

OFFICE ESTIMATE
1 @ 70' Bridge

980091

PREDESIGN-PRESURVEY REPORT

Project# _____
TIP# _____
Let Date _____
WBS# 170P. 11. R. 91

County Yadkin

Bridge# 980091
Road# SR 1599 (Mt. Carmel Rd.)
Stream Forbush Creek

Type Of Request: POC Force Account TIP NCMA

Date 7/10/13 Name M. W. S.

Assigned To RCH

Checked By WSH 7-23-13

Prior Survey Date NO (attach copy of prior survey) BRN BK: NO CO. FILE NO

Study By Scour Section NONE

Flood Zone AE Detail Study limited Date 5/18/09 Panel# 5837

B.M. Info N/A

Quad Map E Bend Drainage Area 14.3 SQ mi From USGS/Stream Stats
Q25 2690 cfs Q50 3260 cfs Q100 3770 cfs Method Regression EQU.
2700 3300 3800 cfs RURAL, REGION 2

EXISTING BRIDGE INFORMATION

Location 0.8 mi. W JCT. SR 1600

Average Daily Traffic 3000 YR 2009

Length 41 ft Bed- To Crown 9 ft. Water Depth 1 ft.

Type Structure Timber floor on I-beams

Type Spans 1 @ 41' single span

Upstream Structure 980108 ✓ Prestressed conc. cored slab

Location 0.4 mi. N. JCT. SR 1593

Bed- To Crown 10 ft. WD = 1 ft. Prior Survey 9/04 (1@60, 1@30) (BRN BK)

Downstream Structure 980073 ✓ Prestressed conc. cored slab 1@31'-6" 1@45'

Location 0.5 mi. N JCT. SR 1605 1@41'-3"

Bed- To Crown 14 ft. WD = 2 ft. Prior Survey 8/92 (BRN. BK) 30'-45'-40'

