

413
office estimate Min brgy = 55'

230188

PREDESIGN-PRESURVEY REPORT

Project# _____
TIP# _____
Let Date _____
WBS# _____

County Columbus

Bridge# 230188
Road# SR 1516 (Paul Wilcox Dr)
Stream Brier Creek

Type Of Request: POC Force Account TIP NCMA

Date 5/29/13 Name E AKprugu Assigned To _____

Checked By _____

Prior Survey Date _____ (attach copy of prior survey)

Study By Scour Section _____

Flood Zone Yes Detail Study Limited Date June 2, 2006 Panel# 0224

B.M. Info _____

Quad Map Evergreen Drainage Area 6.2 sq mi From FIS
Q25 750 Q50 925 Q100 1125 Method USFS - Rural/Regression
Region 4 Coastal plain

FIS Q100 = 510 cfs

EXISTING BRIDGE INFORMATION

Location 0.3 mi E Jct SR 1515
Average Daily Traffic 280 (2007)
Length 36' Bed- To Crown 8' Water Depth 3'
Type Structure RC Floor/Timber Joists (BMD-10)

Type Spans _____
Upstream Structure Brg # 23

Location 0.6 mi N Jct SR 1506

Bed- To Crown 6' Prior Survey _____

Downstream Structure N/A

Location _____

Bed- To Crown _____ Prior Survey _____

SCS Watershed _____

ENVIRONMENTAL

Trout Stream No Anadromous Fish No Primary Nursery Area No
High Quality Waters No Nutrient Sensitive Waters No
Near Water Supply Intake No CAMA County No
Stream Classification C, SW
DENR River Basin Info. Lumber



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION TEMP REPAIRS: SHORED STRUCTURE AND
ENCASED PILE

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY COLUMBUS BRIDGE NUMBER 230188 INSPECTION CYCLE 2 YRS
ROUTE SR1516 ACROSS BRIER CREEK M.P. 0

LOCATION 0.3 MI E. JCT SR1515

SUPERSTRUCTURE RC FLOOR/TIMBER JOISTS (BMD-10)

SUBSTRUCTURE EBTS&IBT:TIMBER CAP/TIMBER PILES;ADDED STL.CRUTCH@BOTH ENDS

SPANS 2@17'10

LONGITUDE 78° 54' 6.5"

LATITUDE 34° 27' 24.4"

PRESENT CONDITION FAIR

INVENTORY RATING

4.5-01

INSPECTION DATE 05/02/2011

OPERATING RATING

4.5-01

PRESENT POSTING SV 23 TTST 38 SV 23 TTST 38

PROPOSED POSTING SV 23 TTST 38 TONS

COMPUTER UPDATE 5-26-11

ANALYSIS DATE

5-24-11

POSTING LETTER DATE

SUFFICIENCY RATING

OTHER SIGNS PRESENT 3 DELINEATORS



LOOKING EAST (PAUL WILLOUGHBY ROAD)

