

21" Corred 5lb

L= 100'

Span: 30-40-30

Project# _____

TIP# _____

Let Date _____

PREDESIGN-PRESURVEY REPORT

WBS# _____

County CATAWBABridge# 170009Road# SR 1700 (RIVERBEND RD)Stream CREEK (Elk Shoal Creek)

Type Of Request: POC Force Account TIP NCMA

Date 5/23/12 Name SMQAssigned To RCH

Checked By _____

Prior Survey Date NO (attach copy of prior survey)

Study By Scour Section _____

Flood Zone AE Detail Study REDEVELOP Date 12-18-07 Panel# 3765

B.M. Info _____

Quad Map MUERSVILLE Drainage Area 5.2 SQ MI From RURAL REGR EQ'SQ25 1458 CFS Q50 1777 CFS Q100 2066 CFS Method BLUE RIDGE ANCHOR
USGS REGR EQ'S
SI REPORT 2009-5158

EXISTING BRIDGE INFORMATION

Location 1.1 mi. N. JCT SR 1705Average Daily Traffic 1500 2009Length 91' Bed- To Crown 16' Water Depth 1'Type Structure PRECAST PRESTRESSED CONCRETE CHANNELSType Spans 1@ 30'5", 1@ 30'1", 1@ 30'6" SUPER STR. DEPTH = 1.7'Upstream Structure N/A

Location _____

Bed- To Crown _____ Prior Survey _____

Downstream Structure CATAWPA RIVER

Location _____

Bed- To Crown _____ Prior Survey _____

SCS Watershed _____

ENVIRONMENTAL

Trout Stream NO Anadromous Fish NO Primary Nursery Area NOHigh Quality Waters NO Nutrient Sensitive Waters NONear Water Supply Intake NO CAMA County NOStream Classification WS-IV; CADENR River Basin Info. CATAWBA 11-71-(0.7)

No 3030



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION TEMPORARY REPAIRS

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY CATAWBA

BRIDGE NUMBER 170009

INSPECTION CYCLE 2 YRS

ROUTE SR1700

ACROSS ELK SHOAL CREEK

M.P. 0

LOCATION 1.1 MI. N. JCT. SR1705

SUPERSTRUCTURE PRECAST PRESTRESSED CONCRETE CHANNELS

SUBSTRUCTURE END & INTERIOR BENTS: PPC CAPS & TIMBER PILES

SPANS 1@30'5", 1@30'1", 1@30'6"

LONGITUDE 81° 8' 10.0"

LATITUDE 35° 47' 44.9"

