

On T

PREDESIGN-PRESURVEY REPORT

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

County JOHNSTON

Bridge# 500141
Road# SR 1550 (WINSTON RD)
Stream WHITE OAK CREEK

Type Of Request: POC Force Account TIP NCMA

Date 4-13-11 Name CHRIS LEWIS

Assigned To RANDY HENEGAR

Checked By _____

Prior Survey Date _____ (attach copy of prior survey)

Study By Scour Section _____

Flood Zone AE Detail Study REDELINEATION Date 12-2-05 Panel# 1648

B.M. Info _____

Quad Map GARNER Drainage Area 10.2 sq mi. (208772675) From QUAD AND DASS
Q25 _____ Q50 _____ Q100 _____ Method _____

EXISTING BRIDGE INFORMATION

Location 1.0 MILES EAST JUNCTION SR 1525

Average Daily Traffic 1900 (2009)

Length 33' Bed- To Crown 12' Water Depth 8'

Type Structure TIMBER JOIST, TIMBER CAPS AND PILES

Type Spans 1@ 17'6" 1@ 17'2" 1@ 17'10"

Upstream Structure BRIDGE #910247

Location 1.2 MILES SOUTHWEST JUNCTION US 70

Bed- To Crown 14' Prior Survey _____

Downstream Structure BRIDGE #500579

Location 2.5 MILES EAST JUNCTION I-40

Bed- To Crown 29' Prior Survey _____

SCS Watershed _____

ENVIRONMENTAL

Trout Stream No Anadromous Fish No Primary Nursery Area No
High Quality Waters No Nutrient Sensitive Waters YES
Near Water Supply Intake No CAMA County No
Stream Classification C; NSW
DENR River Basin Info. NEUSE

* NO SSP ANTICIPATED



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION

SHORED STRUCTURE, TEMPORARY PILE REPAIRS-
CONCRETE COLLARS
PRIORITY MAINTENANCE ISSUED ON DECAYED
PILES, VOID IN FILL BEHIND BULKHEAD

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY JOHNSTON

BRIDGE NUMBER 500141

INSPECTION CYCLE 2 YRS

ROUTE SR1550

ACROSS WHITE OAK CREEK

M.P. 0

LOCATION 1.0MI.E.JCT SR1525

SUPERSTRUCTURE REINFORCED CONCRETE FLOOR ON TIMBER JOIST STD.BMD-10

SUBSTRUCTURE EBTS&IBTS:TIM.CAPS/TIM.PILES-CRUTCH BT@EBT1

SPANS 1@17'6,1@17'2,1@17'10

LONGITUDE 78° 31' 18.1"

LATITUDE 35° 38' 20.3"