SCS Watershed N/A

ENVIRONMENTAL

TVA No ✓

Trout Stream No ✓

Anadromous Fish

Primary Nursery Area No ✓

High Quality Waters No ✓

Nutrient Sensitive Waters

No ✓

Near Water Supply Intake

No ✓

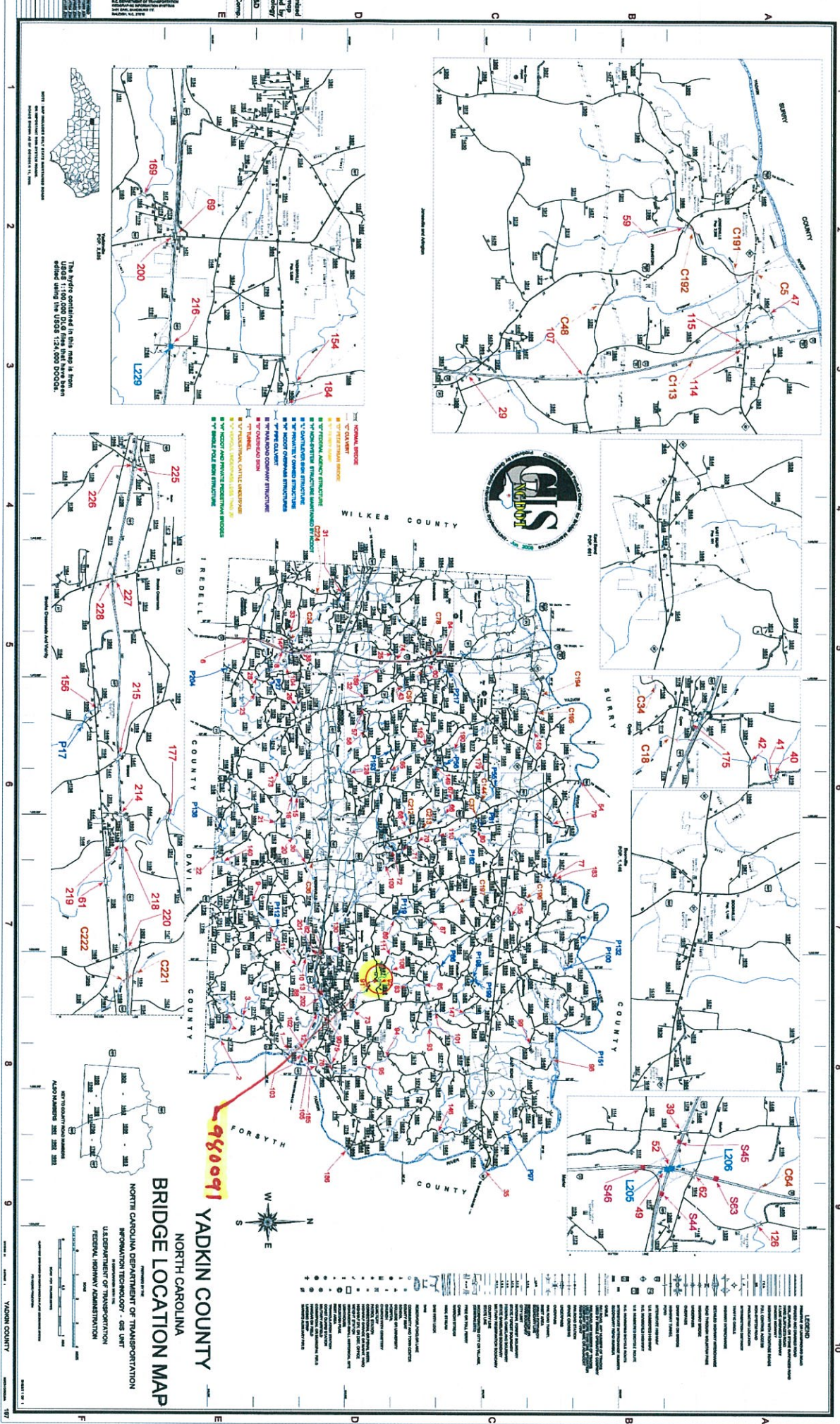
CAMA County

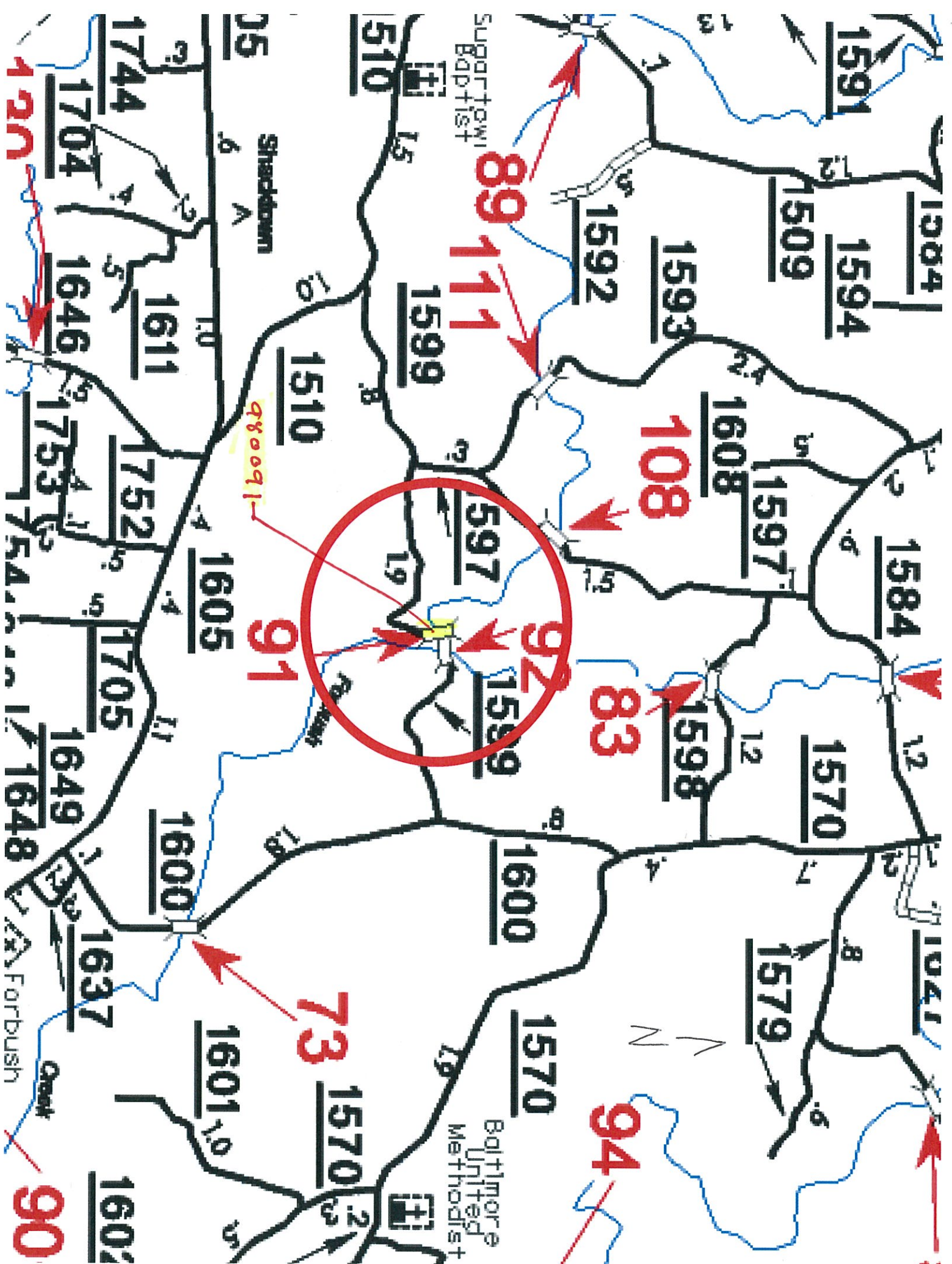
No ✓

Stream Classification C 12-83- (0.3) ✓

DENR River Basin Info.