PRESENT CONDITION FAIR

INVENTORY RATING HS 01

INSPECTION DATE 03/02/2011

OPERATING RATING HS 01

PRESENT POSTING SV 24 TTST 27

PROPOSED POSTING SV 24, TTST 27

COMPUTER UPDATE 4-6-11

ANALYSIS DATE 3-22-2011

POSTING LETTER DATE

SUFFICIENCY RATING

OTHER SIGNS PRESENT 4 DELINEATORS



SOUTH TO NORTH

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: 04/06/2011

IDENTIFICATION				SUFFICIENCY RATING = 24	
(1) STATE NAME - NORTH CAROLINA	BRIDGE	170009			
(8) STRUCTURE NUMBER(FEDERAL)	00000000350009			STATUS =	Structurally Deficient
INVENTORY ROUTE (ON/UNDER) - ON	131017000				
(2) STATE HIGHWAY DEPARTMENT DISTRICT	12				
(3) COUNTY CODE 35	(4) PLACE CODE 00000				
(6) FEATURE INTERSECTED - ELK SHOAL CREEK					
(7) FACILITY CARRIED SR1700					
(9) LOCATION 1.1 MI. N. JCT. SR1705					
(11) MILEPOINT	0				
(16) LAT 35° 47' 44.9"	(17) LONG 81° 8' 10.0"				
(98) BORDER BRIDGE STATE CODE	PCT SHARE				
(99) BORDER BRIDGE STRUCTURE NO					
CLASSIFICATION					
(112) NBIS BRIDGE SYSTEM -	YES				
(104) HIGHWAY SYSTEM NON NHS Route	0				
(26) FUNCTIONAL CLASS - Local	09				
(100) STRAHNET HIGHWAY - Not a STRAHNET Route	0				
(101) PARALLEL STRUCTURE - No Parallel Structure	N				
(102) DIRECTION OF TRAFFIC - 2-way Traffic	2				
(103) TEMPORARY STRUCTURE - Temporary	T				
(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: Prestressed Concrete					
TYPE - Channel Beam	CODE 522				
(44) STRUCTURE TYPE APPR:					
TYPE -	CODE				
(45) NUMBER OF SPANS IN MAIN UNIT	3				
(46) NUMBER OF APPROACH SPANS					
(107) DECK STRUCTURE TYPE - Concrete cast-in-place	CODE 1				
(108) WEARING SURFACE / PROTECTIVE SYSTEM:					
(A) TYPE OF WEARING SURFACE - Bituminous	CODE 6				
(B) TYPE OF MEMBRANE - None	CODE 0				
(C) TYPE OF DECK PROTECTION - None	CODE 0				
CONDITION					
(58) DECK	5				
(59) SUPERSTRUCTURE	6				
(60) SUBSTRUCTURE	4				
(61) CHANNEL & CHANNEL PROTECTION	7				
(62) CULVERTS	N				
LOAD RATING AND POSTING					
(31) DESIGN LOAD Other or Unknown	0				
(64) OPERATING RATING - HS-1	201				
(66) INVENTORY RATING - HS-1	201				
(70) BRIDGE POSTING - Posting Required	3				
(41) STRUCTURE OPEN, POSTED, OR CLOSED	P				
DESCRIPTION - Posted for Load					
AGE AND SERVICE					
(27) YEAR BUILT	1965				
(106) YEAR RECONSTRUCTED					
(42) TYPE OF SERVICE: ON - Highway					
UNDER - Waterway	CODE 15				
(28) LANES ON STRUCTURE 2 UNDER STRUCTURE					
(29) AVERAGE DAILY TRAFFIC	1500				
(30) YEAR OF ADT 2009	(109) TRUCK ADT PCT 6%				
(19) BYPASS OR DETOUR LENGTH	0 MI				
GEOMETRIC DATA					
(48) LENGTH OF MAXIMUM SPAN	31 FT				
(49) STRUCTURE LENGTH	91 FT				
(50) CURB OR SIDEWALK: LEFT 0.4 FT RIGHT 0.4 FT	0.4 FT				
(51) BRIDGE ROADWAY WIDTH CURB TO CURB	24.3 FT				
(52) DECK WIDTH OUT TO OUT	25.8 FT				
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS)	18.0 FT				
(33) BRIDGE MEDIAN - No Median	CODE 0				
(34) SKEW 0° (35) STRUCTURE FLARED	NO				
(10) INVENTORY ROUTE MIN VERT CLEAR	99 FT 99 IN				
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR	24.3 FT				
(63) MIN VERT CLEAR OVER BRIDGE RDWY	99 FT 99 IN				
(54) MIN VERT UNDERCLEAR REF Not a Highway or Railroad					
(55) MIN LAT UNDERCLEAR RT REF Not a Highway or Railroad	99.9 FT				
(56) MIN LAT UNDERCLEAR LT REF -	0.0 FT				
APPRAISAL					
(67) STRUCTURAL EVALUATION	2				
(68) DECK GEOMETRY	4				
(69) UNDERCLEARANCES, VERT & HORIZ	N				
(71) WATERWAY ADEQUACY	7				
(72) APPROACH ROADWAY ALIGNMENT	7				
(36) TRAFFIC SAFETY FEATURES	0000				
(113) SCOUR CRITICAL BRIDGES	U				
SCOUR PLAN OF ACTION Z					
PROPOSED IMPROVEMENTS					
(75) TYPE OF WORK -	CODE 311				
(76) LENGTH OF STRUCTURE IMPROVEMENT	118 FT				
(94) BRIDGE IMPROVEMENT COST	\$253,000				
(95) ROADWAY IMPROVEMENT COST	\$63,000				
(96) TOTAL PROJECT COST	\$380,000				
(97) YEAR OF IMPROVEMENT COST ESTIMATE	2007				
(114) FUTURE ADT 2380	(115) YEAR FUTURE ADT 2025				
NAVIGATION DATA					
(38) NAVIGATION CONTROL - No Navigational Control	CODE 0				
(111) PIER PROTECTION - Not Applicable	CODE				
(39) NAVIGATION VERTICAL CLEARANCE	0				
(118) VERT - LIFT BRIDGE NAV MIN VERT CLEAR					
(40) NAVIGATION HORIZONTAL CLEARANCE	0				
INSPECTIONS					
(90) INSPECTION DATE	03/02/2011				
(92) CRITICAL FEATURE INSPECTION:	(93) CFI DATE				
A) FRACTURE CRIT DETAIL - NO	A)				
B) UNDERWATER INSP - NO	B)				
C) OTHER SPECIAL INSP NO	C)				
SCOUR					

