

OFFICE ESTIMATE

21'10" x 5'8" Aluminum Box

PREDESIGN-PRESURVEY REPORT

Project# 17BP.11.R.111

TIP# _____

Let Date _____

WBS# _____

County WATAUGA DIV 11

Bridge# 940047

Road# SR1351(CastleFordRd)

Stream Grassy Creek

Type Of Request: POC Force Account TIP NCMA

Date 12/19/2013 Name wsh

Assigned To MTS ✓

Checked By _____ MJY 1-3-14 ✓

Prior Survey Date _____ NONE

BrnBk: None CoFile: None

Study By Scour Section _____ NONE

Flood Zone X Detail Study None 3-Dec-2009

Panel# 2932

B.M. Info n/a

Quad Map TODD Drainage Area 2.7 SQ MI From QUAD SHEET

Q25 800cfs Q50 1000cfs Q100 1200cfs Method REG. EQU

REGION 2

Lat: 36° 15'55.35" Long: 81° 35' 56.13"

EXISTING BRIDGE INFORMATION

Location 0.35 mi. NE JCT SR 1354 (Milton Moretz Rd)

Average Daily Traffic 120 (2000) 6% TRUCK

Length 26' Bed- To Crown 6' Water Depth 1'

Type Structure Timber FLR, Caps, Posts, Sills, E BTS

Type Spans 1 at 25' 10"

Upstream Structure 940046 on SR 1351 (L=26' TIM.: FLR, E BT, CAPS, SILLS)

Location 0.3 MI NE JCT SR 1354 (I BEAMS)

Bed- To Crown 8' (H2O= 2" Deep) Prior Survey n/a

Downstream Structure 940048 on SR 1351 (L=19' TIM.: FLR, CAPS, SILLS, E BTS)

Location 0.4 MI. NE JCT SR 1354 (I BEAMS)

Bed- To Crown 7' (H2O = 2' DEEP) Prior Survey n/a

SCS Watershed n/a

ENVIRONMENTAL

TVA: YES

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 WS IV: +

(#10-1-14)

DENR River Basin Info. NEW

COUNTY: WATAUGA

BRIDGE No.: 47
940047.

DATE:

12/17/13

OAL = 25.4'

⊥ OPENING = 21.7 FT

CLEAR ROWY = 19.3 FT

CLEAR ROWY ALONG SKRW = 21.5 FT

RAIL TO BED =

RAIL TO SEAT =

HEIGHT OF RAIL = 2.6 FT

NW DEPTH = 1.0 FT

STREAM WIDTH = 8 FT

WATERWAY OPENING = 78.5 SQ. FT.