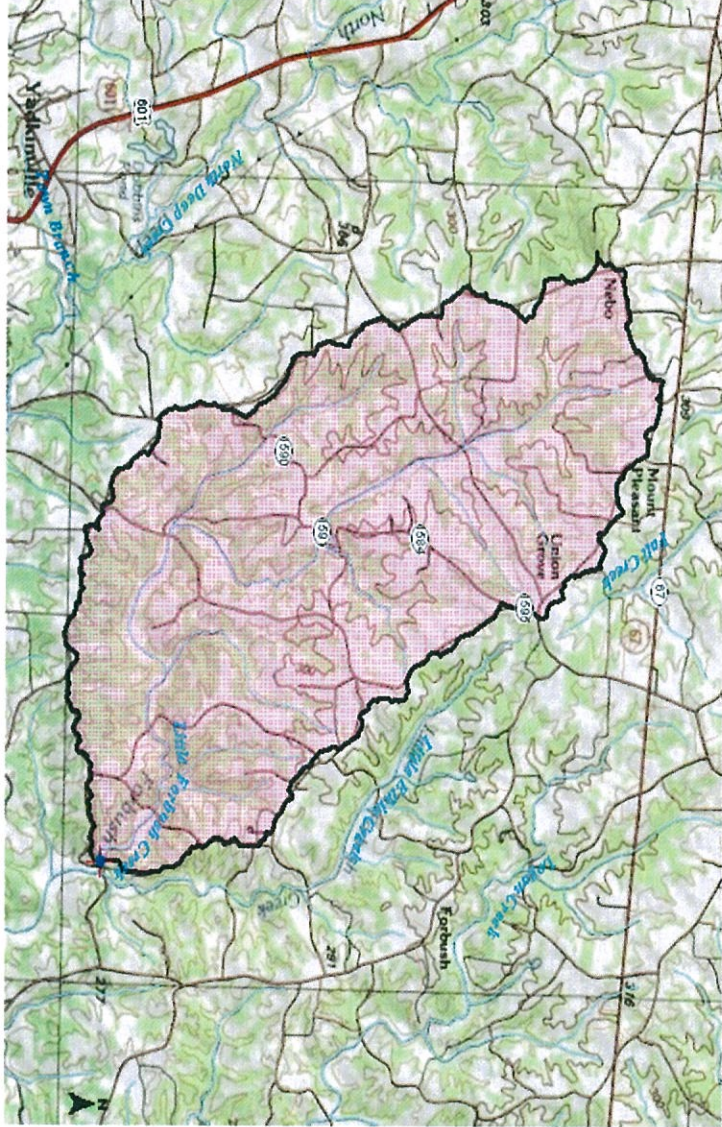
Yadkin ✓







StreamStats Print Page



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- Explanation**
- ★ Global Watershed Point
 - SPT000P Point
 - NCDOT Point
 - ▲ Localities
 - ▲ Gauging Station, Continuous Record
 - ▲ Low Flow, Partial Record
 - ▲ Peak Flow, Partial Record
 - ▲ Peak and Low Flow, Partial Record
 - ▲ Stage Only
 - ▲ Low Flow, Partial Record, Stage
 - ▲ Miscellaneous Record
 - ▲ Unknown
 - Local NHD2
 - Longest Low Flow Point
 - Stream Grid
 - Global Watershed
 - Pilot Study Area
 - Inupoly



North Carolina StreamStats

Streamstats Ungaged Site Report

Date: Mon Jul 8 2013 12:30:56 Mountain Daylight Time

Site Location: North_Carolina

NAD27 Latitude: 36.1507 (36 09 02)

NAD27 Longitude: -80.5720 (-80 34 19)

NAD83 Latitude: 36.1508 (36 09 03)

NAD83 Longitude: -80.5717 (-80 34 18)

Drainage Area: 14.3 mi² ~ 9152 A-C.