BRIDGE MANAGEMENT UNIT
DATA ON EXISTING STRUCTURE

Run Date: 04/06/2011

COUNTY : CATAWBA	DIV : 12	DIST : 3	STRUCTURE NUMBER : 170009	LENGTH : 91 FEET
ROUTE CARRIED : SR1700		FEATURE INTERSECTED : ELK SHOAL CREEK		
LOCATED : 1.1 MI. N. JCT. SR1705		BRIDGE NAME :		CITY :
FUNC. CLASS : 09	SYST.ON : NFA	SYST.UNDER : NFA	ADT & YR : 1500 2009	RAIL TYPE : LT 233 RT 233
BUILT : 1965	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 : 16 FT		WATER DEPTH : 1 FT
SUPERSTRUCTURE : PRECAST PRESTRESSED CONCRETE CHANNELS				
SUBSTRUCTURE : END & INTERIOR BENTS:PPC CAPS & TIMBER PILES				
SPANS : 1@30'5, 1@30'1", 1@30'6				
BEAMS OR GIRDERS : 10 SECTIONS OF PRECAST PRESTRESSED CONCRETE CHANNELS				
FLOOR : PPCCH,2 AWS	ENCROACHMENT :		DECK (OUT TO OUT) : 25.8 FT	
CLEAR ROADWAY : 24.3 FT	BETWEEN RAILS : 25.2 FT		SIDEWALK OR CURB : LT 0.4 FT RT 0.4 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 : channel, Pile	POSTED : SV 24 TTST 27 DATE 08/24/2006	
SYSTEM : Secondary S.R. Route			GREEN LINE ROUTE : N	
2ND OPENING :		3RD OPENING :		4TH OPENING : 5TH OPENING :
REMARKS :				