PRESENT CONDITION POOR

INVENTORY RATING

INSPECTION DATE 02/23/2011

OPERATING RATING

PRESENT POSTING SV 17 TTST 26 SV 17 TTST 26

PROPOSED POSTING

COMPUTER UPDATE

ANALYSIS DATE

POSTING LETTER DATE

SUFFICIENCY RATING

OTHER SIGNS PRESENT 2 DELINEATORS



LOOKING EAST

SIGN NOTICE
ISSUED FOR

NUMBERED
REQUIRED

No

WEIGHT LIMIT

No

DELINEATORS

No

NARROW BRIDGE

No

ONE LANE BRIDGE

No

LOW CLEARANCE

NATIONAL BRIDGE INVENTORY—— STRUCTURE INVENTORY AND APPRAISAL Run Date: 03/18/2011

IDENTIFICATION				SUFFICIENCY RATING =		5
(1) STATE NAME -NORTH CAROLINA	BRIDGE	500141		STATUS = Structurally Deficient		
(8) STRUCTURE NUMBER(FEDERAL)		000000001010141				
INVENTORY ROUTE (ON/UNDER) - ON		131015500				
(2) STATE HIGHWAY DEPARTMENT DISTRICT		4		CLASSIFICATION		CODE
(3) COUNTY CODE 101	(4) PLACE CODE	00000		(112)NBIS BRIDGE SYSTEM -		YES
(6) FEATURE INTERSECTED - WHITE OAK CREEK				(104)HIGHWAY SYSTEM NON NHS Route		0
(7) FACILITY CARRIED SR1550				(26) FUNCTIONAL CLASS - Local		09
(9) LOCATION 1.0MI.E.JCT SR1525				(100)STRAHNET HIGHWAY - Not a STRAHNET Route		0
(11)MILEPOINT		0		(101)PARALLEL STRUCTURE - No Parallel Structure		N
(16)LAT 35° 38' 20.3"	(17)LONG 78° 31' 18.1"			(102)DIRECTION OF TRAFFIC - 2-way Traffic		2
(98)BORDER BRIDGE STATE CODE	PCT SHARE			(103)TEMPORARY STRUCTURE - Temporary		T
(99)BORDER BRIDGE STRUCTURE NO				(110)DESIGNATED NATIONAL NETWORK - Not Part of		0
				(20) TOLL On Free Road		3
				(31) MAINTAIN - State Highway Agency		01
				(22) OWNER - State Highway Agency		01
				(37) HISTORICAL SIGNIFICANCE - Not Eligible		5
STRUCTURE TYPE AND MATERIAL						
(43) STRUCTURE TYPE MAIN: Wood or Timber						
TYPE - Stringer Multibeam or Girder	CODE	702				
(44) STRUCTURE TYPE APPR :				CONDITION		CODE
TYPE -	CODE			(58) DECK		5
(45) NUMBER OF SPANS IN MAIN UNIT		3		(59) SUPERSTRUCTURE		5
(46) NUMBER OF APPROACH SPANS				(60) SUBSTRUCTURE		3
(107)DECK STRUCTURE TYPE - Concrete cast-in-place	CODE	1		(61) CHANNEL & CHANNEL PROTECTION		5
(108)WEARING SURFACE / PROTECTIVE SYSTEM :				(62) CULVERTS		N
(A) TYPE OF WEARING SURFACE - Bituminous	CODE	6				
(B) TYPE OF MEMBRANE - None	CODE	0		LOAD RATING AND POSTING		CODE
(C) TYPE OF DECK PROTECTION - None	CODE	0		(31) DESIGN LOAD Other or Unknown		0
				(64) OPERATING RATING - HS-1		201
				(66) INVENTORY RATING - HS-1		201
				(70) BRIDGE POSTING - Posting Required		0
				(41) STRUCTURE OPEN, POSTED ,OR CLOSED		P
				DESCRIPTION - Posted for Load		
AGE AND SERVICE						
(27) YEAR BUILT		1955				
(106)YEAR RECONSTRUCTED						
(42) TYPE OF SERVICE : ON - Highway				APPRAISAL		CODE
UNDER - Waterway	CODE	15		(67) STRUCTURAL EVALUATION		2
(28) LANES: ON STRUCTURE 2 UNDER STRUCTURE				(68) DECK GEOMETRY		3
(29) AVERAGE DAILY TRAFFIC		1900		(69) UNDERCLEARANCES,VERTI & HORIZ		N
(30) YEAR OF ADT 2009	(109) TRUCK ADT PCT	6 %		(71) WATERWAY ADEQUACY		5
(19) BYPASS OR DETOUR LENGTH		7 MI		(72) APPROACH ROADWAY ALIGNMENT		6
				(36) TRAFFIC SAFETY FEATURES		0000
				(113)SCOUR CRITICAL BRIDGES		5
				SCOUR PLAN OF ACTION		
GEOMETRIC DATA						
(48) LENGTH OF MAXIMUM SPAN		18 FT				
(49) STRUCTURE LENGTH		53 FT				
(50)CURB OR SIDEWALK: LEFT 0.8 FT RIGHT 0.8 FT						
(51) BRIDGE ROADWAY WIDTH CURB TO CURB		23.2 FT				
(52) DECK WIDTH OUT TO OUT		24.3 FT				
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS)		20.0 FT		PROPOSED IMPROVEMENTS		
(33) BRIDGE MEDIAN - No Median	CODE	0		(75) TYPE OF WORK -	CODE	311
(34) SKEW 0° (35) STRUCTURE FLARED		NO		(76) LENGTH OF STRUCTURE IMPROVEMENT		77 FT
(10) INVENTORY ROUTE MIN VERT CLEAR		99 FT 99 IN		(94) BRIDGE IMPROVEMENT COST		\$164,000
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR		23.2 FT		(95) ROADWAY IMPROVEMENT COST		\$41,000
(53) MIN VERT CLEAR OVER BRIDGE RDWY		99 FT 99 IN		(96) TOTAL PROJECT COST		\$246,000
(54) MIN VERT UNDERCLEAR REF Not a Highway or Railroad				(97) YEAR OF IMPROVEMENT COST ESTIMATE		2007
(55) MIN LAT UNDERCLEAR RT REF Not a Highway or Railroad		99.9 FT		(114)FUTURE ADT 3800	(115) YEAR FUTURE ADT	2025
(56) MIN LAT UNDERCLEAR LT REF -		0.0 FT				
NAVIGATION DATA						
(38) NAVIGATION CONTROL - No Navigational Control	CODE	0		INSPECTIONS		
(111)PIER PROTECTION - Not Applicable	CODE			(90) INSPECTION DATE		02/23/2011
(39) NAVIGATION VERTICAL CLEARANCE		0		(92) CRITICAL FEATURE INSPECTION :	(93) CFI DATE	
(116)VERT - LIFT BRIDGE NAV MIN VERT CLEAR				A) FRACTURE CRIT DETAIL - NO	A)	
(40) NAVIGATION HORIZONTAL CLEARANCE		0		B) UNDERWATER INSP - YES 48Mo	B)	01/01/2010
				C) OTHER SPECIAL INSP NO	C)	
				SCOUR		