Percent Urban: 6.1 %

Percent Impervious: 0.6 %

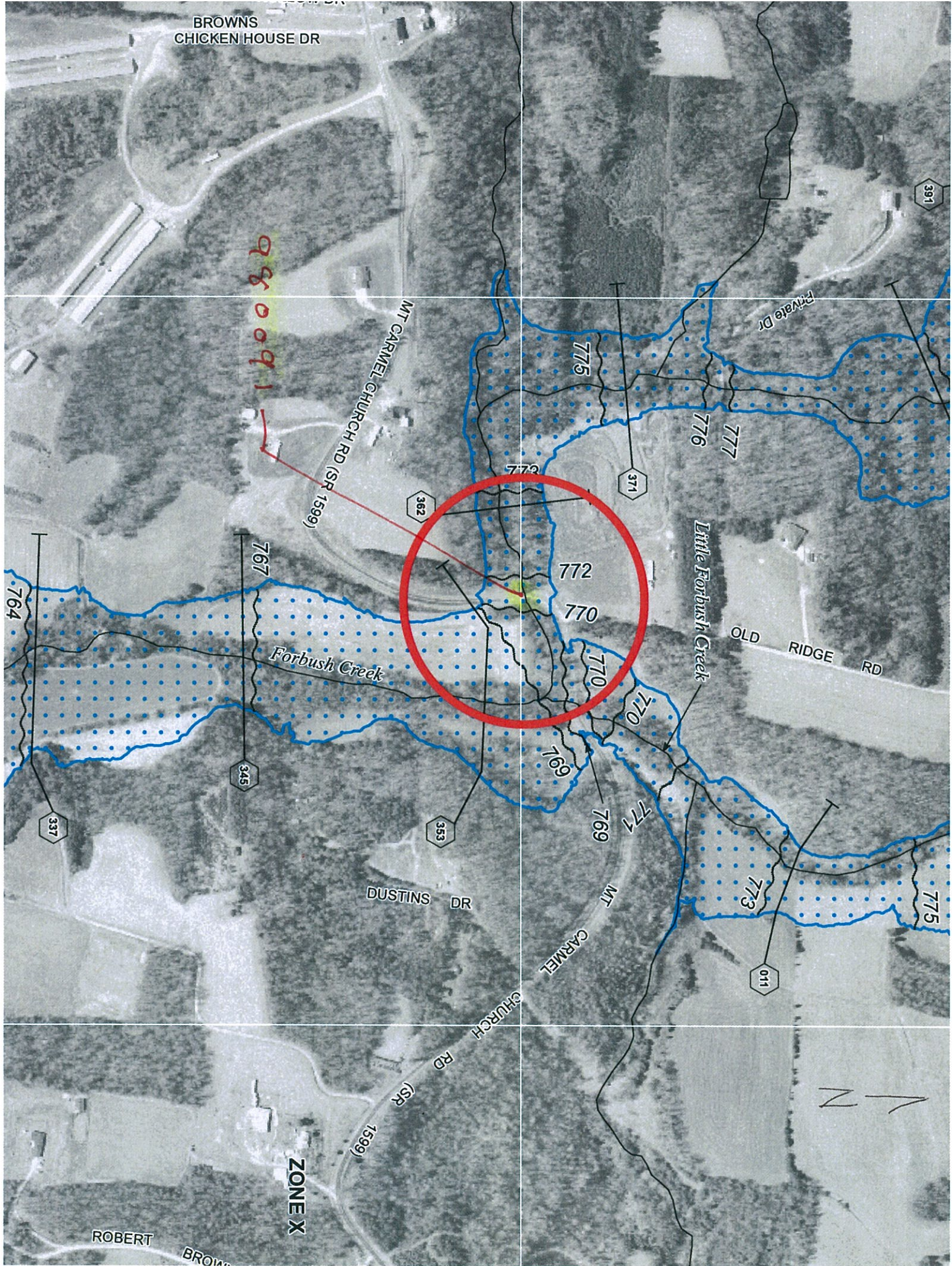
Peak Flows Region Grid Basin Characteristics			
100% Peak Southeast US 2009 5158 (14.3 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	14.3	1	9000
Percent Area in Region 1 (percent)	100.000	0	100
Percent Area in Region 2 (percent)	0.000	0	100
Percent Area in Region 3 (percent)	0.000	0	100
Percent Area in Region 4 (percent)	0.000	0	100
Percent Area in Region 5 (percent)	0.000	0	100

Urban Flows Region Grid Basin Characteristics			
100% Peak urban Blue Ridge-Piedmont FS007-00 (14.3 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	14.3	0.04	41
Area of Impervious Surfaces (percent)	0.63 (below min value 2)	2	54.6

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Peak Flows Region Grid Streamflow Statistics					
Statistic	Flow (ft ³ /s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2	891	35		513	1550
PK5	1560	34		908	2700
PK10	2060	35		1170	3600
PK25	2690	38		1480	4880
PK50	3260	40		1740	6100
PK100	3770	42		1950	7300
PK200	4270	44		2130	8560
PK500	5050	48		2400	10600

Urban Flows Region Grid Streamflow Statistics					
Statistic	Flow (ft ³ /s)	Standard Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2U	173				
PK5U	371				
PK10U	549				
PK25U	947				
PK50U	1220				
PK100U	1540				



Section 4.0 – Area Studied

Table 6—Flooding Sources Studied by Detailed Methods: Limited Detailed

Source	Riverine Sources		Affected Communities
	From	To	
Cain Mill Branch	The Yadkin/Davie County boundary	Approximately 1,590 feet upstream of Snow Road (SR 1160)	Yadkin County (Unincorporated Area)
Chinquapin Creek	The Yadkin/Davie County boundary	Approximately 0.5 mile upstream of the Yadkin/Davie County boundary	Yadkin County (Unincorporated Area)
Cobb Creek	Approximately 0.8 mile upstream of Swaim Road	Approximately 1.1 miles upstream of Swaim Road	Town of Jonesville, Yadkin County (Unincorporated Area)
Cranberry Creek	The confluence with South Deep Creek	Approximately 2.0 miles upstream of Whitaker Road (SR 1334)	Yadkin County (Unincorporated Area)
Dobbins Creek	The confluence with North Little Hunting Creek	Approximately 0.6 mile upstream of Twin Creek Road (SR 1319)	Yadkin County (Unincorporated Area)
Dobbins Creek Tributary	The confluence with Dobbins Creek	Approximately 1,575 feet upstream of Twin Creek Road (SR 1319)	Yadkin County (Unincorporated Area)
Fall Creek	The confluence with Yadkin River	Approximately 1,575 feet upstream of State Highway 67	Yadkin County (Unincorporated Area)
Fisher Creek	The confluence with South Deep Creek	Approximately 910 feet upstream of Brandon Hills Rd (SR 1153)	Yadkin County (Unincorporated Area)
Flat Rock Branch	The confluence with North Little Hunting Creek	Approximately 1.5 miles upstream of Cranfill Road (SR 1121)	Yadkin County (Unincorporated Area)
Forbush Creek	The confluence with Yadkin River	Approximately 400 feet upstream of Union Grove Church Road (SR 1585)	Yadkin County (Unincorporated Area)
Forbush Creek Tributary 1	The confluence with Forbush Creek	Approximately 0.8 mile upstream of the confluence with Forbush Creek	Yadkin County (Unincorporated Area)
Forbush Creek Tributary 2	The confluence with Forbush Creek	Approximately 1.1 miles upstream of the confluence with Forbush Creek	Yadkin County (Unincorporated Area)
Forbush Creek Tributary 3	The confluence with Forbush Creek	Approximately 0.5 mile upstream of the confluence with Forbush Creek	Yadkin County (Unincorporated Area)
Forbush Creek Tributary 4	The confluence with Forbush Creek	Approximately 0.7 mile upstream of Griffin Road (SR 1591)	Yadkin County (Unincorporated Area)
Forbush Creek Tributary 5	The confluence with Forbush Creek	Approximately 0.7 mile upstream of Bovendertown Road (SR 1584)	Yadkin County (Unincorporated Area)