Environmental Sensitivity Map ----- 2008

Catawba 170009

5/25/2012 9:47 AM



Legend

- City/Town
- DOQQ Grid
- 24K Grid
- 100K Grid
- Drainage Areas of Selected Sites
- USGS Continuous Gage Station 2003
- USGS Gage Stations CGIA Copy
- Ambient Water Monitoring Stations
- Industrial Outfalls 2006
- Impact Outfalls 2007
- DRAFT Stormwater Controls
- IDDEP
- NPDES Sites
- TIP Bridge 2004 To 2010
- NCDOT Bridges
- TIP Road Section 2004 To 2010
- TIP Bridge 2007 To 2013
- TIP Road Section 2007 To 2013
- Airports
- Ferry Routes
- Power/Transmission Line
- Railroad
- Local Roads
- Secondary Road
- Highway US Route
- Highway NC Route
- Surface Water Intake
- Andromedus Spawning Streams
- Water Supply Watersheds
- Primary Nursery
- Secondary Nursery
- Special Secondary Nursery
- SA Water
- ORW
- HQW ORW DWQ 2008
- High Quality Water Zone
- Hazardous Spill Basin Line
- 300D Streams
- 24K Hydrography Line
- Federal Lands
- National Wetlands Inventory
- Hazardous Spill Basin Polygon
- HSS Boundary
- 24K Hydrography Polygon
- 100K Hydrography Line
- 100K Hydrography Polygon
- Streambed Mapping (19Counties)
- Trout Water WRC
- Trout Water DWQ
- Soil
- State Boundary
- EEP TLW Local Planning
- EEP TLW Basinwide Planning
- Sub River Basin
- 14 Digit Hydrologic Catalog Unit
- 8 Digit Hydrologic Catalog Unit
- River Basin
- Physiographic Frame Data
- 500K Physiographic Region
- DOT Division
- Rest Areas
- Major Urban
- Minor Urban
- Jordan Boundary
- Falls Lake Boundary
- High Rock Boundary
- Catawba Main Stem
- RND Boundary
- Goose Creek Boundary
- Piedmont Hydrology
- County