BRIDGE MANAGEMENT UNIT
DATA ON EXISTING STRUCTURE

Run Date: 03/18/2011

COUNTY : JOHNSTON		DIV : 4		DIST : 3		STRUCTURE NUMBER : 500141		LENGTH : 53 FEET	
ROUTE CARRIED : SR1550				FEATURE INTERSECTED : WHITE OAK CREEK					
LOCATED : 1.0MI.E.JCT SR1525				BRIDGE NAME :				CITY :	
FUNC. CLASS : 09		SYST.ON : NFA		SYST.UNDER : NFA		ADT & YR : 1900 2009		RAIL TYPE : LT 241 RT 241	
BUILT : 1955		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 : 12 FT				WATER DEPTH : 8 FT	
SUPERSTRUCTURE : REINFORCED CONCRETE FLOOR ON TIMBER JOIST STD.BMD-10									
SUBSTRUCTURE : EBT&IBTS:TIM.CAPS/TIM.PILES-CRUTCH BT@EBT1									
SPANS : 1@17'6,1@17'2,1@17'10									
BEAMS OR GIRDERS : 19 LINES 6X12 TIMBER JOIST @VAR.CENTERS									
FLOOR : 5 RC/2.5 AWS		ENCROACHMENT :				DECK (OUT TO OUT) : 24.3 FT			
CLEAR ROADWAY : 23.2 FT		BETWEEN RAILS : 23.2 FT				SIDEWALK OR CURB : LT 0.8 FT RT 0.8 FT			
VERT.CLOVER : 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 17 TTST 26		DATE 03/27/1995	
SYSTEM : Secondary S.R. Route						GREEN LINE ROUTE : N			
2ND OPENING :		3RD OPENING :		4TH OPENING :		5TH OPENING :			
REMARKS :									

