Cover Page

Hydraulics Unit Pre-Design Report (Pre-Scoping) for Structure #: 420011

Date: 04/25/2017

County: Harnett | Stream: EAST BUIES CREEK

Road #: SR2002 | Road Name: Kivett Rd.

Division: 6 | Location: 0.2 MI. W. SR2084

Latitude: 35.41175 | Longitude: 78.72816 Decimal degrees, a min of 5 decimal points

Assigned to:

Prepared By: HM

Hydro Mgr: | Hydro Reviewer:

Project Type:

Existing Structure

Structure Type: Bridge | Yr Built: 1955

Span Arrangement: 1 @ 17'-11", 1 @ 17'-0", 1 @ 16'-7", 2 @ 17'-0", 1 @ 17'-11" | OAL (ft): 103.0 | Skew: 90 | Abutment Type: Vertical -Timber

Number of Barrels: | @ Span (ft): | x Rise (ft):

Bed to Crown (ft): 13.0 | Clear Roadway (ft): 24.0 | Water Depth (ft) 2.0 | Superstructure Depth: 1.5'

ADT: 790 | Year ADT: 2011 | Scour Code (item113): U | Prior Survey Completed: ■ | Survey Date: 08/01/1954

Drainage Area: 6.5 Sq. Mi. | Drainage Area Source: USGS Stream Stats | Roadway Overtops at Q100: ☐

Discharge Method: USGS Regression Equations | USGS Region: 4- Coastal | Stream Gage Number(if applicable):

Q10 (cfs): 600 | Q25 (cfs): 800 | Q50 (cfs): 1,000 | Q100 (cfs): 1,200 | QBFE (cfs):

■ Structure in Flood Hazard Zone | Panel #: 680 | Panel Date: 10/03/2006 | Type of FIS: REDELINEATED | Date of FIS: 10/03/2006

Enviromental

Quad Map: LILLINGTON, NC | River Basin: Cape Fear | Buffer Rule: NA

Primary Stream Classification

☐ Class B ■ Class C ☐ SA ☐ SB

☐ SC ☐ SWL ☐ WL ☐ WS I

☐ WS II ☐ WS III ☐ WS IV ☐ WS V

Supplemental Stream Classification

☐ FWS ☐ HQW ☐ NSW ☐ ORW

☐ Sw ☐ Tr ☐ UWL ☐ w/in 0.5mi. of CA

Other Stream Classification

☐ Anadromous Fish ☐ Area of Envronmental Concern

☐ CAMA County ☐ Federal Wild & Scenic Rivers

☐ HSB Requried ☐ NC Natural & Scenic Rivers

☐ Impaired [303d] ☐ Primary Nursery Area

☐ TVA ☐ Designated Shellfish Harvesting Area

☐ Designated Public Mountain Trout Waters

Up/Down Stream Features

Upstream Feature: Culvert

Location: 0.6 MI. W. JCT. SR1006

Structure #: 420010 | Route: SR1516

Latitude: 35.42233 | Longitude: 78.71797

Prior Survey Completed: ■ | Survey Date: 03/13/2000 | Bed to Crown (ft): 10.0 | Year Built: 2001

Structure Type: RCBC

Span Arrangement: | OAL (ft):

Number of Barrels: 2 | @ Span (ft): 15.0 | x Rise (ft): 7.0

Downstream Feature: Bridge

Location: 0.1MI.N.US421&NC27

Structure #: 420245 | Route: SR2054

Latitude: 35.40041 | Longitude: 78.73391

Prior Survey Completed: ☐ | Survey Date: | Bed to Crown (ft) 11.0 | Year Built: 1923

Structure Type: Bridge

Span Arrangement: 1@31'7 | OAL (ft): 32.00

Number of Barrels: | @ Span (ft): | x Rise (ft):

Preliminary Structure Estimate [Office Estimate]

Structure Type: | Skew:

Dimensions/Spans:

Notes

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STRUCTURE MANAGEMENT UNIT

ATTENTION: PRIORITY MAINTENANCE NOTICE ISSUED, SKETCHES UPDATED.

Structure Safety Report

Routine Element Inspection - Contract

COUNTY: HARNETT **STRUCTURE NUMBER:** 420011 **FREQUENCY:** 24 MONTHS

FACILITY CARRIED: SR2002 **MILE POST:**

LOCATION: 0.2 MI. W. OF SR2084

FEATURE INTERSECTED: EAST BUIES CREEK

LATITUDE: 35° 24' 42.3" **LONGITUDE:** 78° 43' 41.37"

SUPERSTRUCTURE: REINF.CONC.FLOOR ON TIMBER JOISTS

SUBSTRUCTURE: E.BTS&INT.BTS:TIM.CAPS ON ENC.TIM.PILES@8'2CTS.