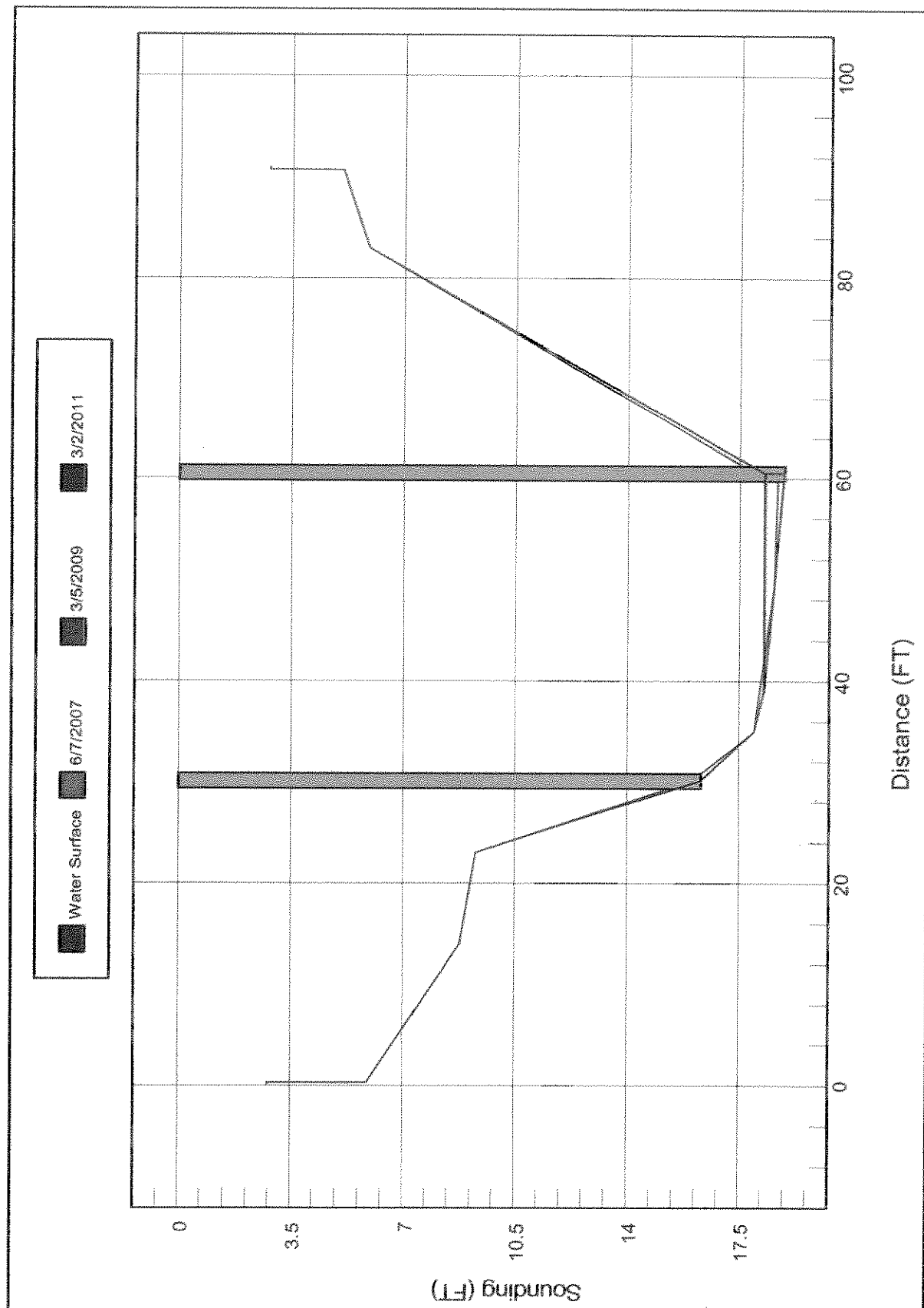
Bridge: 170009

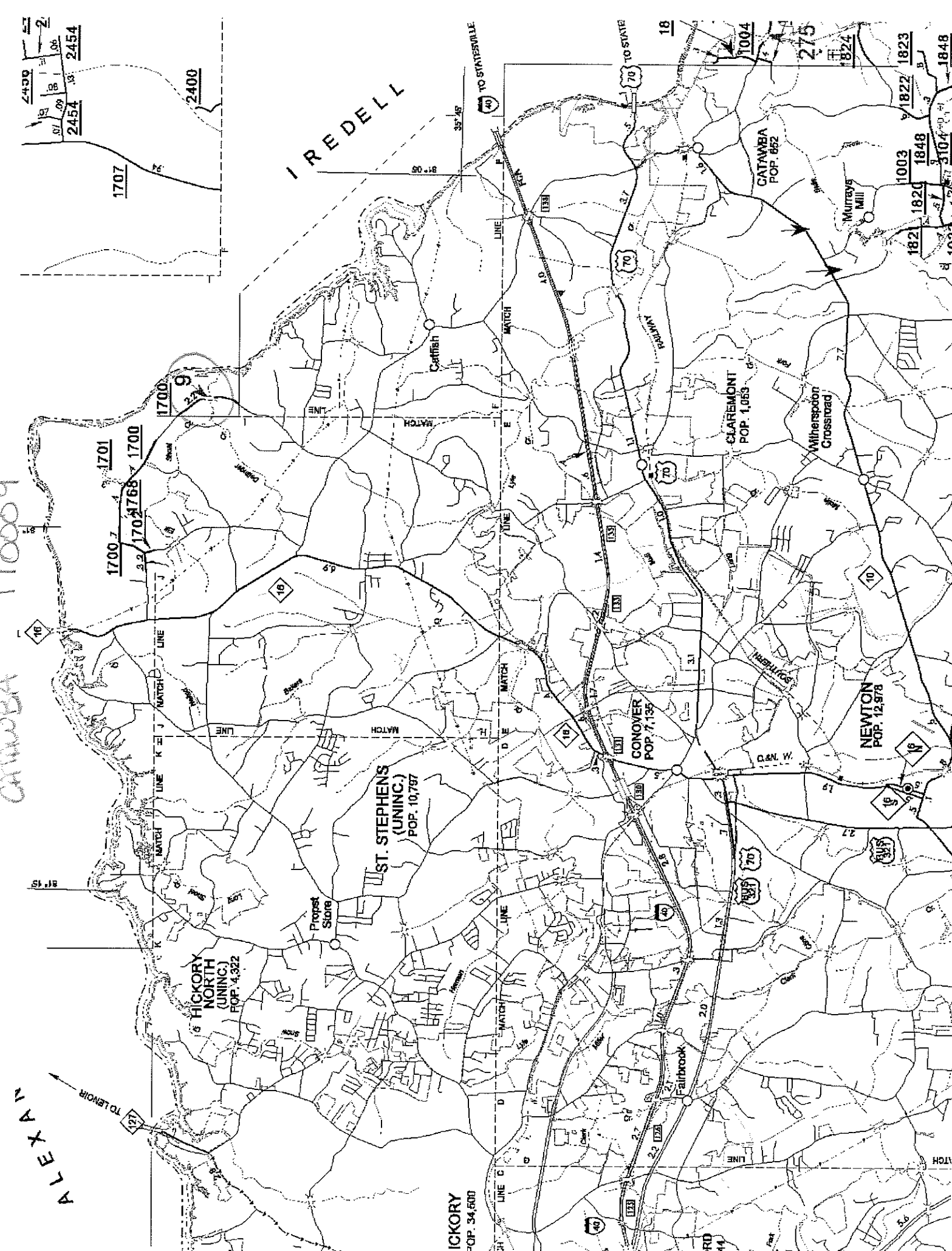
County CATAWBA