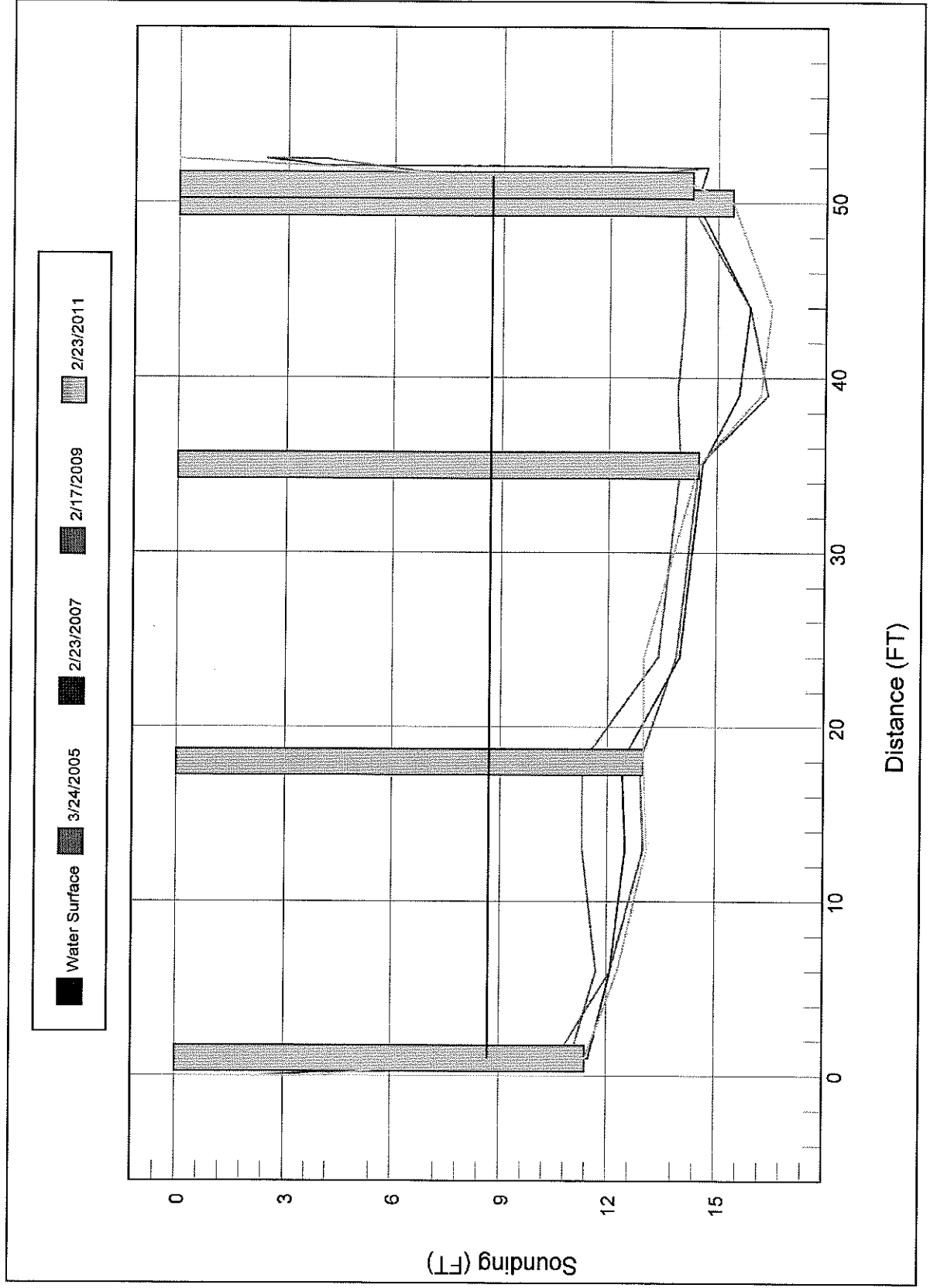
Bridge: 500141

County JOHNSTON

Date: 02/23/2011

STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)