SIGN NOTICE
ISSUED FOR

NUMBERED
REQUIRED

No

WEIGHT LIMIT

Yes

DELINEATORS

1

No

NARROW BRIDGE

No

ONE LANE BRIDGE

No

LOW CLEARANCE

BRIDGE MANAGEMENT UNIT
DATA ON EXISTING STRUCTURE

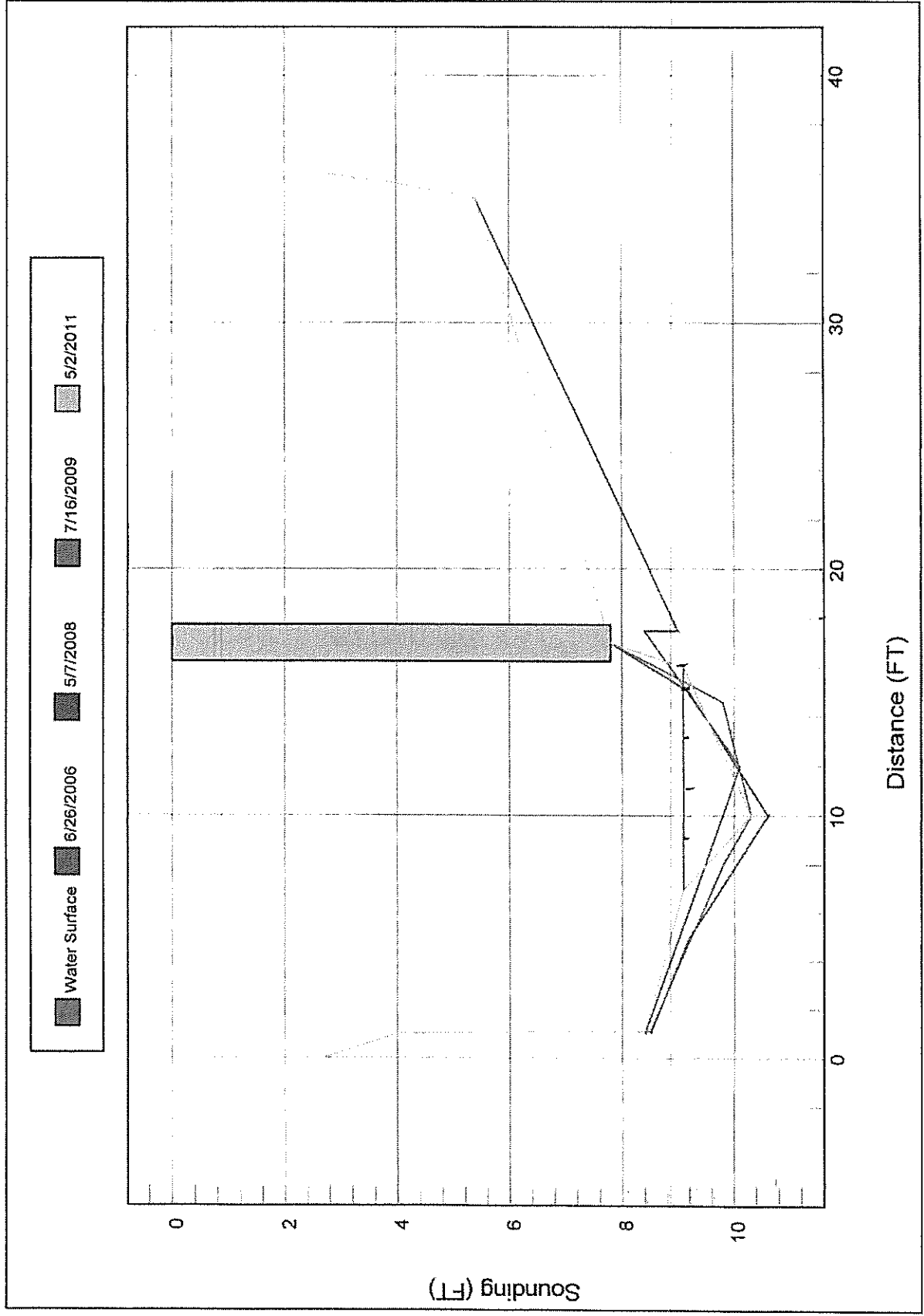
Update Date: 08/19/2009

COUNTY : COLUMBUS		DIV : 6		DIST : 3		STRUCTURE NUMBER : 230188		LENGTH : 36 FEET	
ROUTE CARRIED : SR1516				FEATURE INTERSECTED : BRIER CREEK					
LOCATED : 0.3 MI E. JCT SR1515				BRIDGE NAME :					
FUNC. CLASS : 09		SYST.ON : NFA		SYST.UNDER : NFA		ADT & YR : 280 2007		RAIL TYPE : LT 241 RT 241	
BUILT : 1956		BY : BMU		PROJ :		FED.AID PROJ :		DESIGN LOAD : Other or Unknown	
REHAB :		BY :		PROJ :		ALIGNMENT : TAN.		SKEW : 90	
								LANES : ON 2 UNDER	
NAVIGATION : VC 0.0 FT HC 0.0 FT				HT. CRN. TO BED : 8 FT				WATER DEPTH : 3 FT	
SUPERSTRUCTURE : RC FLOOR/TIMBER JOISTS (BMD-10)									
SUBSTRUCTURE : EBTS&IBT:TIMBER CAP/TIMBER PILES;ADDED STL.CRUTCH@BOTH ENDS									
SPANS : 2@17'10									
BEAMS OR GIRDERS : 19 LINES 6X12 TIMBER JOIST @ VARIOUS CTS.									
FLOOR : 5 RC/NO AWS		ENCROACHMENT :				DECK (OUT TO OUT) : 25.3 FT			
CLEAR ROADWAY : 24.0 FT		BETWEEN RAILS : 25.5 FT				SIDEWALK OR CURB : LT 0.8 FT RT 0.8 FT			
VERT.CL.OVER : 99 FT 99 IN		VERT.CL.UNDER : 00 FT 00 IN				HOR.CL.UNDER : 0.0 FT			
INV.RTG. : HS-1		OPE.RTG. : HS-1		CONTR.MEMBER : JOIST INT.		POSTED : SV 23 TTST 38		DATE 08/19/2009	
SYSTEM : Secondary S.R. Route						GREEN LINE ROUTE : N			
2ND OPENING :		3RD OPENING :		4TH OPENING :		5TH OPENING :			
REMARKS :									