Date: 03/02/2011

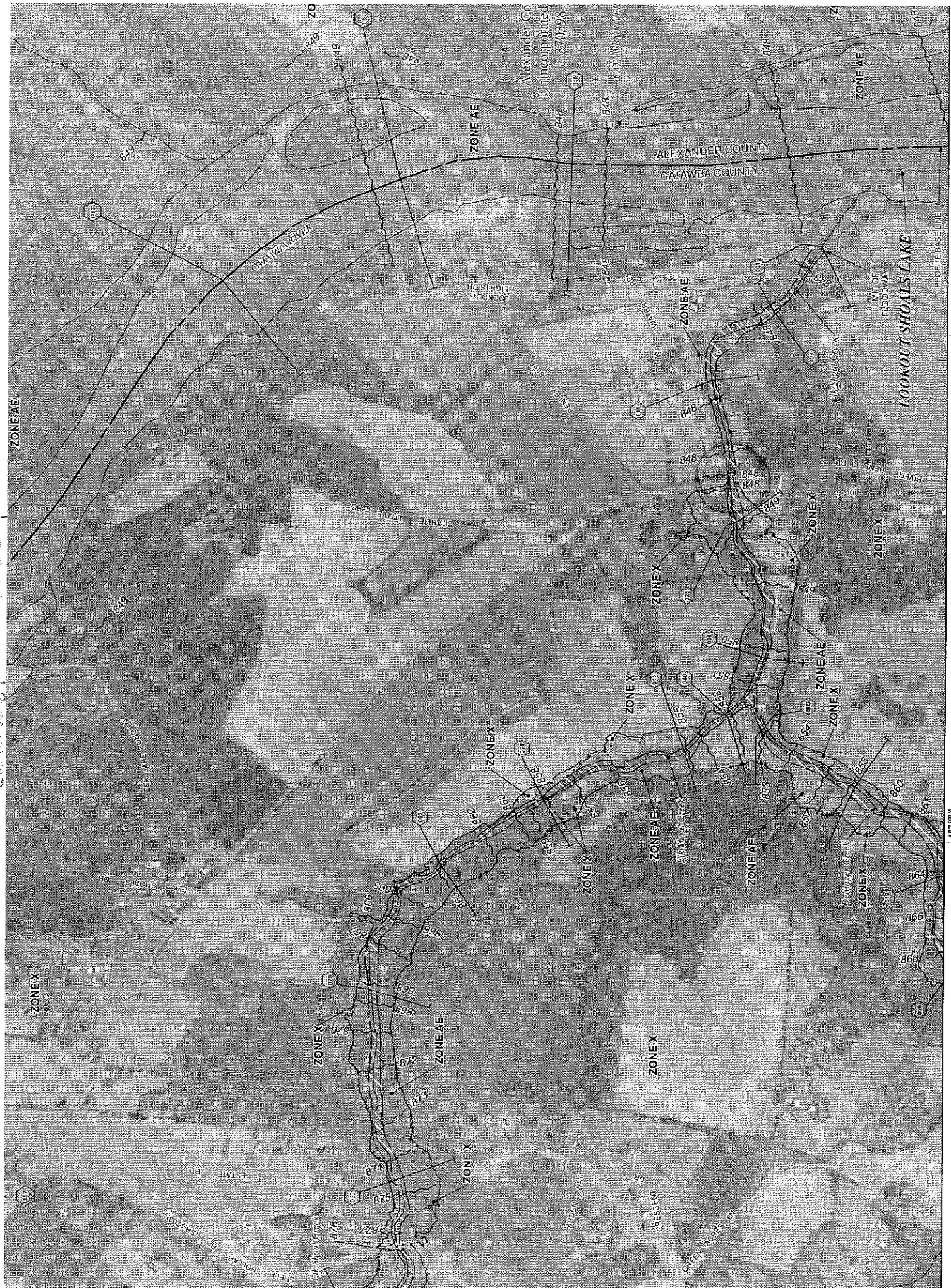
STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)