35° 38' 30"
 3947 000 M

35° 38' 00"

Section 4.0 – Area Studied

**Table 6—Flooding Sources Studied by
Detailed Methods: Redelineated**

Source	Riverine Sources		Affected Communities
	From	To	
Mill Creek (South)	The Johnston/Wayne County boundary	Approximately 0.7 mile upstream of the confluence with Stone Creek	Johnston County (Unincorporated Areas)
Moccasin Creek No. 1	The Johnston/Wayne County boundary	Approximately 1,900 feet upstream of US Highway 70	Johnston County (Unincorporated Areas)
Neuse River	The Johnston/Wayne County boundary	The Johnston/Wake County boundary	Town of Clayton, Town of Selma, Town of Smithfield, Town of Wilson's Mills, Johnston County (Unincorporated Areas)
Poplar Creek	The confluence with the Neuse River	Approximately 1.4 miles upstream of the confluence with Little Poplar Creek	Town of Smithfield, Town of Wilson's Mills, Johnston County (Unincorporated Areas)
Sams Creek	Approximately 0.4 mile downstream of City Road	Approximately 100 feet upstream of City Road	Town of Clayton, Johnston County (Unincorporated Areas)
Stone Creek	The confluence with Mill Creek (South)	US Highway 701	Johnston County (Unincorporated Areas)
Stony Fork	The confluence with Hannah Creek	Approximately 1,550 feet upstream of US Highway 301	Johnston County (Unincorporated Areas)
Swift Creek	The confluence with the Neuse River	The Johnston/Wake County boundary	Town of Smithfield, Johnston County (Unincorporated Areas)
Unnamed Tributary (#1) to Swift Creek	The confluence with Swift Creek	The Johnston/Wake County boundary	Johnston County (Unincorporated Areas)
Unnamed Tributary (#2) to Swift Creek	The confluence with Swift Creek	NC 1525	Johnston County (Unincorporated Areas)
White Oak Creek	The confluence with Swift Creek	The Johnston/Wake County boundary	Johnston County (Unincorporated Areas)

Section 5.0 – Engineering Methods

Table 8—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
White Oak Creek	At the confluence with Swift Creek	14.6	2,190	3,730	4,630	7,640
	Approximately 480 feet upstream of N.C. Route 42	13.6	2,230	3,780	4,720	7,910
	Approximately 0.8 mile upstream of Winston Road	12.0	2,530	4,380	5,510	9,420
	Approximately 120 feet downstream of Winston Road	10.3	2,480	4,250	5,270	8,680
	Approximately 1.6 miles upstream of Winston Road	8.0	2,460	4,300	5,330	8,780

*Data not available

¹Modified by storage at State Route 1003

²Discharges reduced by storage at U.S. Highway 70

³Part of flow for Mill Creek goes into the Neuse River

⁴Part of flow from Moccasin Creek basin goes into Raccoon Swamp

⁵Discharge reduced by storage

⁶Modified by Falls Lake

Table 9, "Gage Information," lists the stream gages located in Johnston County, including the drainage area of the flooding source at the gage and the period of record available at the time of the publication of this FIS Report.