Bridge: 230188 County COLUMBUS Date: 05/02/2011

STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)



$$7.8 \times 1.5 \approx 11.7 \times 2 = 23.4 + 20 + 9 = 52.4$$

Section 5.0 – Engineering Methods

Table 7—Summary of Discharges

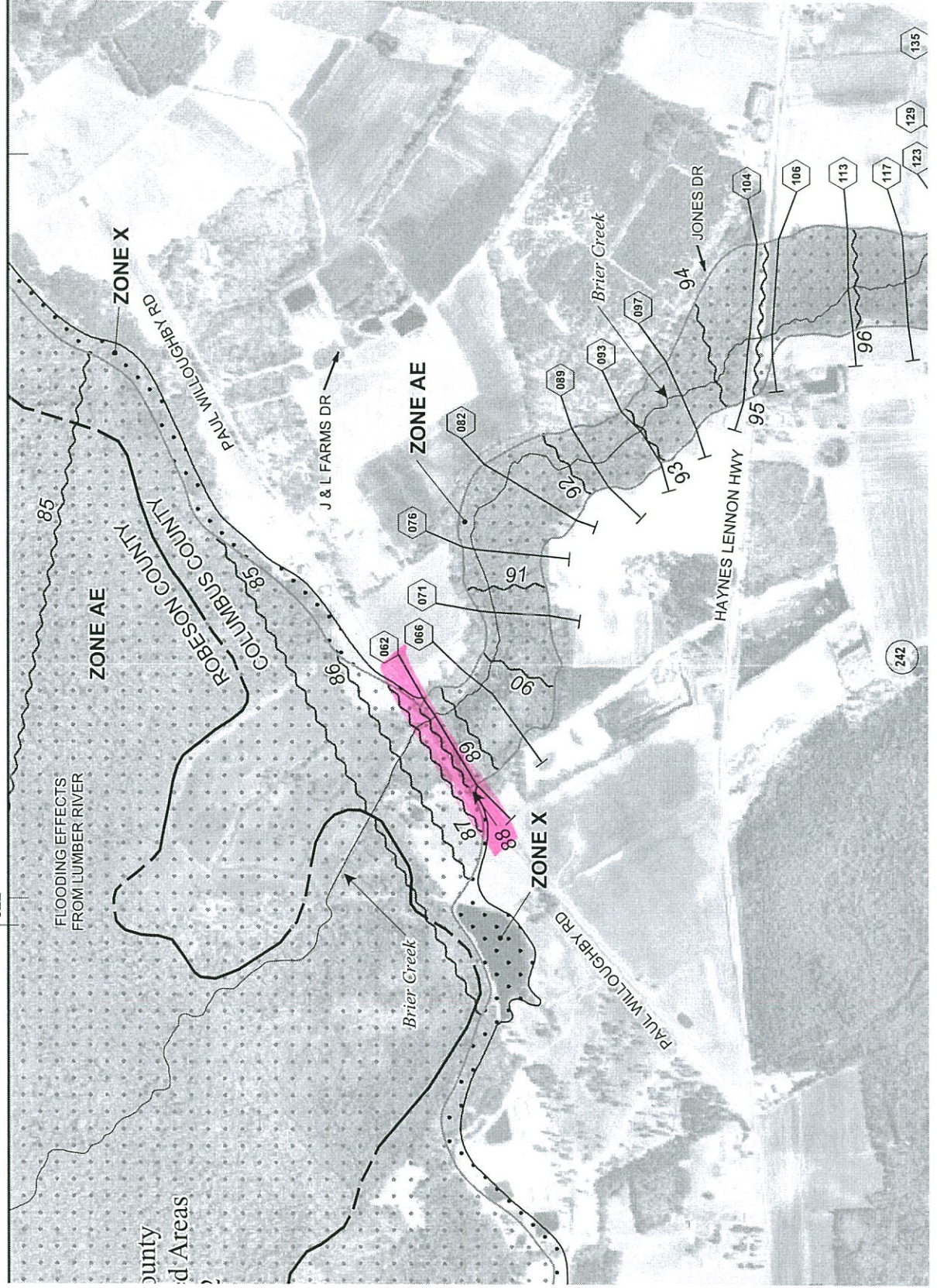
Flooding Source	Location	Drainage Area (square miles)	Discharges (cfs)			
			10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Bogue Swamp (continued)	Approximately 4,000 feet downstream of US HWY 74/76	18.6	1,080	1,890	2,330	3,570
	Approximately 2,200 feet upstream of US HWY 74/76	13.4	880	1,560	1,930	2,990
	Approximately 8,150 feet upstream of US HWY 74/76	8.03	640	1,160	1,440	2,260
	Approximately 8,250 feet upstream of US HWY 74/76	5.20	490	890	1,120	1,780
	Approximately 17,500 feet upstream US HWY 74/76	3.98	410	770	960	1,540
Brier Creek	Confluence with Big Swamp	6.8	*	*	550	*
	At Paul Willoughby Road	6.2	*	*	510	*
	Approximately 1200 feet upstream of NC 242	5.2	*	*	460	*
Browders Branch	Approximately 3,200 feet downstream of Silver Spoon Road	1.91	*	*	640	*
	Approximately 1,600 feet downstream of Silver Spoon Road	1.86	*	*	630	*
	Approximately 200 feet upstream of Silver Spoon Road	1.75	*	*	600	*
	Approximately 2,000 feet upstream of Silver Spoon Road	1.60	*	*	570	*