1 @ 17'-11", 1 @ 17'-0", 1 @ 16'-7", 2 @ 17'-0", 1 @ 17'-11"

SPANS: 1@17'11,1@17',1@16'7,2@17',1@17'11

☐ FRACTURE CRITICAL ☑ TEMPORARY SHORING ☐ SCOUR CRITICAL ☑ SCOUR PLAN OF ACTION

PRESENT CONDITION: Fair **INSPECTION DATE:** 02/17/2016

POSTED SV: 24 **POSTED TTST:** 36

OTHER SIGNS PRESENT: FOUR DELINEATORS



LOOKING EAST

Sign noticed issued for		Number Required
NO	WEIGHT LIMIT	0
NO	DELINEATORS	0
NO	NARROW BRIDGE	0
NO	ONE LANE BRIDGE	0
NO	LOW CLEARANCE	0

INSPECTED BY	SIGNATURE	ASSISTED BY
Joshua W Gentry		Kenneth M Wing

NATIONAL BRIDGE INVENTORY-------- STRUCTURE INVENTORY AND APPRAISAL Run Date: 07/26/2016

IDENTIFICATION

(1) STATE NAME -NORTH CAROLINA BRIDGE **420011**
(8) STRUCTURE NUMBER(FEDERAL) 000000000850011
(5) INVENTORY ROUTE (ON/UNDER) - ON 31020020
(2) STATE HIGHWAY DEPARTMENT DISTRICT 2
(3) COUNTY CODE 85 (4) PLACE CODE 38220
(6) FEATURE INTERSECTED - EAST BUIES CREEK
(7) FACILITY CARRIED SR2002
(9) LOCATION 0.2 MI. W. SR2084
(11)MILEPOINT 0
(16)LAT 35° 24' 42.30" (17)LONG 78° 43' 41.37"
(98)BORDER BRIDGE STATE CODE PCT SHARE
(99)BORDER BRIDGE STRUCTURE NO

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE MAIN: Wood or Timber
TYPE - Stringer Mutlibeam or Girder CODE 702
(44) STRUCTURE TYPE APPR :
TYPE - CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 6
(46) NUMBER OF APPROACH SPANS
(107)DECK STRUCTURE TYPE - 1 CODE
(108)WEARING SURFACE / PROTECTIVE SYSTEM :
(A) TYPE OF WEARING SURFACE - CODE
(B) TYPE OF MEMBRANE - CODE
(C) TYPE OF DECK PROTECTION - CODE

AGE AND SERVICE

(27) YEAR BUILT 1955
(106)YEAR RECONSTRUCTED
(42) TYPE OF SERVICE : ON - Highway
UNDER - Waterway CODE 15
(28) LANES: ON STRUCTURE 2 UNDER STRUCTURE 0
(29) AVERAGE DAILY TRAFFIC 790
(30) YEAR OF ADT 2011 (109) TRUCK ADT PCT 7%
(19) BYPASS OR DETOUR LENGTH 4 MI

GEOMETRIC DATA

(48) LENGTH OF MAXIMUM SPAN 17 FT
(49) STRUCTURE LENGTH 103 FT
(50)CURB OR SIDEWALK: LEFT .7085 FT RIGHT .7085 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 24 FT
(52) DECK WIDTH OUT TO OUT 25.25 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 18 FT
(33) BRIDGE MEDIAN - No Median CODE 0
(34) SKEW 0° (35) STRUCTURE FLARED 0
(10) INVENTORY ROUTE MIN VERT CLEAR 999.9 FT
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 24 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 999.9 FT
(54) MIN VERT UNDERCLEAR REF Not a Highway or Railroad 0 FT
(55) MIN LAT UNDERCLEAR RT REF Not a Highway or Railroad 000 FT
(56) MIN LAT UNDERCLEAR LT REF - 000 FT

NAVIGATION DATA

(38) NAVIGATION CONTROL - No Navigational Control CODE 0
(111)PIER PROTECTION - CODE
(39) NAVIGATION VERTICAL CLEARANCE 0
(116)VERT - LIFT BRIDGE NAV MIN VERT CLEAR FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0 FT

SUFFICIENCY RATING = 20.48
STATUS = Structurally Deficient

CLASSIFICATION — CODE

(112)NBIS BRIDGE SYSTEM - YES
(104)HIGHWAY SYSTEM Is not on NHS 0
(26) FUNCTIONAL CLASS - Local 19
(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 Structure/Conditions T
(110)DESIGNATED NATIONAL NETWORK - Not on the National Network 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