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
Fisher Creek	Approximately 1,280 feet upstream of the confluence with South Deep Creek	3.16	*	*	3,214	*
	Approximately 130 feet downstream of Brandon Hills Road (SR 1153)	2.8	*	*	2,986	*
Flat Rock Branch	At the confluence with North Little Hunting Creek	4.3	*	*	1,844	*
	Approximately 1,090 feet upstream of Cranfill Road (SR 1121)	3.0	*	*	1,493	*
	Approximately 1.3 miles upstream of Cranfill Road (SR 1121)	1.7	*	*	1,044	*
Forbush Creek	At the confluence with Yadkin River	53.9	*	*	9,002	*
	Approximately 720 feet downstream of Baltimore Road (SR 1570)	26.8	*	*	4,936	*
	Approximately 0.6 mile upstream of Baltimore Road (SR 1570)	26.1	*	*	4,749	*
	Approximately 1.4 miles upstream of Baltimore Road (SR 1570)	25.1	*	*	4,517	*
	Approximately 0.9 mile downstream of Falcon Road (SR 1600)	24.4	*	*	4,327	*
	Approximately 410 feet downstream of Falcon Road (SR 1600)	22.2	*	*	3,819	*
	Approximately 0.8 mile upstream of Falcon Road (SR 1600)	21.6	*	*	3,817	*
	Approximately 0.5 mile downstream of Mount Carmel Church Road (SR 1599)	20.0	*	*	3,796	*

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
Forbush Creek	Approximately 400 feet downstream of Mount Carmel Church Road (SR 1599)	14.3	*	*	3,537	*
	Approximately 1,500 feet downstream of Hutchens Road (SR 1597)	13.9	*	*	3,510	*
	Approximately 940 feet upstream of Hutchens Road (SR 1597)	12.8	*	*	3,410	*
	Approximately 125 feet upstream of Lace Knoll Road (SR 1584)	12.3	*	*	3,361	*
	Approximately 0.5 mile upstream of Lace Knoll Road (SR 1584)	10.62	*	*	3,183	*
	Approximately 0.7 mile upstream of Lace Knoll Road (SR 1584)	10.59	*	*	3,179	*
	Approximately 1.1 miles upstream of Lace Knoll Road (SR 1584)	10.1	*	*	3,117	*
	Approximately 0.5 mile downstream of Union Cross Church Road (SR 1509)	9.7	*	*	3,061	*
	Approximately 475 feet upstream of Union Cross Church Road (SR 1509)	7.2	*	*	2,550	*
	Approximately 0.7 mile upstream of Union Cross Church Road (SR 1509)	6.8	*	*	2,471	*
	Approximately 275 feet downstream of Griffin Road (SR 1591)	5.1	*	*	2,056	*
	Approximately 0.6 mile upstream of Griffin Road (SR 1591)	4.8	*	*	1,976	*