ANEL 0226

79° 39' 30"

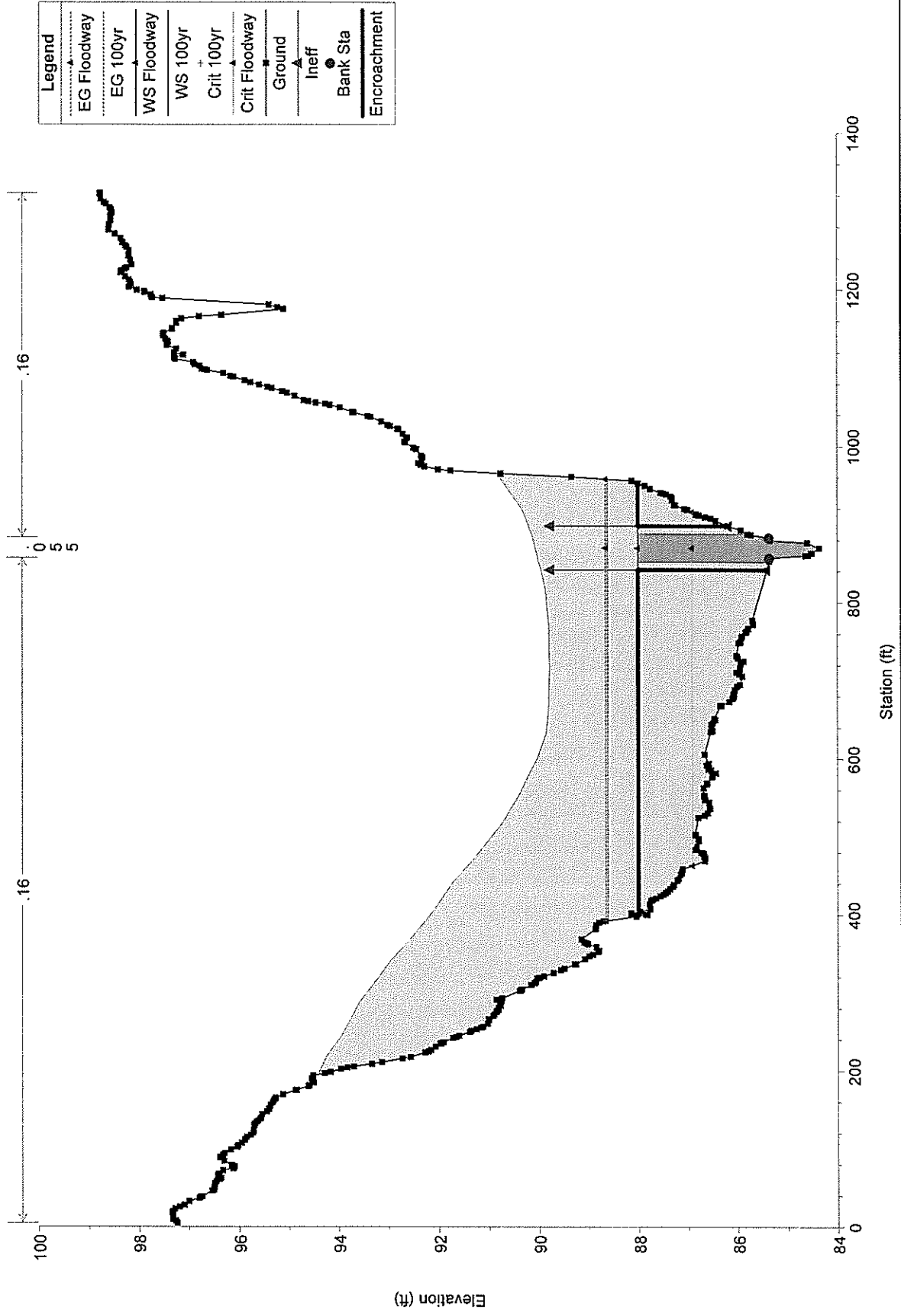
622 000 M

79° 38' 30"

