piedmont and northern coastal plain are believed to be relics of former populations.

The adult RCW has black and white plumage and male RCWs have small red streaks on the sides of the nape. The RCW is identifiable by horizontal stripes of black and white on it's back, white with streaked flanks on it's breast and underside, and a large white cheek patch.

The RCW uses open old growth stands of southern pines, particularly longleaf pine (*Pinus palustris*), for foraging and nesting habitat. RCWs require forested stands that contain at least 50.00 percent pine, lack a thick understory, and are contiguous with other pine stands. These birds nest exclusively in trees greater than 60 years old that are contiguous with pine stands at least 30 years of age. The foraging range of the RCW is up to 500.00 ac (202.34 ha) and must be contiguous with suitable nesting sites.

RCWs nest exclusively in living pine trees, generally those trees infected with red-heart disease. Cavities are located in colonies from 12.00 to 100.00 ft (3.66 to 30.48 m) above the ground and average 30.00 to 50.00 ft (9.14 to 15.24 m) high. They can be identified by a large incrustation of running sap surrounding the tree. The incrustation of sap is believed to be a defense mechanism of the RCW against possible predators. A colony of woodpeckers usually consists of one breeding pair and the offspring from previous years. The RCW lays its eggs (three to five) in April, May, and June and the eggs hatch approximately 38 days later. All members of the colony share the raising of the young. Red-cockaded woodpeckers feed mainly on insects but may feed on seasonal wild fruits.

**BIOLOGICAL CONCLUSION:**

**NO EFFECT**

The mature, open pine stands required by the RCW are not present in the project area. The North Carolina Natural Heritage Program database was reviewed on June 12, 2001 and revealed no records of existing populations of RCW within 1.00 mi (1.61 km) of the project area. No habitat for the RCW exists in the project area, thus, no impacts to RCWs will result from project construction.

**4.2.2 Federal Species of Concern and State Listed Species**

Federal Species of Concern are not afforded federal protection under the Endangered Species Act 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 therefore should be included for consideration. Federal Species of Concern (FSC) are defined as a species that is under consideration for listing but 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 N.C. State Endangered Species Act and the N.C. Plant Protection and Conservation Act of 1979.

There is one Federal Species of Concern listed by the FWS for Greene County. A survey for this species was not conducted during the site visit, nor were any of this species observed. A review of the NCNHP database of rare species and unique habitats on June 12, 2001 revealed no federal species of concern within 1.00 mi (1.61 km) of the project area.

**Table 3. Federal Species of Concern for Greene and Lenoir Counties.**

<b>Scientific Name</b>	<b>Common Name</b>	<b>NC Status</b>	<b>Habitat</b>
<i>Lythrurus matutinus</i>	Pinewoods shiner	SR**	Yes

“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.

\*\* -- Obscure record - the date the species was last observed in the county is uncertain.