CONDITION — CODE

(58) DECK 5
(59) SUPERSTRUCTURE 5
(60) SUBSTRUCTURE 3
(61) CHANNEL & CHANNEL PROTECTION 6
(62) CULVERTS N

LOAD RATING AND POSTING — CODE

(31) DESIGN LOAD Unknown 0
(63) OPERATING RATING METHOD - Allowable Stress 2
(64) OPERATING RATING - HS-1 1
(65) INVENTORY RATING METHOD - Allowable Stress 2
(66) INVENTORY RATING - HS-1 1
(70) BRIDGE POSTING - Posting Required 3
(41) STRUCTURE OPEN, POSTED ,OR CLOSED P
DESCRIPTION - Posted for Load

APPRAISAL — CODE

(67) STRUCTURAL EVALUATION 3
(68) DECK GEOMETRY 4
(69) UNDERCLEARANCES,VERTI & HORIZ N
(71) WATERWAY ADEQUACY 6
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0000
(113)SCOUR CRITICAL BRIDGES U

PROPOSED IMPROVEMENTS

(75) TYPE OF WORK - CODE
(76) LENGTH OF STRUCTURE IMPROVEMENT
(94) BRIDGE IMPROVEMENT COST
(95) ROADWAY IMPROVEMENT COST
(96) TOTAL PROJECT COST
(97) YEAR OF IMPROVEMENT COST ESTIMATE
(114)FUTURE ADT 1580 (115) YEAR FUTURE ADT 2025

INSPECTIONS

(90) INSPECTION DATE 02/17/2016
(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: 07/26/2016

COUNTY :	DIVISION :	DISTRICT:	STRUCTURE NUMBER :	LENGTH :
HARNETT	6	2	420011	103 FEET

ROUTE CARRIED : SR2002

FEATURE INTERSECTED : EAST BUIES CREEK

LOCATED : 0.2 MI. W. SR2084

BRIDGE NAME :

CITY : *LILLINGTON

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
19	NFA	NFA	790 2011	LT 241 RT 241

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
1955	BMU			Unknown

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :
	DBM		TAN.	90	ON 2 UNDER 0

NAVIGATION :	HT. CRN. TO BED :	WATER DEPTH :
VC 0 FT HC 0 FT	13 FT	2 FT

SUPERSTRUCTURE : REINF.CONC.FLOOR ON TIMBER JOISTS

SUBSTRUCTURE : E.BTS&INT.BTS:TIM.CAPS ON ENC.TIM.PILES@8'2CTS.

SPANS : 1@17'11",1@17',1@16'7",2@17',1@17'11"

BEAMS OR GIRDERS : 19 LINES OF 6X12 TIMBER JOISTS @ 1'4.25 CENTERS

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
6RC/NO AWS		25.25 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :			
24 FT	25.417 FT	LT	.7085 FT	RT	.7085 FT

VERT.CL.OVER : 999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :				
HS-1	HS-1	int.joist,pile	SV	24	TTST	36	DATE 02/10/2010