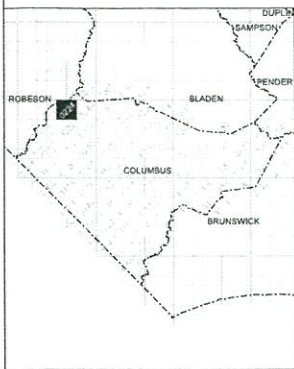


Brier Creek Approximate Study Plan: 100 yr Flood Event Simulation 6/20/2003

SR 1516



STATE OF NORTH CAROLINA FIRM PANEL LOCATOR DIAGRAM



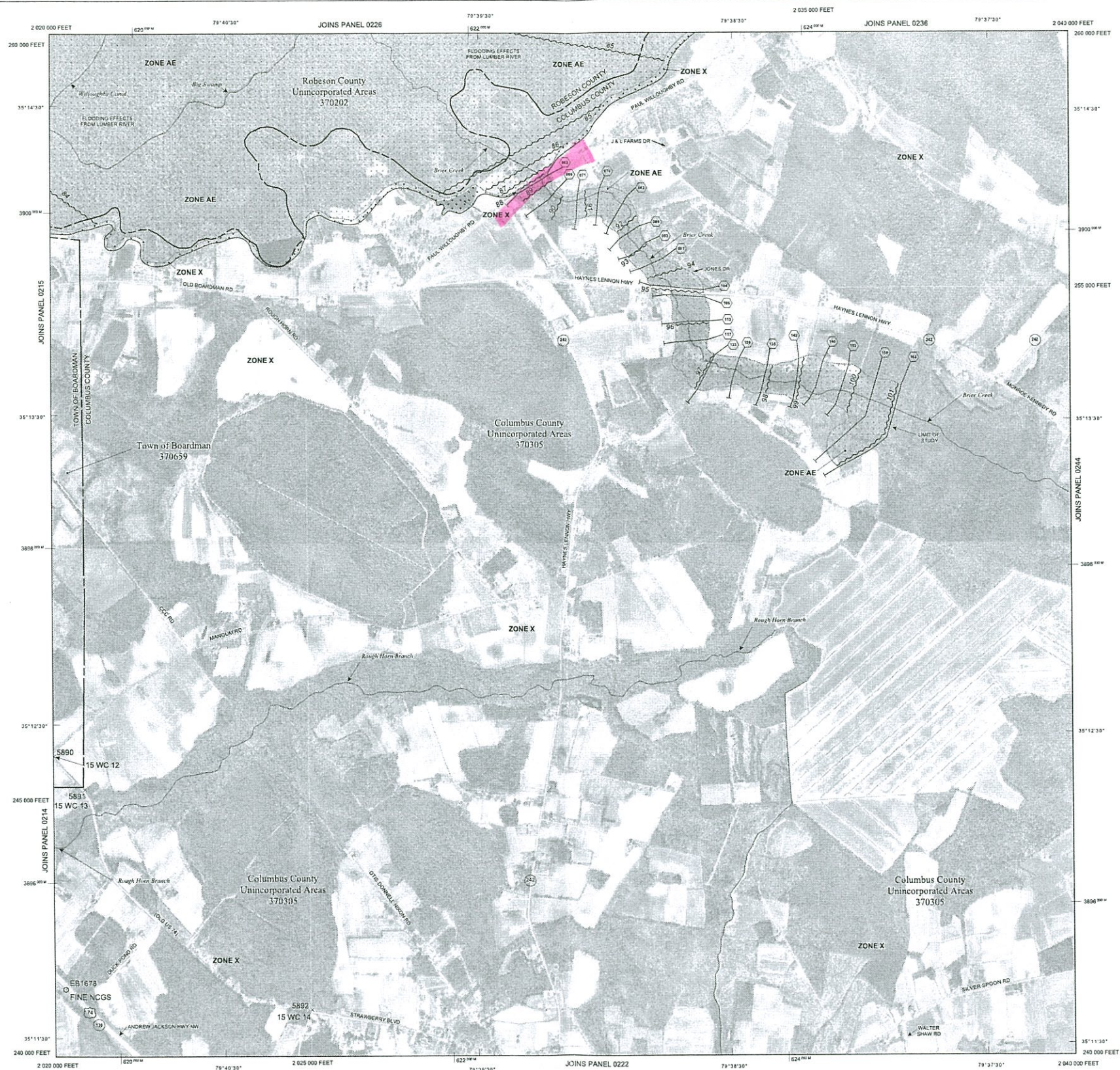
DATUM INFORMATION

The projection used in the preparation of this map was the North Carolina State Plane (NAD83). The horizontal datum was the North American Datum of 1983, GRS80 ellipsoid. Differences in datum, ellipsoid, projection, or Universal Transverse Mercator zones used in the production of FIRM maps for adjacent jurisdictions may result in slight positional differences in map features across jurisdictional boundaries. These differences do not affect the accuracy of this FIRM. All coordinates on this map are in U.S. Survey Feet, where 1 U.S. Survey Foot = 1200/3937 Meters.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. An average offset between NAVD 88 and the National Geodetic Vertical Datum of 1929 (NGVD 29) has been computed for each North Carolina county. This offset was then applied to the NGVD 29 flood elevations that were not revised during the creation of this statewide format FIRM. The offsets for each county shown on this FIRM panel are shown in the vertical datum offset table below. Where a county boundary and a flooding source with unrevised NGVD 29 flood elevations are coincident, an individual offset has been calculated and applied during the creation of this statewide format FIRM. See Section 6.1 of the accompanying Flood Insurance Study report to obtain further information on the conversion of elevations between NAVD 88 and NGVD 29. To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the North Carolina Geodetic Survey at the address shown below. You may also contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov.

North Carolina Geodetic Survey
121 West Jones Street
Raleigh, NC 27601
(919) 733-3636
www.ncgs.state.nc.us

County	Average Vertical Datum Offset Table
Columbus	-1.54
Robeson	-0.55
Example: NAVD 88 = NGVD 29 + (-1.54)	



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood) also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AD, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A
No Base Flood Elevations determined.

ZONE AE
Base Flood Elevations determined.