CATAWBA 10000





DOWNSTREAM



LOOKING SOUTH

Section 4.0 – Area Studied

**Table 3—Flooding Sources Studied by
Detailed Methods: Revised or Newly Studied**

Source	Riverine Sources		Affected Communities
	From	To	
Elk Shoal Creek	The confluence with Catawba River	Approximately 1,980 feet upstream of Rest Home Road (SR 1702)	Catawba County (Unincorporated Areas)
Falling Creek	Approximately 0.4 mile downstream of Cloninger Mill Road NE	Approximately 50 feet downstream of 12 th Avenue NE	Catawba County (Unincorporated Areas), City of Hickory
Falling Creek Tributary 1	The confluence with Falling Creek	Approximately 275 feet upstream of 14 th Avenue NE	City of Hickory
Falling Creek Tributary 2	The confluence with Falling Creek	Approximately 380 feet upstream of 12 th Avenue NE	City of Hickory
Frye Creek	The confluence with Cripple Creek and Horseford Creek	Approximately 425 feet upstream of 33 rd Street NW	City of Hickory, Town of Long View
Geitner Branch	The confluence with Henry Fork	Approximately 1,900 feet upstream of 7 th Avenue SW	City of Hickory
Geitner Branch Tributary 1	The confluence with Geitner Branch	Approximately 1,250 feet upstream of confluence with Geitner Branch	City of Hickory
Geitner Branch Tributary 2	The confluence with Geitner Branch	Approximately 1,670 feet upstream of 7 th Avenue SW	City of Hickory
Henry Fork	The confluence with South Fork Catawba River and Jacob Fork	The Catawba/Burke County boundary	City of Hickory, City of Newton, Town of Brookford, Town of Long View
Henry Fork Tributary 1	The confluence with Henry Fork	Approximately 0.5 mile upstream of Catawba Valley Boulevard SE	City of Hickory, Catawba County (Unincorporated Areas)
Henry Fork Tributary 2	The confluence of Henry Fork	Approximately 1,930 feet upstream of Brookford Boulevard	City of Hickory, Town of Brookford
Hildebran Creek	The confluence with Clarks Creek	Approximately 150 feet upstream of A. C. Little Drive	City of Newton
Horseford Creek	Approximately 1,520 feet upstream of confluence with Catawba River	The confluence of Frye Creek and Cripple Creek	Catawba County (Unincorporated Areas), City of Hickory