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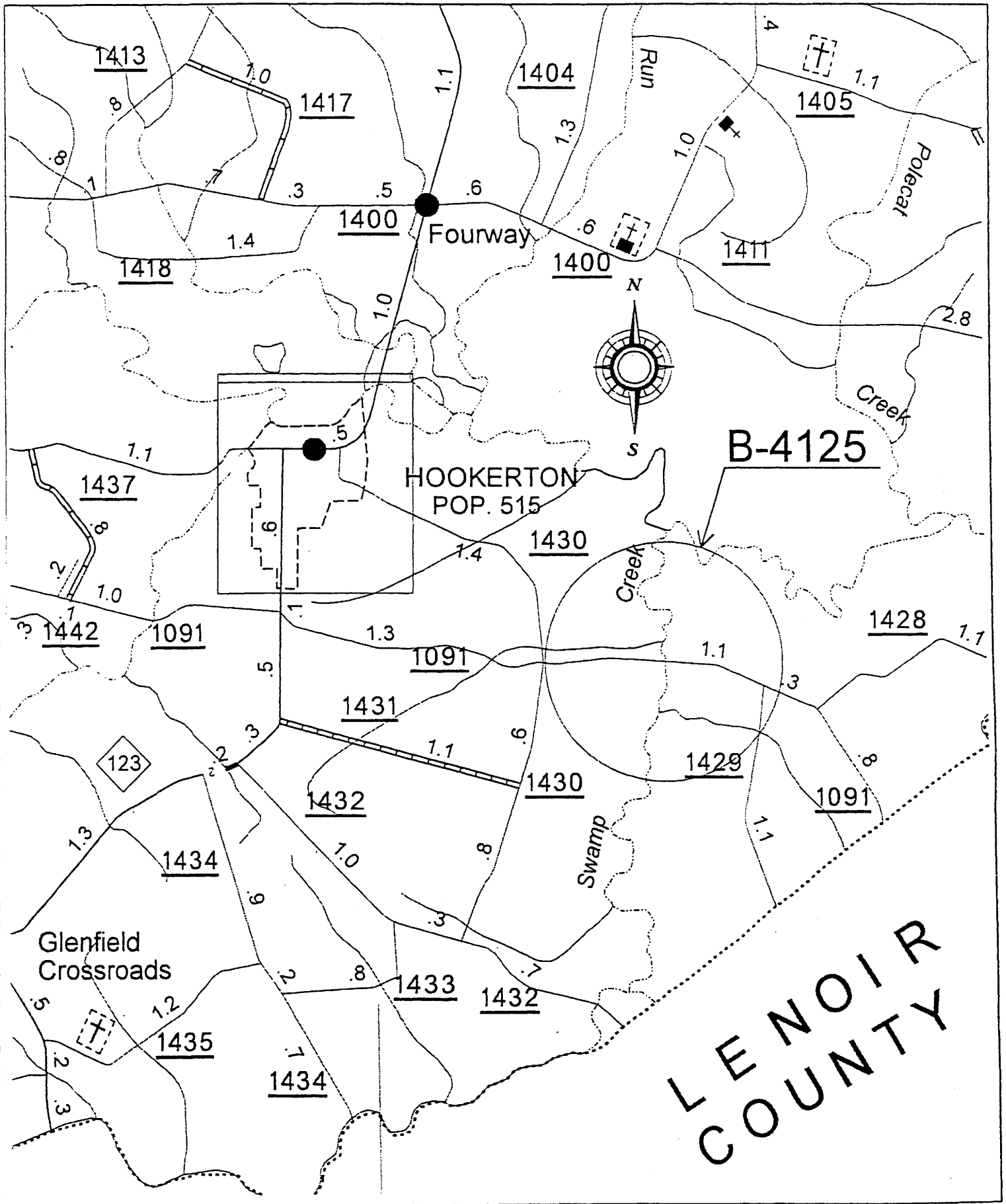
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# FIGURE 1 GREENE COUNTY



TIP B-4125  
Habitat Within  
Project Area



Bridge No. 46

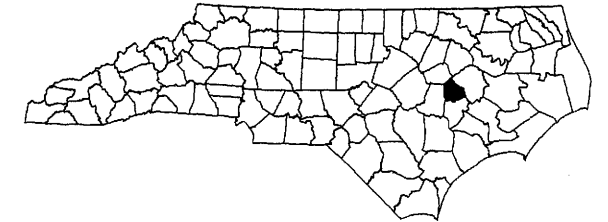
SR 1091

Wheat Swamp Creek

LMDG Project #: 1960024-311.00

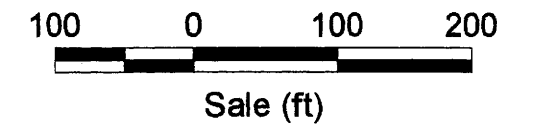
Figure 2 TIP B-4125  
Habitat Within Project Area

Neuse River Basin  
Greene County, NC



Legend

-  Project Area
-  Bridge
-  Wheat Swamp Creek
-  Tributary
-  Bottomland Hardwoods
-  Bottomland Hardwoods Wetlands
-  Powerline Corridor Wetlands
-  Powerline Corridor
-  Coastal Plain Levee Forest
-  Dry Oak-Hickory Forest
-  Agriculture
-  Maintained Yard
-  Maintained Road
-  Maintained/Disturbed



LANDMARK  
DESIGN GROUP

DATA FORM  
ROUTINE WETLAND DETERMINATION  
(1987 CDE Wetlands Delineation Manual)

Project/Site: <u>B-4125</u> Applicant/Owner: _____ Investigator: <u>Ryan Smith, Corri Wolfe</u>	Date: <u>7/12/01</u> County: <u>Greene</u> State: <u>NC</u>
Do Normal Circumstances exist on the site? <span style="float: right;"><input type="radio"/> Yes <input type="radio"/> No</span> Is the site significantly disturbed (Atypical Situation)? <span style="float: right;"><input type="radio"/> Yes <input type="radio"/> No</span> Is the area a potential Problem Area? <span style="float: right;"><input type="radio"/> Yes <input checked="" type="radio"/> No</span> (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Red maple</u>	<u>tree</u>	<u>FAC</u>	9. <u>Boehmeria cylindrica</u>	<u>herb</u>	<u>OBL</u>
2. <u>river birch</u>	<u>tree</u>	<u>FACW</u>	10. <u>Carex sp.</u>	<u>herb</u>	<u>OBL</u>
3. <u>red maple</u>	<u>sap</u>	<u>FAC</u>	11. <u>Smilax rotundifolia</u>	<u>vine</u>	<u>FAC</u>
4. <u>iron wood</u>	<u>sap</u>	<u>FAC</u>	12. <u>trumpet creeper</u>	<u>vine</u>	<u>FAC</u>
5. <u>iron wood</u>	<u>shrub</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>red maple</u>	<u>shrub</u>	<u>FAC</u>	14. _____	_____	_____
7. <u>Smilax rotundifolia</u>	<u>shrub</u>	<u>FAC</u>	15. _____	_____	_____
8. <u>lizard's tail</u>	<u>herb</u>	<u>OBL</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW and/or FAC: 100%  
(excluding FAC-): \_\_\_\_\_