DETOUR =

ONE FOOT POSTS + CAR

TIMBER VERTICAL ABUT
STEEL GIRDS

APPARENT BEDROCK

OTO SEAT 4.4

~~ABUT~~ FOOTING 7.1

OTOZ FTNG 7.1

+02 WE 8.0

+02 WS 7.8

+10 7.8

+12 8.5

+17 WE/WS 7.8

+25.4 ABUT 6.7

SEAT 4.4

DA = 1727.7729 acres

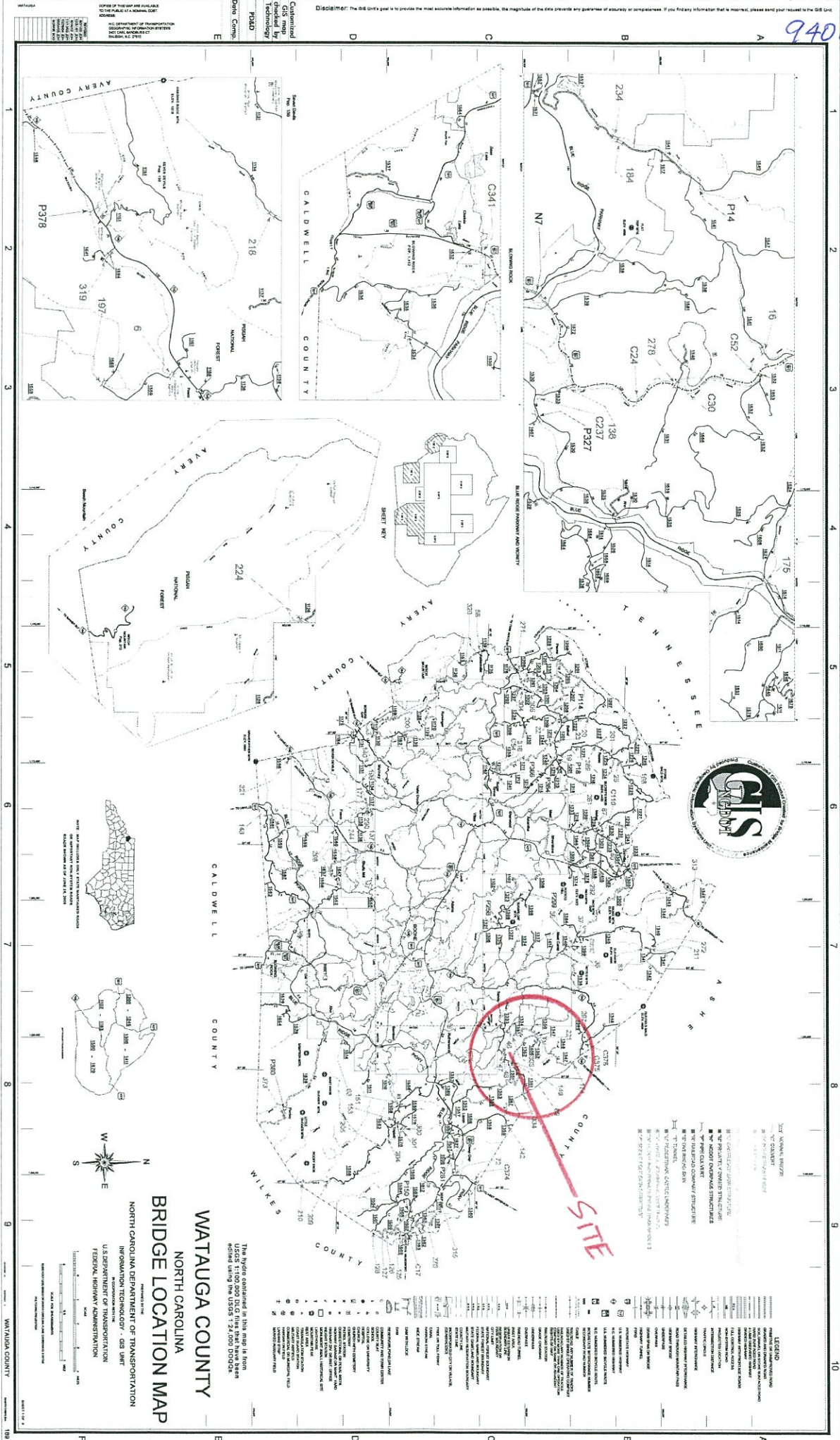
DA = 2.6996 SQ. MI.