SYSTEM : Secondary S.R. Route

GREEN LINE ROUTE : N

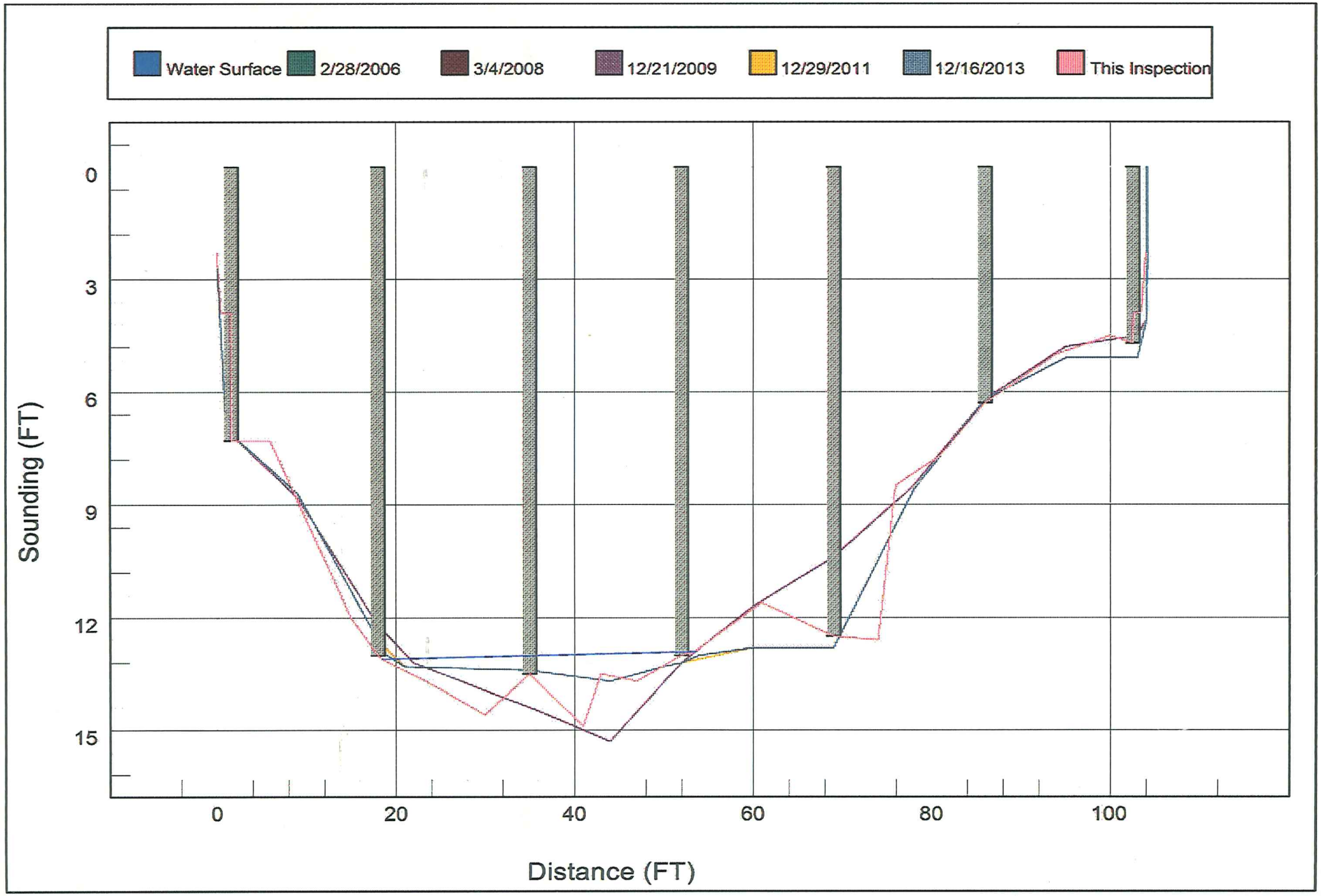
UNDER ROUTES AND CLEARANCES

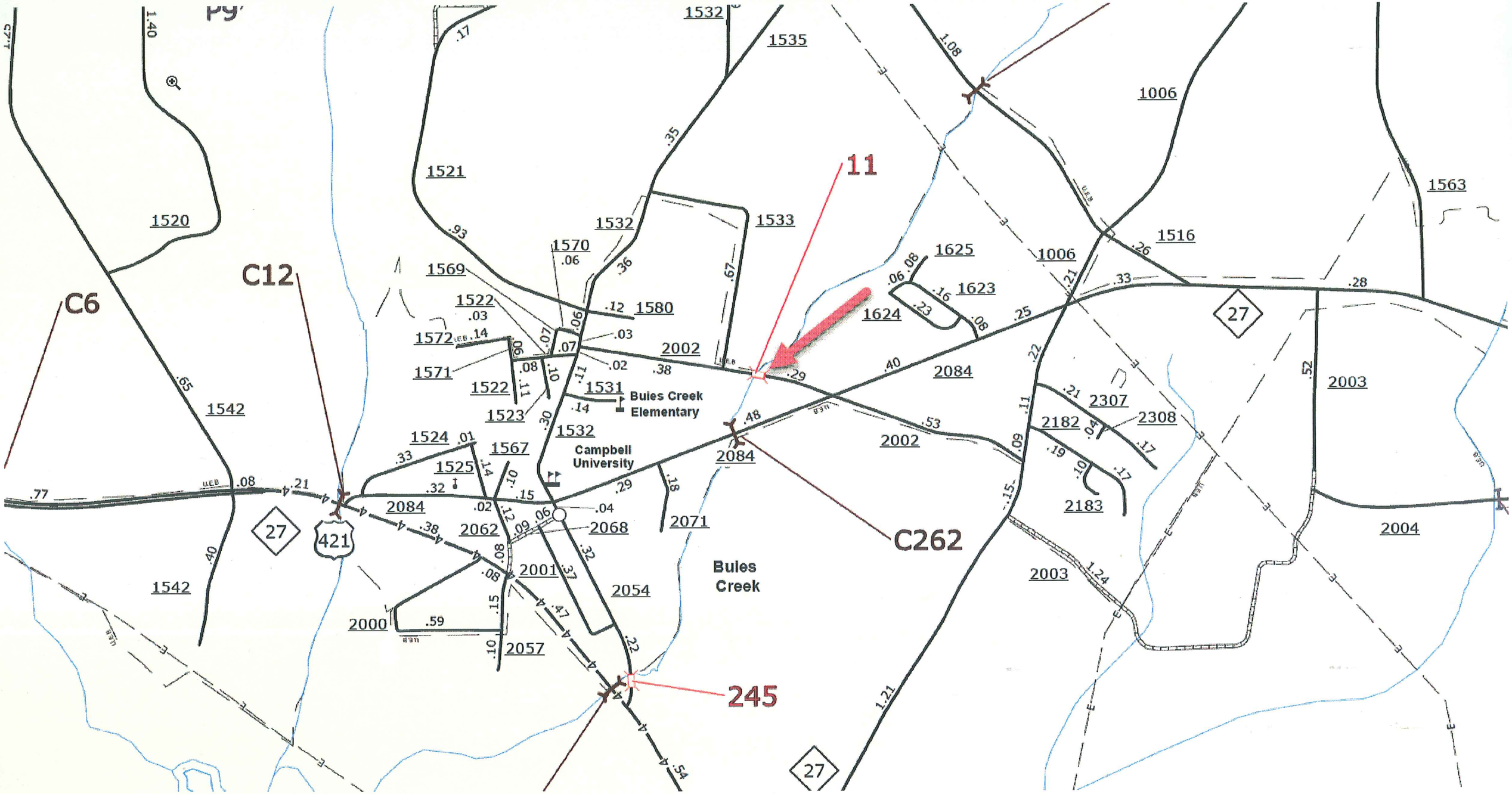
REMARKS :