Remarks: \_\_\_\_\_

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input checked="" type="checkbox"/> Drift Lines <input checked="" type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: <u>10</u> (in.) Depth to Saturated Soil: <u>4</u> (in.)	Remarks: _____



DATA FORM  
 ROUTINE WETLAND DETERMINATION  
 (1987 CDE Wetlands Delineation Manual)

Project/Site: <u>B-4125</u>	Date: <u>7/12/01</u>
Applicant/Owner: _____	County: <u>Greene</u>
Investigator: <u>Ryan Smith, Corri Wolfe</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <span style="float: right;">Yes No</span> Is the site significantly disturbed (Atypical Situation)? <span style="float: right;">Yes No</span> Is the area a potential Problem Area? <span style="float: right;">Yes No</span> (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum Indicator
1. <u>loblolly pine</u>	<u>tree</u> <u>FAC</u>
2. <u>hickory sp.</u>	<u>tree</u> <u>FAC</u>
3. <u>river birch</u>	<u>tree</u> <u>FACW</u>
4. <u>sweet-gum</u>	<u>sap</u> <u>FAC+</u>
5. <u>smilax bona-nox</u>	<u>shrub</u> <u>FAC</u>
6. <u>dog fennel</u>	<u>shrub</u> <u>FACU</u>
7. <u>mulberry</u>	<u>shrub</u> <u>FAC</u>
8. <u>virginia creeper</u>	<u>vine</u> <u>FACU</u>
9. _____	_____
10. _____	_____
11. _____	_____
12. _____	_____
13. _____	_____
14. _____	_____
15. _____	_____
16. _____	_____
Percent of Dominant Species that are OBL, FACW and/or FAC: <u>80%</u> (excluding FAC-): _____	
Remarks: _____	

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b> Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: <u>None</u>	

WETLAND RATING WORKSHEET (4th VERSION)

Project Name: B-4125 County: Green  
 Nearest Road: SR 1091 Date: 7/12/01  
 Wetland Area (ac): \_\_\_\_\_ Wetland Width (ft): \_\_\_\_\_  
 Name of Evaluator(s): Ryan Smith, Corn Wolfe

Wetland Location:

- on sound or estuary
- pond or lake
- on perennial stream
- on intermittent stream
- within interstream divide
- other \_\_\_\_\_

Adjacent Land Use:

- (Within 1/2 mi upstream, upslope, or radius)
- forested/natural veg. 30%
  - agriculture/urbanized 60%
  - impervious surface 10%
- Adjacent Special Natural Areas \_\_\_\_\_

Soils

- Soil Series \_\_\_\_\_
- predominantly organic (humus, muck or peat)
  - predominantly mineral (non-sandy)
  - predominantly sandy

Dominant Vegetation

- (1) red maple
- (2) river birch
- (3) iron wood

Hydraulic Factors

- freshwater \_\_\_\_\_ brackish
- steep topography
- ditched or channelized
- total wetland width  $\geq$  100 feet.

Flooding and Wetness

- semipermanently to permanently flooded or inundated
- seasonally flooded or inundated
- intermittently flooded or temporary surface water
- no evidence of flooding or surface water

Wetland Type (select one)\*

- Bottomland Hardwood Forest
- Swamp Forest
- Carolina Bay
- Focosin
- Pine Savannah
- Freshwater Marsh
- Bog/Fen
- Headwater Forest
- Bog Forest
- Ephemeral Wetland
- Other: \_\_\_\_\_

\*The rating system cannot be applied to salt or brackish marshes or stream channels.

DEM RATING

WATER STORAGE	<u>3</u>	x 4.00 =	<u>12</u>
BANK/ShORELINE STABILIZATION	<u>2</u>	x 4.00 =	<u>8</u>
POLLUTANT REMOVAL	<u>3</u> *	x 5.00 =	<u>15</u>
WILDLIFE HABITAT	<u>4</u>	x 2.00 =	<u>8</u>
AQUATIC LIFE VALUE	<u>4</u>	x 4.00 =	<u>16</u>
RECREATION/EDUCATION	<u>2</u>	x 1.00 =	<u>2</u>

WETLAND SCORE = 61  
(TOTAL)

\* Add 1 point if in sensitive watershed and >10% nonpoint disturbance within 1/2 mile upstream, upslope, or radius.