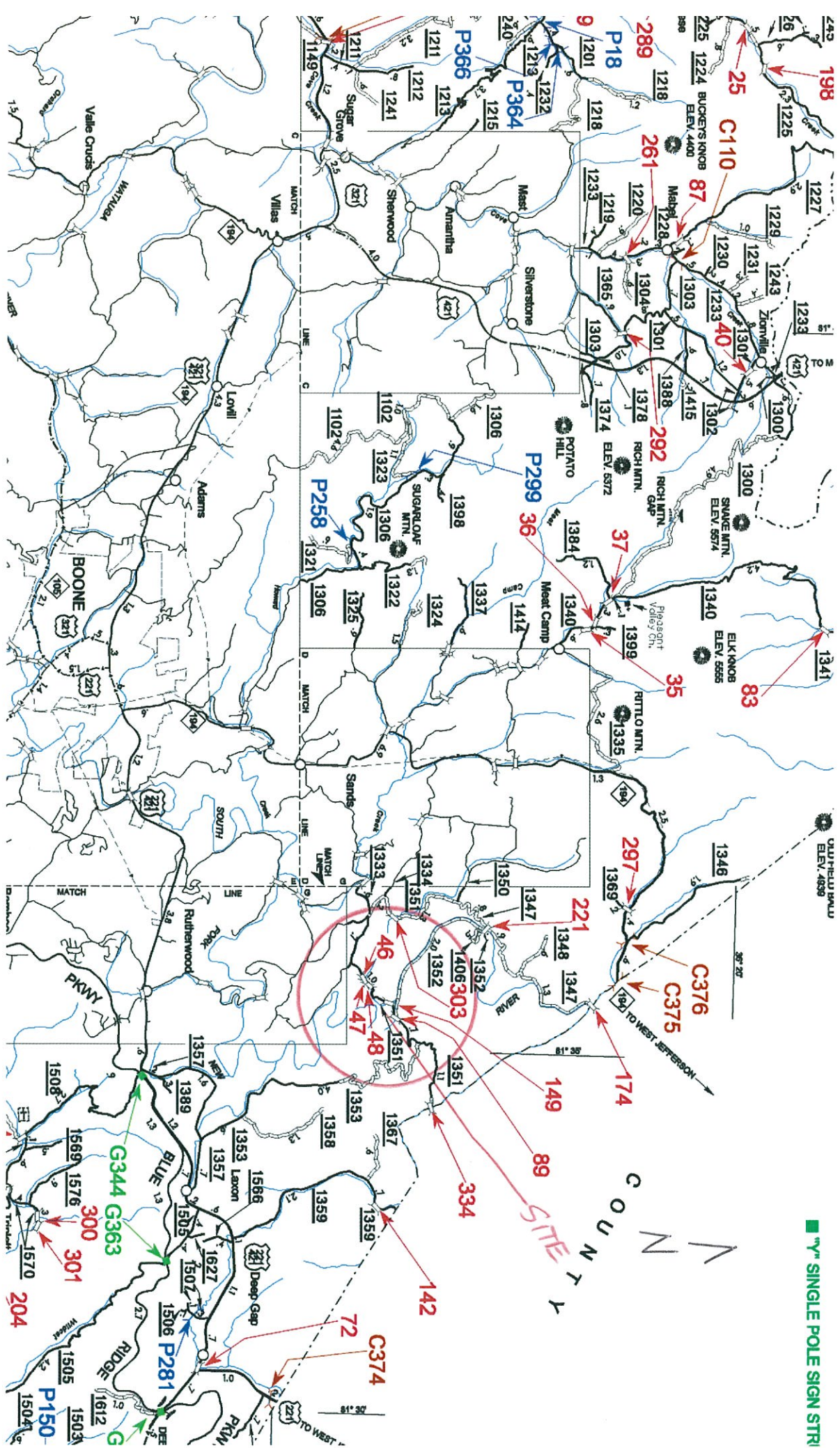
DA = 2.7 SQ. MI. ✓

47 [.]