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
Dellinger Creek (continued)	Approximately 500 feet upstream of Rest Home Road (SR 1702)	0.25	133	248	311	499
Douglas Creek	At the confluence with Jacob Fork	3.11	*	*	1,905	*
	Approximately 0.7 mile upstream of Jacob Fork River Road (SR 1111)	1.54	*	*	1,225	*
Elk Shoal Creek	Approximately 420 feet upstream of the confluence with Catawba River	5.31	1,009	1,738	2,116	3,186
	Approximately 250 feet upstream of the confluence of Dellinger Creek	2.67	639	1,122	1,375	2,100
	Approximately 0.7 mile upstream of the confluence of Dellinger Creek	2.43	602	1,059	1,299	1,986
	Approximately 1.3 miles upstream of the confluence of Dellinger Creek	2.16	556	982	1,206	1,850
	Approximately 2.3 miles upstream of the confluence of Dellinger Creek	1.66	468	831	1,024	1,578
	Approximately 2.5 miles upstream of the confluence of Dellinger Creek	0.66	253	460	572	899
	Approximately 2.8 miles upstream of the confluence of Dellinger Creek	0.50	211	387	483	762
Falling Creek	At the Alexander\Catawba County boundary	5.91	1,892	3,667	4,037	5,037
	Approximately 970 feet downstream of Cloninger Mill Road NE	5.50	1,850	3,578	3,935	4,898
	Approximately 50 feet upstream of Cloninger Mill Road NE	4.79	1,746	3,377	3,710	4,606

Section 5.0 – Engineering Methods

Table 9—Roughness Coefficients

Stream	Channel "n"	Overbank "n"¹
Dellinger Creek	0.040-0.047	0.100-0.150
Douglas Creek	0.050	0.100 – 0.150
East Tributary McLin Creek	0.030-0.050	0.030-0.130
Elk Shoal Creek	0.041-0.047	0.100-0.150
Falling Creek	0.040 – 0.051	0.050 – 0.160
Falling Creek Tributary 1	0.050	0.050 – 0.160
Falling Creek Tributary 2	0.050	0.060 – 0.160
Fitz Creek	0.030 – 0.060	0.030 – 0.120
Frye Creek	0.040 – 0.060	0.030 – 0.160
Geitner Branch	0.050 – 0.055	0.060 – 0.150
Geitner Branch Tributary 1	0.050	0.130 – 0.180
Geitner Branch Tributary 2	0.050	0.110 – 0.180
Haas Creek	0.050	0.080 – 0.150
Hagan Fork Creek	0.030-0.060	0.030-0.120
Henry Fork	0.030 – 0.065	0.0130 – 0.160
Henry Fork Tributary 1	0.055	0.080 – 0.160
Henry Fork Tributary 2	N/A	N/A
Henry Fork Tributary 3	0.050	0.120 – 0.150
Herman Branch Creek	0.030-0.060	0.030-0.120
Hickory Creek	0.030-0.060	0.030-0.120
Hildebran Creek	0.045 – 0.050	0.035 – 0.140
Holdsclaw Creek	0.045	0.100 – 0.150
Holdsclaw Creek Tributary 1	0.045	0.150
Holly Branch	0.030-0.060	0.030-0.120
Holly Branch Tributary 1	0.040 – 0.050	0.100 – 0.600
Hop Creek	0.050	0.100 – 0.150
Horseford Creek	0.030 – 0.045	0.060 – 0.160
Howards Creek	0.045-0.060	0.080-0.150
Indian Creek	0.045-0.050	0.060-0.120
Jacob Fork	0.030-0.060	0.030 – 0.150
Jacob Fork Tributary 1	0.050	0.100 – 0.150
Lippard Creek	0.050	0.100 – 0.150
Long Creek	0.035-0.060	0.080-0.130
Long Shoal Creek	0.040 – 0.050	0.035 – 0.160
Long View Creek	0.040 – 0.060	0.080 – 0.160
Long View Creek Tributary 1	0.050	0.080 – 0.160
Long View Creek Tributary 2	0.060	0.080– 0.160
Lyle Creek	0.030 – 0.060	0.030 – 0.120

Elk Shoal Creek Detailed Study Plan: Floodway Run 2/8/2008
 ESC-1 Structure ID: UC_ESC_01 Detailed Survey Structure