Table 9—Gage Information

Gage Number or Identifier	Flooding Source	Site Name	Drainage Area (square miles)	Period of Record	
				From	To
02087500	Neuse River	Neuse River near Clayton	1,150	1919	Present
02087570	Neuse River	Neuse River at Smithfield	99.3	1970	1991
02088000	Middle Creek	Middle Creek near Clayton	83.50	1940	Present
02088140	Stone Creek	Stone Creek near Newton Grove	27.9	1953	1971
02088210	Hannah Creek	Hannah Creek near Benson	2.6	1953	1971
02088470	Little River	Little River near Kenly	191.0	1964	1989
02088500	Little River	Little River near Princeton	232.0	1930	2002

Section 5.0 – Engineering Methods

Table 10—Roughness Coefficients

Stream	Channel "n"	Overbank "n" ¹
Moccasin Creek	0.040 - 0.08	0.09 - 0.15
Moccasin Creek (near Princeton)	0.05	0.15
Moccasin Creek Tributary 1	0.045 - 0.050	0.12 - 0.14
Moccasin Creek Tributary 2	0.046	0.13
Neuse River	0.04 - 0.08	0.1 - 0.25
Oak Creek	0.050	0.15
Oak Creek Tributary	0.050	0.15
Pole Branch	0.045	0.13
Polecat Branch	0.045	0.13
Poplar Creek	0.042 - 0.043	0.116 - 0.15
Quincosin Swamp	0.050	0.15
Reedy Creek	0.045	0.13
Reedy Prong	0.050	0.15
Reedy Prong Tributary	0.050	0.15
Sams Creek	0.035 - 0.055	0.10 - 0.11
Snipes Creek	0.042 - 0.045	0.12 - 0.13
Spring Branch	0.035 - 0.06	0.06 - 0.13
Spring Branch (into Little River)	0.042	0.13
Spring Branch Tributary 1	0.042	0.13
Stone Creek	0.05 - 0.06	0.12 - 0.15
Stone Creek Tributary	0.050	0.15
Stony Fork	0.05 - 0.06	0.12 - 0.15
Stony Fork Tributary	0.050	0.15
Swift Creek	0.043 - 0.05	0.105 - 0.168
Unnamed Tributary (#1) to Swift Creek	0.040 - 0.043	0.105 - 0.133
Unnamed Tributary (#2) to Swift Creek	0.039 - 0.04	0.11 - 0.154
White Oak Creek	0.033 - 0.047	0.1 - 0.16

¹ Does not include ineffective flow areas where n = 1.0 or 10.0

For flooding sources studied by limited detailed methods in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this report and the FIRM panels. This method entails developing a HEC-RAS hydraulic model, resulting in the calculation of BFEs and the delineation of the 1% annual chance floodplain (designated as Zone AE). Cross sections for the flooding sources studied by limited detailed methods were obtained using digital elevation data obtained with LIDAR technology developed as part of the North Carolina Statewide Floodplain Mapping Program. The hydraulic model is prepared using this digital elevation data, without surveying bathymetric or structural data. Where bridge or culvert data are readily available, such as from the North Carolina Department of Transportation, these data have been reflected in the hydraulic model. If these structural data are not readily available, field measurements of these structures were made to approximate their geometry in the hydraulic

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
White Oak Creek								
015	1,493	260	3,901	1.2	189.4	189.4	190.0	0.6
023	2,272	240	3,368	1.4	189.4	189.4	190.2	0.8
028	2,803	465	5,287	0.9	189.5	189.5	190.4	0.9
036	3,619	550	6,154	0.8	189.5	189.5	190.4	0.9
045	4,462	545	5,414	0.9	189.6	189.6	190.6	1.0
050	5,033	480	3,784	1.2	189.8	189.8	190.8	1.0
073	7,343	184	1,822	2.6	195.5	195.5	196.2	0.7
091	9,108	310	2,738	1.7	196.0	196.0	196.7	0.7
101	10,145	450	3,478	1.4	196.5	196.5	197.4	0.9
107	10,651	360	2,550	1.9	196.7	196.7	197.7	1.0
120	11,959	210	1,665	3.3	198.1	198.1	199.1	1.0
127	12,673	500	3,652	1.5	199.0	199.0	200.0	1.0
136	13,625	608	4,121	4.8	199.2	199.2	200.2	1.0
148	14,845	560	4,121	1.3	202.1	202.1	203.0	0.9
153	15,339	265	1,821	3.0	202.1	202.1	203.1	1.0
155	15,525	220	1,344	4.1	202.4	202.4	203.4	1.0
173	17,266	210	1,236	4.3	207.4	207.4	208.4	1.0
179	17,944	340	1,829	2.9	209.2	209.2	210.2	1.0