1, 3, 19, 33



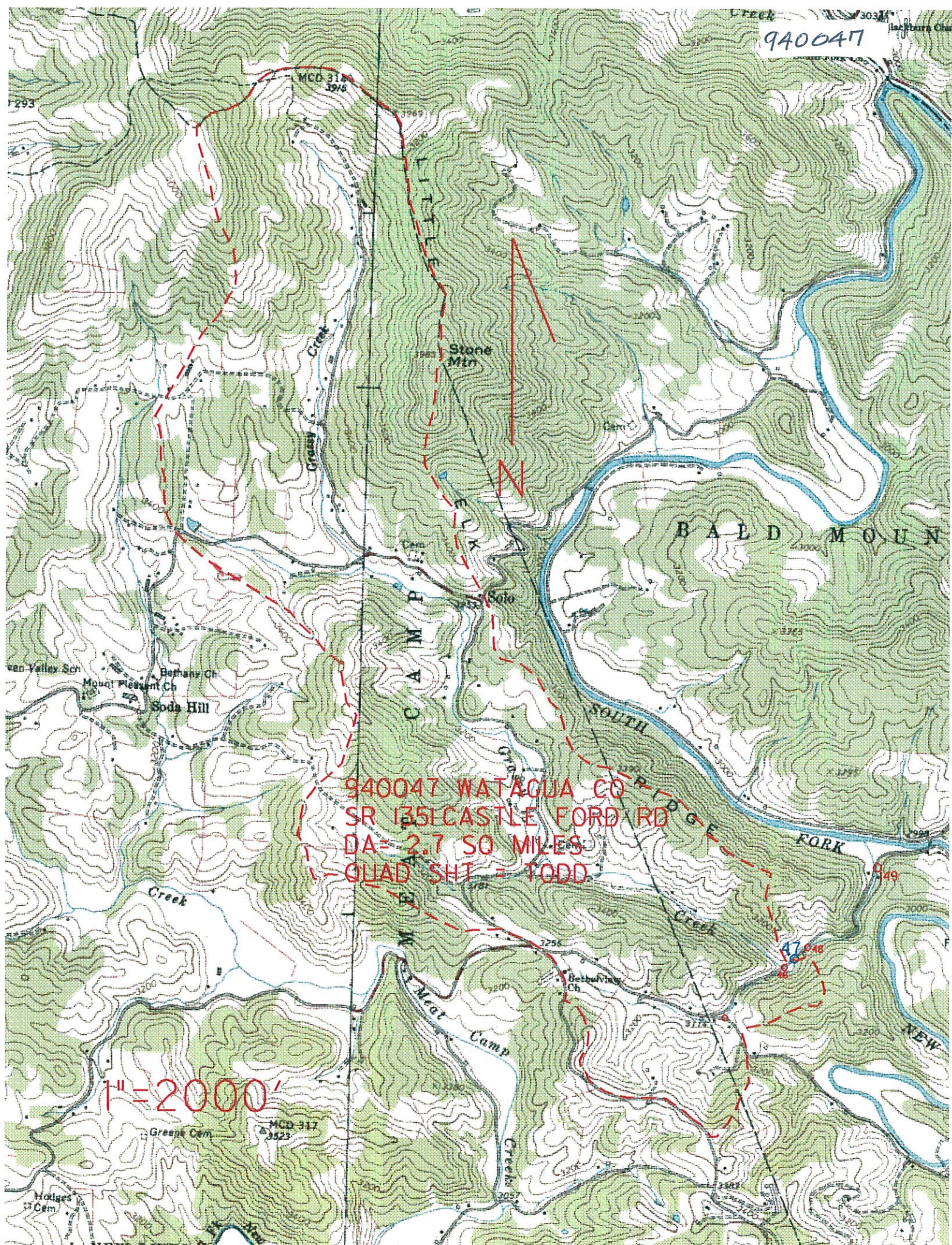




940047

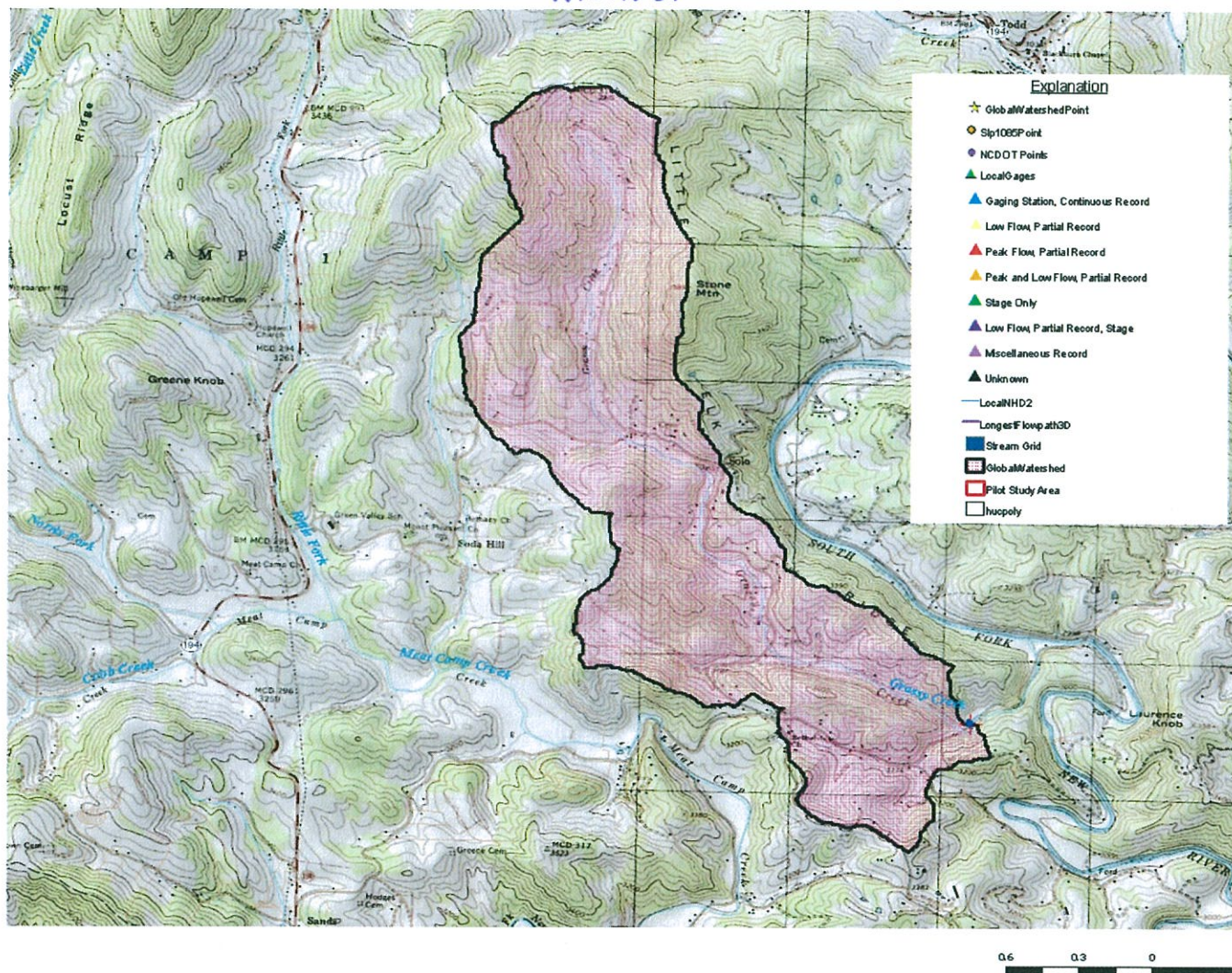
940047 WATAUGA CO
SR 1351 CASTLE FORD RD
DA= 2.7 SQ MILES
QUAD SHT = TODD

1"=2000'



StreamStats Print Page

WATAUGA CO # 940047



12/23/2013 11:07:48 AM



North Carolina StreamStats

Streamstats Ungaged Site Report

Date: Mon Dec 23 2013 11:07:02 Mountain Standard Time

Site Location: North_Carolina

NAD27 Latitude: 36.2652 (36 15 55)

NAD27 Longitude: -81.5992 (-81 35 57)

NAD83 Latitude: 36.2654 (36 15 55)

NAD83 Longitude: -81.5990 (-81 35 56)

Drainage Area: 2.73 mi²

Percent Urban: 4.4 %

Percent Impervious: 0.2 %

Peak Flows Region Grid Basin Characteristics			
100% Peak Southeast US 2009 5158 (2.73 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	2.73	1	9000
Percent Area in Region 1 (percent)	0.000	0	100
Percent Area in Region 2 (percent)	100.000	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 (2.73 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	2.73	0.04	41
Area of Impervious Surfaces (percent)	0.16 (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	240	35		136	421
PK5	443	34		254	774
PK10	604	35		340	1070
PK25	824	38		446	1520
PK50	984	40		516	1880
PK100	1180	42		596	2330
PK200	1350	44		656	2760
PK500	1610	48		747	3480

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	19.9				
PK5U	54.8				
PK10U	91.7				
PK25U	189				
PK50U	262				
PK100U	352				



940047



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION

PRIORITY MAINTENANCE ISSUED
TEMPORARY REPAIR

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection - Contract

COUNTY WATAUGA BRIDGE NUMBER 940047 INSPECTION CYCLE 0 YRS
SR1351 (CASTLE FORD RD)
ROUTE SR1351 ACROSS CREEK M.P. 0
.35 MILES NORTHEAST OF JUNCTION WITH SR1354 (MILTON MORETZ RD)
LOCATION .35 MI.NE.JCT.SR1354

SUPERSTRUCTURE TIMBER FLOOR ON I-BEAMS

SUBSTRUCTURE E.BTS:TIMBER CAPS/TIMBER POST& CONC.SILLS @ VAR. CTRS.