Bridge: 420011 County HARNETT Date:

STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)




11
C12
C6
C262
245
1520
1521
1532
1535
1533
1542
1569
1570
.06
1522
.03
1572
.14
1571
1580
.12
2002
.38
1531
.14
Buies Creek Elementary
1523
1532
Campbell University
1524
.01
1567
1525
.14
.32
2084
.02
2062
2068
2071
2001
2054
2000
.59
2057
Buies Creek
1624
1625
1623
1006
1516
1563
2084
2002
2307
2308
2182
2183
2003
2004
27
421
1.40
.65
.77
.08
.21
.38
.40
.93
.35
.67
.36
.06
.07
.03
.08
.11
.10
.30
.29
.48
.53
.18
.32
.37
.47
.22
.54
.15
.04
.09
.12
.1.08
.06
.16
.23
.25
.33
.28
.52
.1.24
.1.21

https://streamstatsags.cr.usgs.gov/v3_beta/BCreport.htm?rcode=NC&v

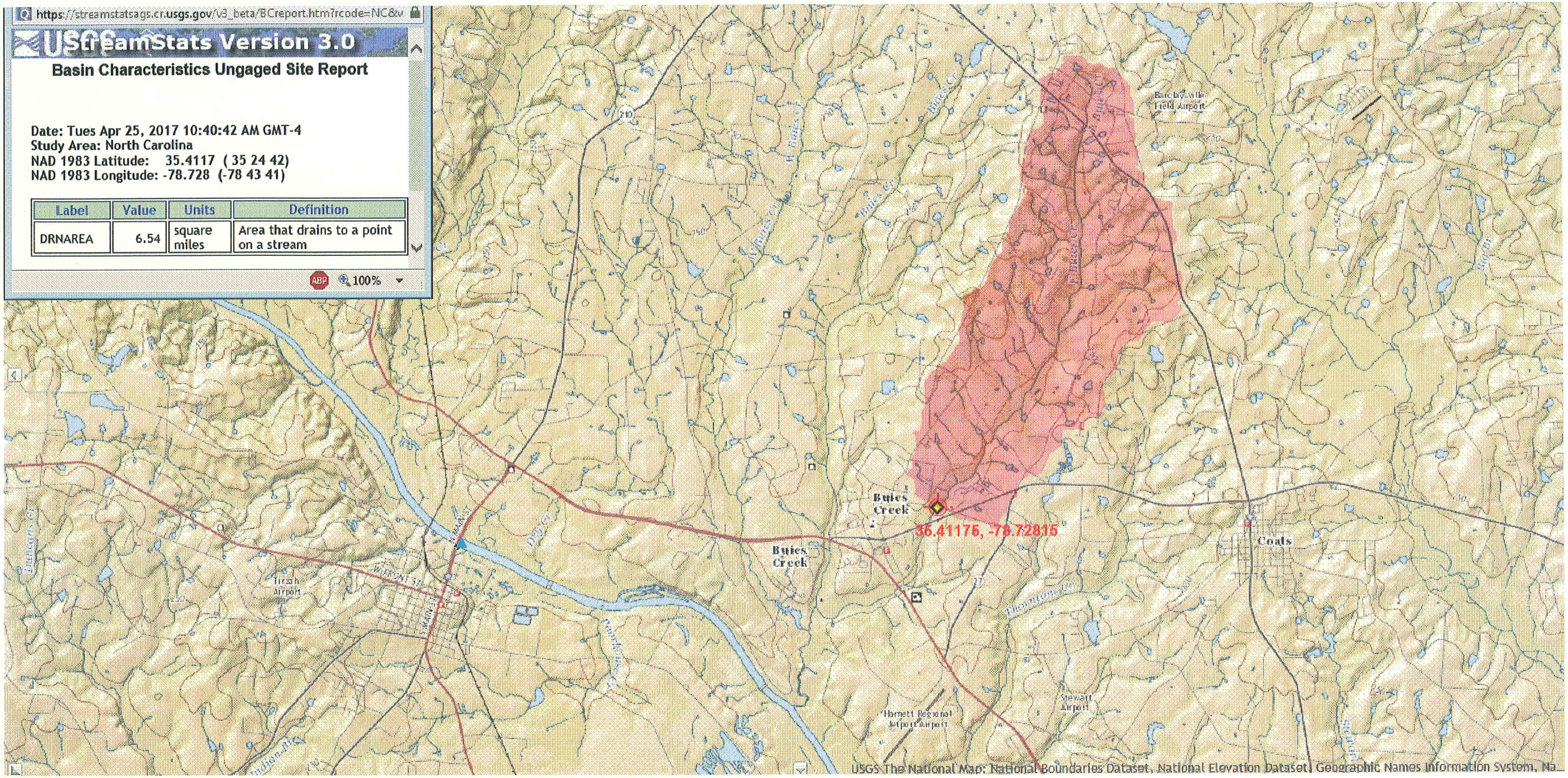
StreamStats Version 3.0

Basin Characteristics Ungaged Site Report

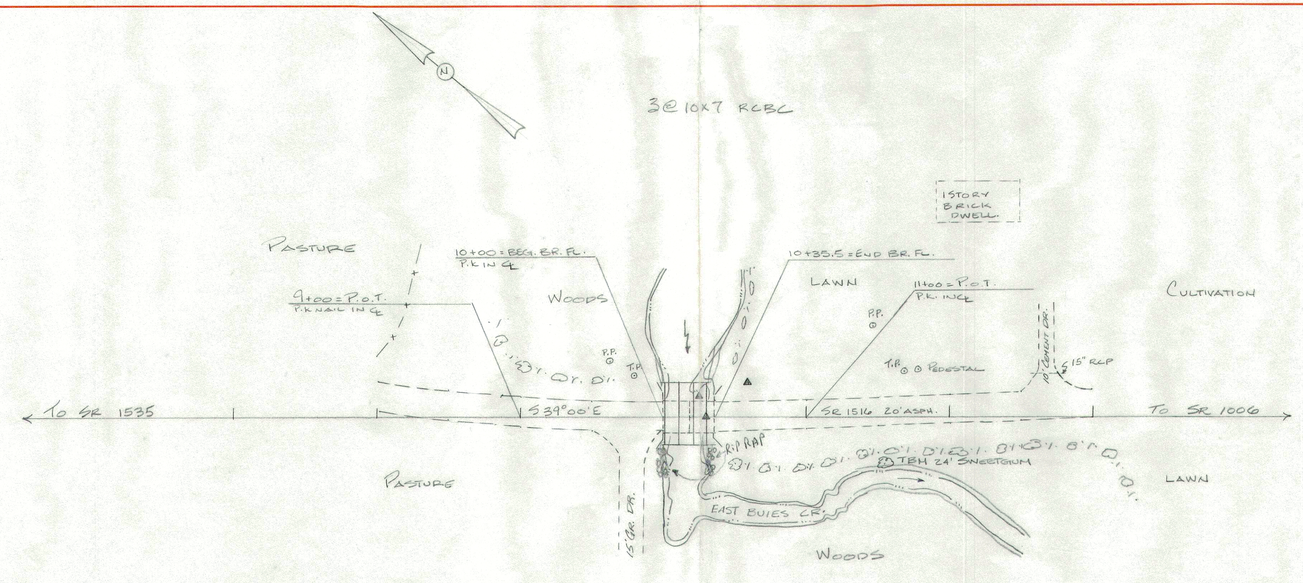
Date: Tues Apr 25, 2017 10:40:42 AM GMT-4
Study Area: North Carolina
NAD 1983 Latitude: 35.4117 (35 24 42)
NAD 1983 Longitude: -78.728 (-78 43 41)

Label	Value	Units	Definition
DRNAREA	6.54	square miles	Area that drains to a point on a stream

100%




Flood Information
Risk Information
Financial Vulnerability
Flood Insurance
FIS Reports
Engineering Models
Click a stream to view models
Model Information
Stream: East Bules Creek
Model: East Bules Creek
Study: Redelineation
Start: The confluence with Bules Creek
End: Sheriff Johnson Road
The model for this section of the stream is not available online. Please email the NCFMP Program Manager or call (919)-715-5711 for more information
Map Export
Data Export
174.5
174.5
156.4
156.4



COMPUTATIONS

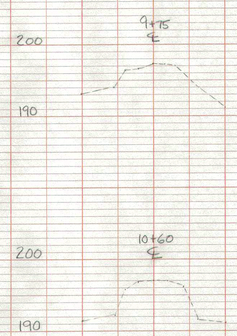
Size & Type	ka	DRAW CONTROL HW/D	H.W.	dc	(dc + D)/2	INLET CONTROL HW	H.	LSO	H.W.	
3@10'x7' RCBC										Q25
										Q100