Section 5.0 – Engineering Methods

Table 10—Roughness Coefficients

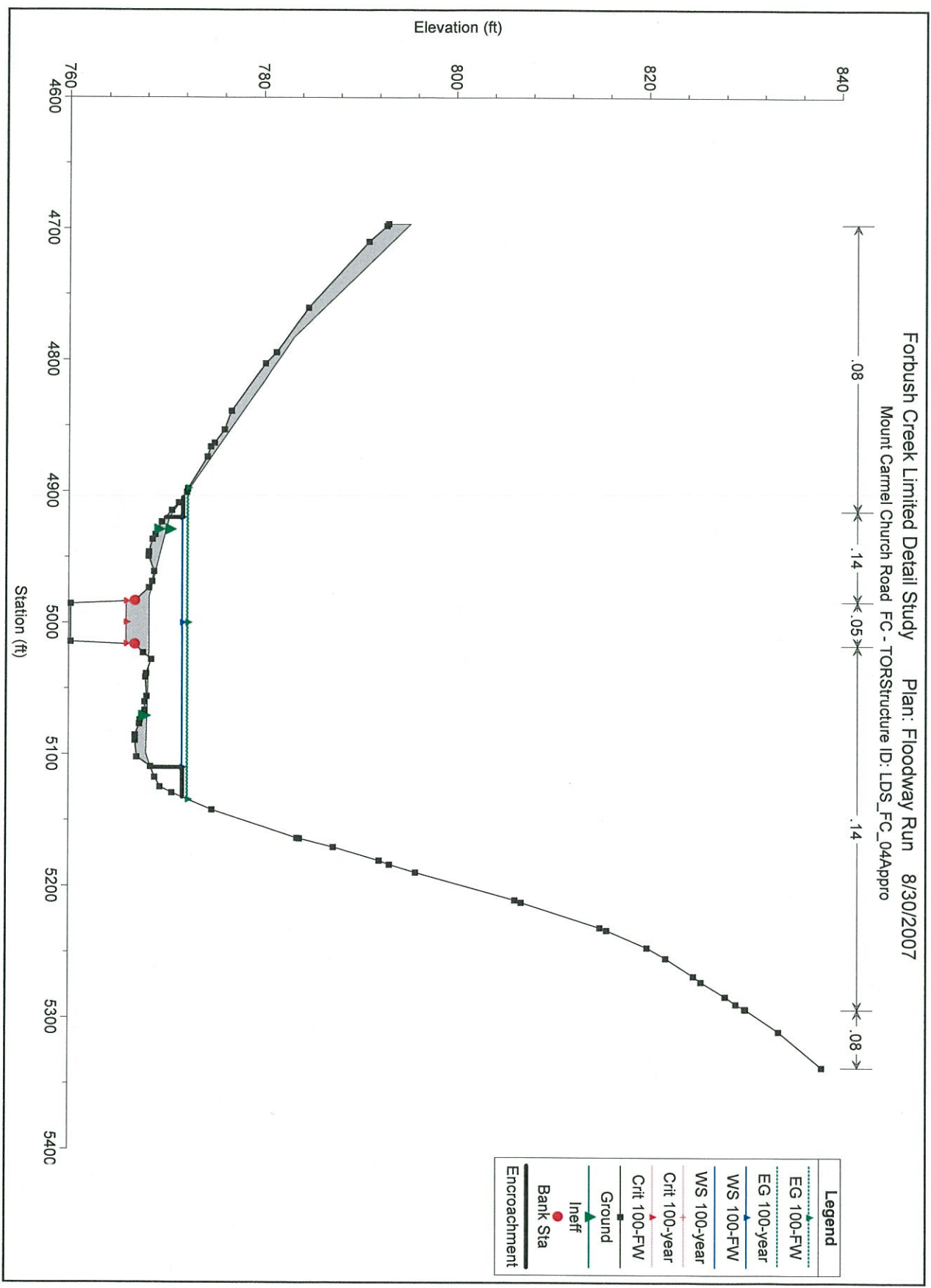
Stream	Channel "n"	Overbank "n"
Cobb Creek	0.050 – 0.070	0.060 – 0.250
Cranberry Creek	0.035 – 0.055	0.070 – 0.150
Deep Creek	0.047 – 0.052	0.070 – 0.290
Dobbins Creek	0.045	0.080 – 0.140
Dobbins Creek Tributary	0.045	0.080 – 0.140
Fall Creek	0.045 – 0.050	0.010 – 0.150
Fisher Creek	0.050	0.080 – 0.150
Flat Rock Branch	0.045	0.110 – 0.120
Forbush Creek	0.050	0.080 – 0.140
Forbush Creek Tributary 1	0.050	0.080 – 0.140
Forbush Creek Tributary 2	0.050	0.080 – 0.140
Forbush Creek Tributary 3	0.050	0.080 – 0.140
Forbush Creek Tributary 4	0.050	0.080 – 0.140
Forbush Creek Tributary 5	0.055	0.080 – 0.140
Hall Creek	0.045	0.045 – 0.140
Hall Creek Tributary 1	0.045	0.060 – 0.140
Hall Creek Tributary 2	0.045	0.060 – 0.140
Harmon Creek	0.048	0.060 – 0.120
Hauser Creek	0.050 – 0.055	0.090 – 0.150
Haw Branch	0.050	0.070 – 0.150
Jonesville Creek	0.050	0.080 – 0.140
Lineberry Creek	0.050	0.080 – 0.140
Little Forbush Creek	0.048	0.080 – 0.150
Little Forbush Creek Tributary 1	0.035 – 0.048	0.080 – 0.150
Logan Creek	0.048	0.080 – 0.120
Logan Creek Tributary 1	0.048 – 0.050	0.080 – 0.150
Logan Creek Tributary 2	0.048	0.080 – 0.150
Logan Creek Tributary 3	0.048	0.080 – 0.150
Loney Creek	0.052	0.060 – 0.120
Long Branch	0.040	0.080 – 0.120
Long Branch North	0.045 – 0.050	0.080 – 0.120
Mill Branch	0.052	0.060 – 0.120
Miller Creek	0.055	0.080 – 0.150
North Deep Creek	0.035 – 0.050	0.070 – 0.150
North Deep Creek Tributary 1	0.045	0.070 – 0.140
North Deep Creek Tributary 2	0.035 – 0.045	0.070 – 0.140
North Deep Creek Tributary 2A	0.035 – 0.050	0.080 – 0.120
North Deep Creek Tributary 3	0.045 – 0.050	0.070 – 0.140
North Deep Creek Tributary 4	0.035 – 0.050	0.080 – 0.140
North Deep Creek Tributary 4A	0.045	0.080 – 0.140
North Deep Creek Tributary 4B	0.035 – 0.045	0.080 – 0.140