1 @ 25'-10"

SPANS 1 @ 25'-10"

LONGITUDE 81° 35' 56.13"

LATITUDE 36° 15' 55.35"

INSPECTION DATE 10/15/2013

PRESENT CONDITION FAIR

PRESENT POSTING SV 16 TTST 21

SV 16 TTST 21

PROPOSED POSTING

OTHER SIGNS PRESENT (4) DELINEATORS, (2) NARROW BRIDGE



WEST APPROACH LOOKING EAST

Fracture Critical	<u>No</u>
Temporary Shoring	<u>No</u>
Scour Critical	<u>No</u>
Scour POA	<u>No</u>

SIGN NOTICE ISSUED FOR	NUMBERED REQUIRED
<u>No</u> WEIGHT LIMIT	
<u>No</u> DELINEATORS	
<u>No</u> NARROW BRIDGE	
<u>No</u> ONE LANE BRIDGE	
<u>No</u> LOW CLEARANCE	

940047

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 10/31/2013

COUNTY : WATAUGA DIVISION : 11 DISTRICT : 2 STRUCTURE NUMBER : 940047 LENGTH : 26 FEET

ROUTE CARRIED : SR1351 FEATURE INTERSECTED : GRASSY CREEK

LOCATED : .35 MI.NE.JCT.SR1354 BRIDGE NAME : CITY :

FUNC. CLASS : 09 SYST.ON : NFA SYST.UNDER : NFA ADT & YR : 120 2000 RAIL TYPE : LT 227 RT 227

BUILT : 1962 BY : BMU PROJ : FED.AID PROJ : DESIGN LOAD : Unknown

REHAB : BY : PROJ : ALIGNMENT : TAN SKEW : 120 LANES : ON 2 UNDER 0

NAVIGATION : VC 0 FT HC 0 FT HT. CRN. TO BED : 6 FT WATER DEPTH : 1 FT

SUPERSTRUCTURE : TIMBER FLOOR ON I-BEAMS

SUBSTRUCTURE : E.BTS:TIMBER CAPS/TIMBER POST& CONC.SILLS @ VAR. CTRS.

SPANS : 1 @ 25'-10

BEAMS OR GIRDERS : 9 LINES 12 I-BEAMS @ 2'-4 CENTERS

FLOOR : 4X8 TIM/2.5 AWS ENCROACHMENT : DECK (OUT TO OUT) : 20.22 FT

CLEAR ROADWAY : 19.28 FT BETWEEN RAILS : 19.86 FT SIDEWALK OR CURB : LT .3 FT RT .3 FT

VERT.CL.OVER : 999.9 FT

INV.RTG. : HS-1 OPE.RTG. : HS-1 CONTR.MEMBER : Ext Beam POSTED : SV 11 TTST 15 DATE 10/30/2013

SYSTEM : Secondary S.R. Route GREEN LINE ROUTE : N

UNDER ROUTES AND CLEARANCES

REMARKS :