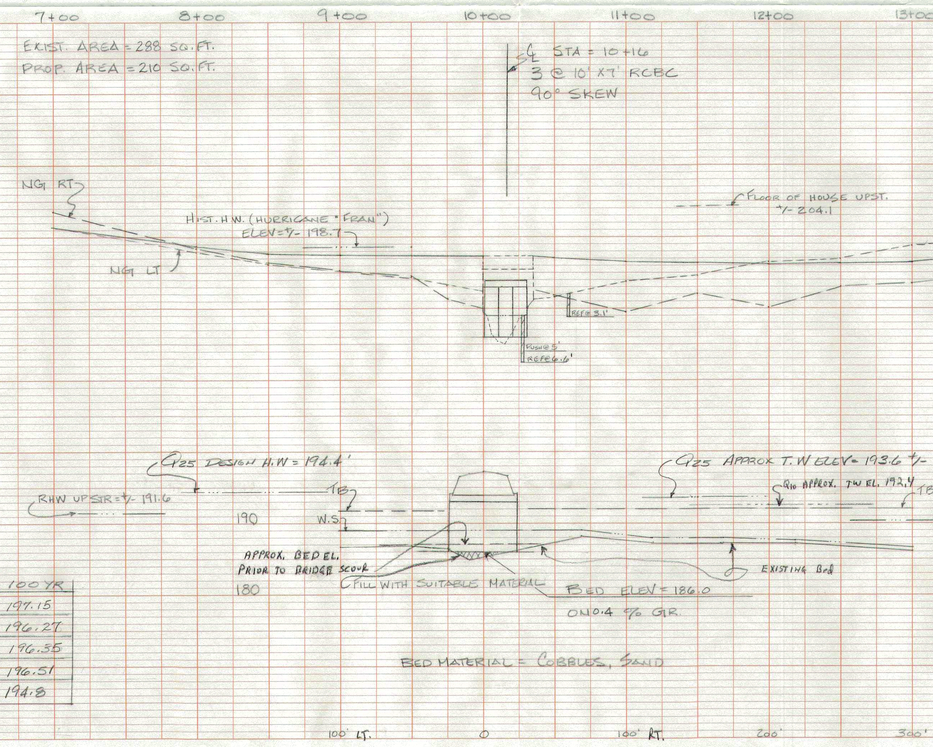
COMP'S FROM "HEC-2"

NOTE: NOTIFY COUNTY FOR BENCHMARK WILL BE DESTROYED DURING CONSTRUCTION.

RM #26: PK NAIL IN S.E. ABUT OF SR 1516 BRIDGE OVER EAST BUIES CR. ELEV. = 197.08

TBM: 1 BRIDGE NAIL IN BASE OF 24" SWEETGUM 32' RT OF STA. 11+54. ELEV = 192.46





	10YR	25YR	50YR	100YR
PROP. W/FRONT				197.15
PROP. EL.	192.86	194.42	195.14	196.27
CORRECTED	193.30	194.76	195.32	196.35
DUPLICATE	193.36	194.85	195.68	196.51
APPROX TW	192.4	193.6	194.1	194.8

NOTE: THIS SITE IS LOCATED IN A 100 YR. FLOOD ZONE WITH A DETAILED STUDY.

D.A. = 5.3 SQ. MI.
Q10 = 511 CFS - F/S
Q25 = 900 CFS - USGS GENERAL
Q100 = 1432 CFS - F/S

PERMIT REQUIREMENTS:
AVG. DAILY FLOW = 6.4 CFS
FILL IN WETLANDS = NONE
FILL IN WATERS = +-0.02AC
CO.E. # 14 APPLICABLE

OVERTOPPING INFO:
ELEV. = 196.2
FREQ. = 100 -
DISCH. = 14100 CFS ±-

EXIST. BRIDGE INFO:
R.C. FLOOR ON TIME JOISTS
2 SPANS, OAL = 35.5'
CL. RDWY = 24.0'

HIST. H.W. INFO:
LOCAL RESIDENT 40 YRS.
OVERTOPS DURING BIG STORMS.
WASHED OUT DURING HURRICANE "FRAN" 10/96.
ELEV = ±- 198.7
AVG BIG STORM ELEV: = ±- 195.1

DEBRIS POTENTIAL = MODERATE DUE TO DOWNED TREES.

UP STR. @ NC 55 = 1@5'x5' RCBC
DN STR @ SR 2002 - BRG# 11
DN STR @ SR 2084 - 3@8'x8' RCBC
* UP STR @ CAMPBELL UNIV. CROSS COUNTRY COURSE: 2@8'x4' RCBC

HEC-2 = HARNTO.DAT ON HY18 P.C.C.