Section 5.0 – Engineering Methods

Table 11—Limited Detailed Flood Hazard Data

Cross Section ¹	Stream Station ²	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width ³ (feet)
FORBUSH CREEK				
197	19,679	4,327	740.3	52 / 140
205	20,462	4,327	742.7	70 / 40
213	21,260	4,327	744.7	85 / 18
220	22,043	4,327	746.9	70 / 125
232	23,206	4,327	748.0	360 / 50
242	24,210	3,819	749.2	100 / 45
249	24,860	3,819	750.2	53 / 22
259	25,863	3,819	752.8	30 / 55
268	26,751	3,819	754.4	40 / 80
274	27,395	3,819	755.3	178 / 24
283	28,343	3,817	756.2	40 / 188
295	29,458	3,817	757.0	220 / 204
305	30,468	3,817	757.6	260 / 44
314	31,427	3,817	760.6	170 / 30
325	32,450	3,817	762.7	120 / 250
337	33,705	3,796	764.4	240 / 100
345	34,461	3,796	766.5	78 / 176
353	35,315	3,796	768.7	90 / 190
362	36,236	3,537	772.9	89 / 60
371	37,119	3,537	775.2	36 / 120
377	37,748	3,537	777.2	58 / 67
383	38,320	3,537	778.7	100 / 140
391	39,135	3,537	779.2	220 / 100
400	40,006	3,510	779.7	160 / 40
407	40,679	3,510	781.7	108 / 20
414	41,368	3,510	785.3	130 / 25
424	42,360	3,410	789.0	19 / 70
429	42,902	3,410	791.6	50 / 124
435	43,540	3,410	793.0	40 / 30
443	44,279	3,410	798.3	58 / 60
448	44,759	3,410	800.2	156 / 22
456	45,609	3,361	802.4	98 / 72
465	46,494	3,361	804.6	125 / 40
474	47,414	3,361	806.9	160 / 35
482	48,243	3,361	809.2	190 / 25
486	48,638	3,183	810.2	80 / 40
492	49,241	3,179	812.7	17 / 154
501	50,066	3,179	814.3	126 / 110
514	51,370	3,117	816.1	220 / 30
528	52,821	3,117	819.5	220 / 30
541	54,088	3,061	823.3	60 / 150
550	55,049	3,061	825.9	75 / 120
562	56,156	3,061	829.7	200 / 64
571	57,072	2,550	830.9	112 / 29
584	58,433	2,550	835.4	210 / 16
597	59,666	2,471	839.9	22 / 78
601	60,146	2,471	844.0	30 / 28

980091





NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY YADKIN BRIDGE NUMBER 980091 INSPECTION CYCLE 2 YRS
ROUTE SR1599 ACROSS FORBUSH CREEK M.P. 0

LOCATION .8 MI.W.JCT.SR1600

SUPERSTRUCTURE TIMBER FLOOR ON I-BEAMS

SUBSTRUCTURE E.BTS:TIM.CAPS/TIM.POST & SILLS @ VAR.CENTERS

SPANS 1@41'

LONGITUDE 80° 34' 18.1"

LATITUDE 36° 9' 3.4"

PRESENT CONDITION FAIR

INVENTORY RATING

INSPECTION DATE 05/24/2011

OPERATING RATING

PRESENT POSTING SV 23 TTST 26

PROPOSED POSTING

COMPUTER UPDATE

ANALYSIS DATE

POSTING LETTER DATE

SUFFICIENCY RATING

OTHER SIGNS PRESENT 4 DELINEATORS



WEST TO EAST

SIGN NOTICE
ISSUED FOR

NUMBERED
REQUIRED

<u>No</u>	WEIGHT LIMIT	<u></u>
<u>No</u>	DELINEATORS	<u></u>
<u>No</u>	NARROW BRIDGE	<u></u>
<u>No</u>	ONE LANE BRIDGE	<u></u>
<u>No</u>	LOW CLEARANCE	<u></u>