940047

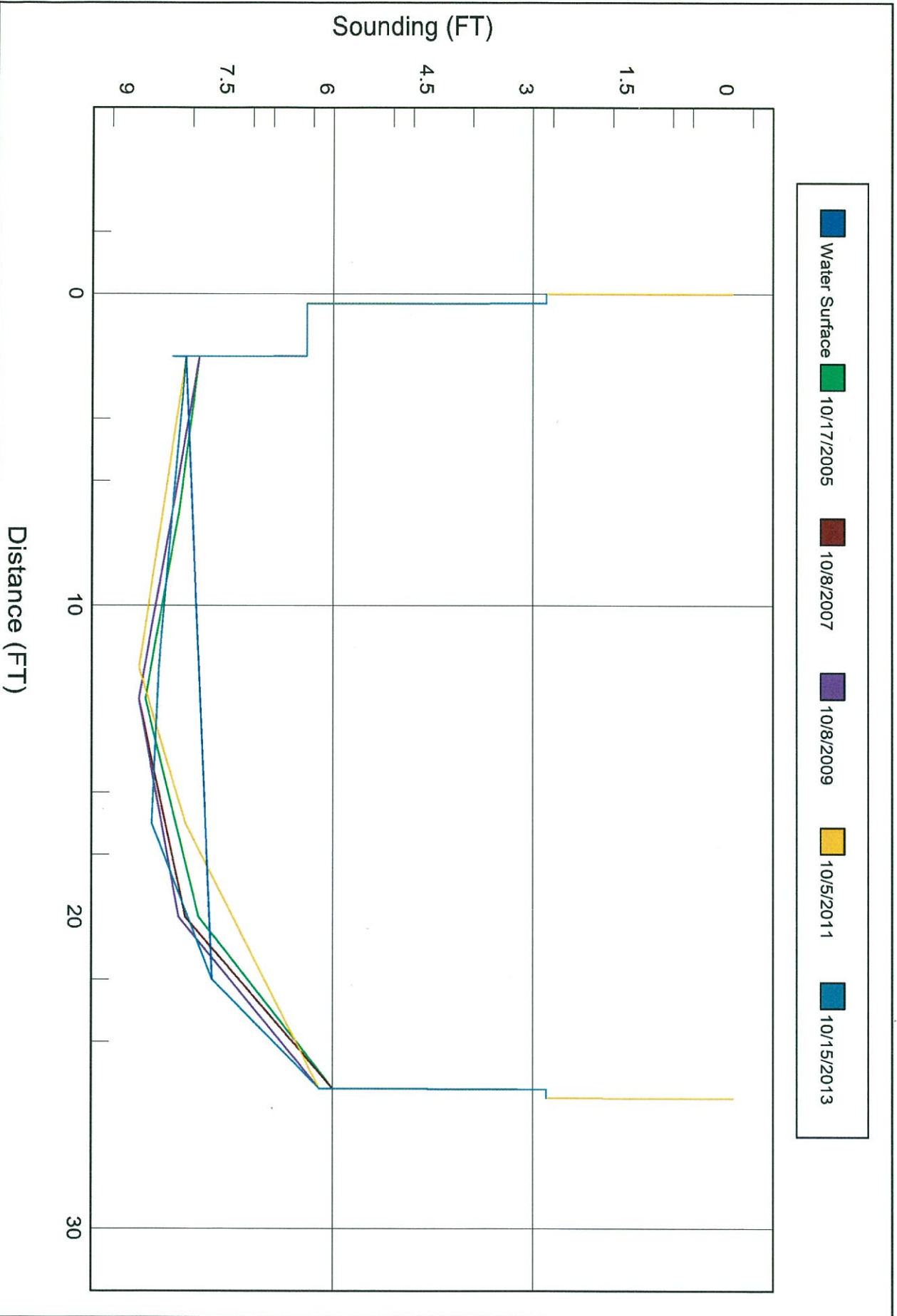
Bridge: 940047

County WATAUGA

Date: 10/15/2013

Top of Rail = 0 FT (Sounding)

STREAMBED PROFILE (Downstream)