¹Feet above Swift Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

JOHNSTON COUNTY, NC
AND INCORPORATED AREAS

FLOODWAY DATA

WHITE OAK CREEK

Name of Stream	Description	Class	Date	Index No.
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Unnamed Tributary to Swift Creek (Yates Mill Pond)	From dam at Silver Lake to a point 0.5 mile upstream of mouth	WS-III;NSW	08/03/92	27-43-5-(1.5)
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Unnamed Tributary to Swift Creek	From a point 0.5 mile upstream of mouth to Swift Creek	WS-III;NSW,CA	08/03/92	27-43-5-(2)
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Swift Creek (Lake Benson)	From a point 0.6 mile upstream of Wake County SR 1006 to dam at Lake Benson	WS-III;NSW,CA	08/03/92	27-43-(5.5)
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Buck Branch	From source to a point 0.6 mile upstream of mouth	WS-III;NSW	08/03/92	27-43-6-(1)
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Buck Branch	From a point 0.6 mile upstream of mouth to Lake Benson, Swift Creek	WS-III;NSW,CA	08/03/92	27-43-6-(2)
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Reedy Branch	From source to a point 0.5 mile upstream of mouth	WS-III;NSW	08/03/92	27-43-7-(1)
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Reedy Branch	From a point 0.5 mile upstream of mouth to Lake Benson, Swift Creek	WS-III;NSW,CA	08/03/92	27-43-7-(2)
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Swift Creek	From dam at Lake Benson to Neuse River	C;NSW	05/01/88	27-43-(8)
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Mahlers Creek	From source to Swift Creek	C;NSW	05/01/88	27-43-9
Neal Branch	From source to Swift Creek	C;NSW	05/01/88	27-43-10
White Oak Creek (Austin Pond)	From source to Swift Creek	C;NSW	05/01/88	27-43-11

Little Creek	From source to Swift Creek	C;NSW	05/01/88	27-43-12
Cooper Branch	From source to Swift Creek	C;NSW	05/01/88	27-43-13
Reedy Branch (Little Branch)	From source to Swift Creek	C;NSW	05/01/88	27-43-14
Middle Creek	From source to backwaters of Sunset Lake	C;NSW	05/01/88	27-43-15-(1)

Middle Creek (Sunset Lake)	From backwaters of Sunset Lake to dam at Sunset Lake	B;NSW	05/01/88	27-43-15-(2)
Basal Creek [(Bass Lake, (Mills Pond)]	From source to Sunset Lake, Middle Creek	B;NSW	05/01/88	27-43-15-3

Middle Creek	From dam at Sunset Lake to Swift Creek	C;NSW	05/01/88	27-43-15-(4)
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Rocky Branch	From source to Middle Creek	C;NSW	05/01/88	27-43-15-4.5
Camp Branch	From source to Middle Creek	C;NSW	05/01/88	27-43-15-5
Bells Lake	Entire lake and connecting stream to Middle Creek	C;NSW	05/01/88	27-43-15-6

Mills Branch	From source to Middle Creek	C;NSW	05/01/88	27-43-15-7
Terrible Creek (Johnsons Pond)	From source to dam at Johnsons Pond	B;NSW	05/01/88	27-43-15-8-(1)

Terrible Creek	From dam at Johnsons Pond to Middle Creek	C;NSW	05/01/88	27-43-15-8-(2)
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Panther Branch	From source to Middle Creek	C;NSW	05/01/88	27-43-15-9
Little Creek	From source to Middle Creek	C;NSW	05/01/88	27-43-15-10