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 07/14/2011

COUNTY :	DIV :	DIST :	STRUCTURE NUMBER :	LENGTH :	
YADKIN	11	1	980091	41	FEET
ROUTE CARRIED :		FEATURE INTERSECTED :			
SR1599		FORBUSH CREEK			
LOCATED :		BRIDGE NAME :		CITY :	
.8 MI.W.JCT.SR1600					
FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :	
09	NFA	NFA	300 2009	LT 227 RT 227	
BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :	
1960	BMU			Other or Unknown	
REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :
1987	BMU	5.7751	TAN	90	ON 2 UNDER
NAVIGATION :		HT. CRN. TO BED :		WATER DEPTH :	
VC	0.0 FT	HC	0.0 FT	9 FT	1 FT
SUPERSTRUCTURE : TIMBER FLOOR ON I-BEAMS					
SUBSTRUCTURE : E.BTS:TIM.CAPS/TIM.POST & SILLS @ VAR.CENTERS					
SPANS : 1@41'					
BEAMS OR GIRDERS : 9 LINES 21 I-BEAMS @ 2'-.5 CENTERS					
FLOOR :		ENCROACHMENT :		DECK (OUT TO OUT) :	
4X8 TIM/2 AWS				18.0 FT	
CLEAR ROADWAY :		BETWEEN RAILS :		SIDEWALK OR CURB :	
17.1 FT		17.8 FT		LT 0.3 FT RT 0.3 FT	
VERT.CL.OVER :		VERT.CL.UNDER :		HOR.CL.UNDER :	
99 FT 99 IN		00 FT 00 IN		0.0 FT	
INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :		
HS-11	HS-16	Cap	SV 23 TTST 26 DATE 09/23/2008		
SYSTEM :			GREEN LINE ROUTE :		
Secondary S.R. Route			N		
2ND OPENING :		3RD OPENING :		4TH OPENING :	
				5TH OPENING :	
REMARKS :					

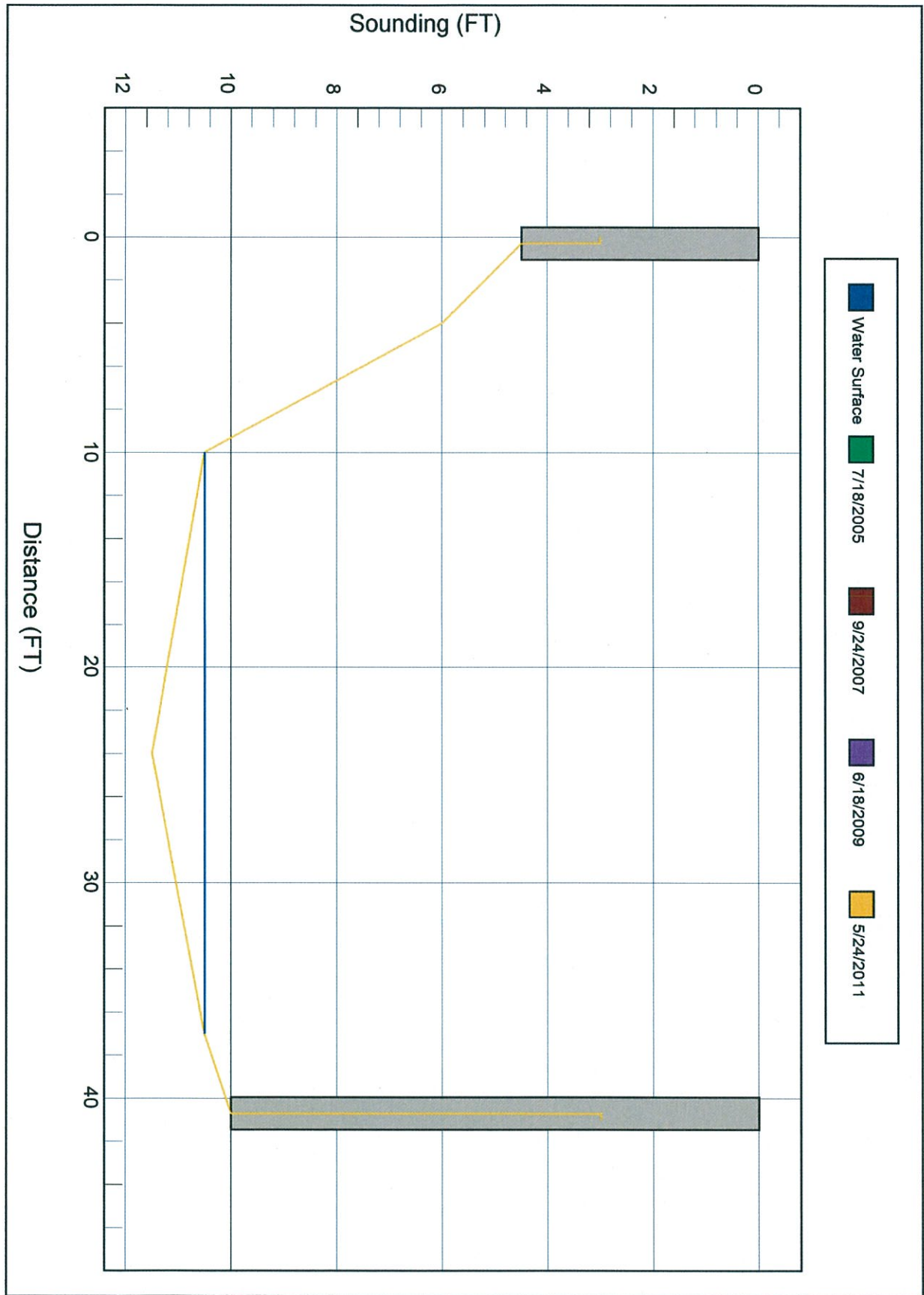
Bridge: 980091

County YADKIN

Date: 05/24/2011

Top of Rail = 0 FT (Sounding)

STREAMBED PROFILE (Downstream)





NORTH PROFILE



ABUT. (B)