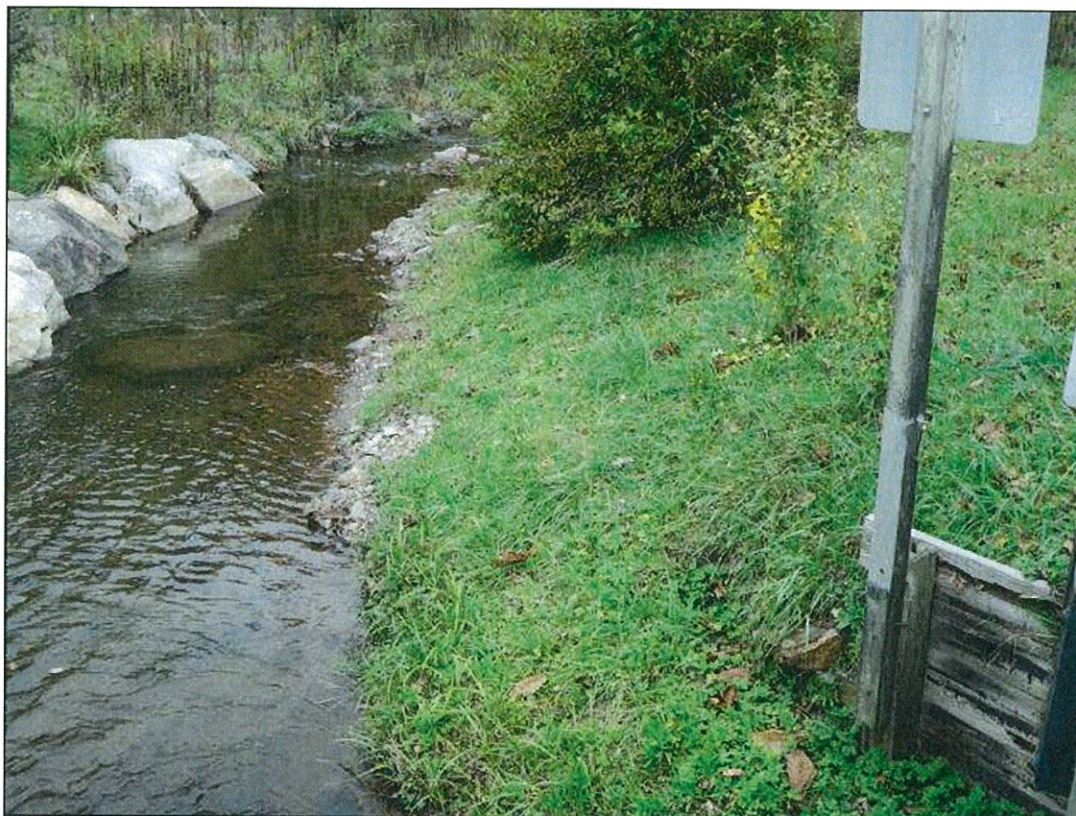
940047

Structure 940047

County WATAUGA

Date: 10/15/2013

Structure Photos



NORTHEAST BANK

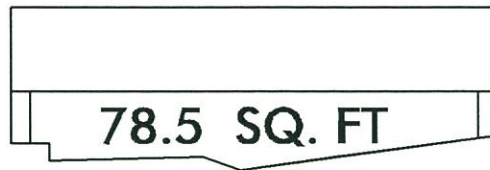


NORTH PROFILE LOOKING SOUTH

WATAUGA 940047

SCALE: 10

SOUNDING



⊥ OPENING



EXISTING BRIDGE OP 78.5 SQ. FT.
 BRD TO CROWN 5.9 FT
 ⊥ OPENING 78.5 $\frac{21.7}{25A} = 67 \text{ FT}^2$
 $21.83' \times 5.67'$
 $21'10" \times 5'8" = 101 \text{ FT}^2$ #47
 ALUMINUM BOX
 EFFECTIVE AREA:
 $101 - [(21.83 \times 1) + (12.83 \times 1)]$
 $= 66 \text{ FT}^2$
 EFFECTIVE HEIGHT OF BLOCKAGE:
 $(21.83 + 12.83) / 21.83 = 1.59 \text{ FT}$
 EFFECTIVE OPENING HEIGHT
 $5.67' - 1.59' = 4.08 \text{ FT}$
 EFFECTIVE WIDTH OF BOX
 $66 \text{ FT}^2 / 4.08 = 16.18 \text{ FT}$
 INPUT AS 16.18×5.67 WITH
 1.59 FT BLOCK
 CHART 16
 $AD^{0.5} = 133$ $Q_{15} = 600 \text{ CFS}$ $H_w/D = 1.95$
 $H_w/D = 1.95$ $Q_{15} = 600 \text{ CFS}$