ZONE AH
Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AD
Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR
Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently discontinued. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99
Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE VE
Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X
Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X
Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D
Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

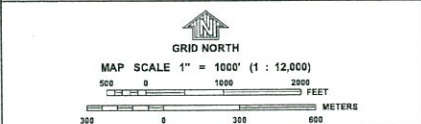
CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations. Flood depths or flood velocities. Base Flood Elevation line and value elevation in feet.
Base Flood Elevation value where uniform within zone; elevation in feet
*Referenced to the North American Vertical Datum of 1988
(EL 987)
Cross section line
Transect line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
2000-meter Universal Transverse Mercator grid ticks, zone 17
4276 M
1477 500 FEET
BM5510 X
BM5510
M1.5
River Mile

GRID NORTH

MAP SCALE 1" = 1000' (1 : 12,000)

500 0 1000 2000 FEET
300 0 300 600 METERS



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0224K

FIRM
FLOOD INSURANCE RATE MAP
NORTH CAROLINA

PANEL 0224
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS	COMMUNITY	CID No.	PANEL	SUFFIX
BOARDMAN, TOWN OF	37055	0224	K	
COLUMBUS COUNTY	37036	0224	K	
ROBESON COUNTY	37002	0224	K	

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

REVISED DATE
JUNE 2, 2006

MAP NUMBER
3720022400K

State of North Carolina
Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles, Floodway Data, Limited Detailed Flood Hazard Data, and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of regulatory floodways shown on the FIRM for flooding sources studied by detailed methods were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data for flooding sources studied by detailed methods as well as non-encroachment widths for flooding sources studied by limited detailed methods are provided in the Flood Insurance Study report for the jurisdiction. The FIS report also provides instructions for determining a floodway using non-encroachment widths for flooding sources studied by limited detailed methods.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.4 "Flood Protection Measures" of the Flood Insurance Study report for information on the flood control structures in the jurisdiction.

Base map information and geospatial data used to develop this FIRM were obtained from various organizations, including the participating local community(ies), state and federal agencies, and/or other sources. The primary base for this FIRM is aerial imagery acquired by Columbus County. The time period of collection for the imagery is 1997. Information and geospatial data supplied by the local community(ies) that met FEMA base map specifications were considered the preferred source for development of the base map. See geospatial metadata for the associated digital FIRM for additional information about base map preparation.

Base map features shown on this map, such as corporate limits, are based on the most up-to-date data available at the time of publication. Changes in the corporate limits may have occurred since this map was published. Map users should consult the appropriate community official or website to verify current conditions of jurisdictional boundaries and base map features. This map may contain roads that were not considered in the hydraulic analysis of streams where no new hydraulic model was created during the production of this statewide format FIRM.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to those new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contain authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each is located.

If you have questions about this map, or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.

An accompanying Flood Insurance Study report, Letter of Map Revision (LOMR) or Letter of Map Amendment (LOMA) revising portions of this panel, and digital versions of this FIRM may be available. Visit the North Carolina Floodplain Mapping Program website at www.ncfloodmaps.com, or contact the FEMA Map Service Center at 1-800-358-6161 for information on all related products associated with this FIRM. The FEMA Map Service Center may also be reached by Fax at 1-800-358-6620 and its website at www.fema.gov/mas.

MAP REPOSITORY

Refer to listing of Map Repositories on Map Index or visit www.ncfloodmaps.com.

EFFECTIVE DATE OF FLOOD INSURANCE RATE MAP PANEL

JANUARY 19, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

JUNE 2, 2006

For community map revision history prior to statewide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent, the North Carolina Division of Emergency Management or the National Flood Insurance Program at the following phone numbers or websites.

NC Division of Emergency Management
(919) 715-4003 www.ncemergency.com

National Flood Insurance Program
1-800-435-6620 www.fema.gov



This digital Flood Insurance Rate Map (FIRM) was produced through a unique cooperative partnership between the State of North Carolina and the Federal Emergency Management Agency (FEMA). The State of North Carolina has implemented a long term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the State's commitment to map floodplain areas at the local level. As a part of this effort, the State of North Carolina has joined in a Cooperative Technical State agreement with FEMA to produce and maintain this digital FIRM.

www.ncfloodmaps.com