N.C. D.O.T.
DIVISION OF HIGHWAYS
HARNETT CO.
BRG# 10 SR 1516
OVER EAST BUIES CR.
B-2984
SCALE: 1" = 50' HORIZ.
1" = 10' VERT.
SURVEY BY: JEL, KAS, RLL
DRAWN & DESIGNED: JEL
CHECKED BY: RED
6,503368

NORTH CAROLINA PROFESSIONAL SEAL 15689 ENGINEER CIVIL
3-13-00

6,503368

PLAN — SURVEYED, PLOTTED, ALIGNMENT CHECKED, RT. OF WAY CHECKED, NOTE BOOK, No., BY, DATE

PROFILE — SURVEYED, PLOTTED, GRADES CHECKED, S.M.'s NOTED, STRUCTURE NOTATIONS CHECKED, NOTE BOOK, No., BY, DATE

209'x9'

0 1 2 3 4 5 6

℄ Sta. 3+45
3 @ 30' I-Beam Spans - 30° L.H. Skew.
Cr. Grade Elev. 102.0

100

Ordinary H.W. 6' above str. bed.

H.W.

90

Post & Beam Bents

Piles

Elev. Footings 85.0

D.A. = 6.3 Sq. mi.
Tal. C = 0.4
Waterway Req. = 202 □'

Present Bridge
Cl. Rdwy 17.5'
1 @ 15.0', 4 @ 17.0'
Wooden Piers
11 - 4"x12" Stringers
Poor Condition
Posted 6 Tons

BUIE'S CREEK

Woods

Woods

Spring

Cult

0.2 mi ⇐ 40

18'BST

To Buie's Creek ↑

Woods

Woods

Cult

EAST

HARNETT COUNTY
EAST BUIE'S CREEK
BRIDGE NO. 11
Scale Horz. 1"=50'
VERT 1"=10'
AUGUST 1954 J.J.B.

Upstream Structure

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE Run Date: 11/29/2016

COUNTY :	DIVISION :	DISTRICT:	STRUCTURE NUMBER :	LENGTH :
HARNETT	6	2	420010	31 FEET

ROUTE CARRIED : SR1516

FEATURE INTERSECTED : EAST BUIES CREEK

LOCATED : 0.6 MI. W. JCT. SR1006

BRIDGE NAME :

CITY :

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
09	NFA	NFA	1100 2013	LT 0 RT 0

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
2001	POC	6.503368		HS 20 + MOD

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :
			TAN.	90	ON 2 UNDER 0

NAVIGATION :		HT. CRN. TO BED :	WATER DEPTH :
VC 0 FT	HC 0 FT	10 FT	3 FT

SUPERSTRUCTURE : DOUBLE 15X7RC BOX CULVERT,50'ALONG C/L OF CULVERT

SUBSTRUCTURE :

SPANS :

BEAMS OR GIRDERS :

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
		0 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :
0 FT	0 FT	LT 0 FT RT 0 FT

VERT.CL.OVER :
999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :		
HS-24	HS-32	RCBC	SV	TTST	DATE 07/25/2001

SYSTEM : Secondary S.R. Route

GREEN LINE ROUTE : N

UNDER ROUTES AND CLEARANCES

REMARKS :

Down Stream structure

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE Run Date: 12/07/2016

COUNTY :	DIVISION :	DISTRICT:	STRUCTURE NUMBER :	LENGTH :
HARNETT	6	2	420245	32 FEET

ROUTE CARRIED : SR2054

FEATURE INTERSECTED : EAST BUIES CREEK

LOCATED : 0.1MI.N.US421&NC27

BRIDGE NAME :

CITY :

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :		RAIL TYPE :			
09	NFA	NFA	2300	2009	LT	281	RT	281

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
1923	SHC	437		H 15

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :		
			TAN.	90	ON 2	UNDER	0

NAVIGATION :					HT. CRN. TO BED :		WATER DEPTH :	
VC	0	FT	HC	0 FT	11	FT	3	FT

SUPERSTRUCTURE : REINFORCED CONCRETE THRU GIRDER

SUBSTRUCTURE : REINFORCED CONCRETE FULL HEIGHT ABUTMENTS

SPANS : 1@31'7

BEAMS OR GIRDERS : RC THRU GIRDERS

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
17" RC/ 5" AWS		24.833 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :			
20 FT	20.917 FT	LT	.4585 FT	RT	.4585 FT

VERT.CL.OVER : 999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :				
HS-12	HS-20	thruGird	SV	21	TTST	27	DATE 09/10/2008

SYSTEM : Secondary S.R. Route

GREEN LINE ROUTE : N

UNDER ROUTES AND CLEARANCES

REMARKS :