

PREDESIGN-PRESURVEY REPORT

Project#
TIP# B-5693
Let Date
WBS#

County ROBESON

Bridge# 770059
Road# SR1924
Stream BIG MARSH SWAMP
Assigned To

Type Of Request: POC Force Account TIP NCMA POT. DIES/BUILD

Date 11-2015 Name JLL

Checked By

Prior Survey Date MARCH 1954 (attach copy of prior survey)

model available
on FMS

Study By Scour Section attached

Flood Zone LIMITED Detail Study L Date 1-5-07 Panel#

0326 overtops

B.M. Info

Quad Map Q25 3000 Drainage Area 61 sq. miles From STREAM STAYS
Q50 3600 Q100 4400 Method USGS 2009-5158

61 sq. mile DA.

DA 86 sq. miles from old survey.

USGS Selected Sites DA = 60.2

EXISTING BRIDGE INFORMATION

Location SR1924 ± 1.2 mi. South of Jct. NC 20

Average Daily Traffic 2700 in 2011

Length 155' Bed- To Crown 12' Water Depth 5'

Type Structure conc. flume on I-beams

Type Spans 20 spans

Upstream Structure Nothing comparable

Location

Bed- To Crown Prior Survey

Downstream Structure Nothing comparable.

Location

Bed- To Crown Prior Survey

SCS Watershed

ENVIRONMENTAL

Trout Stream NO Anadromous Fish NO Primary Nursery Area NO

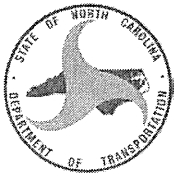
High Quality Waters NO Nutrient Sensitive Waters NO

Near Water Supply Intake NO CAMA County NO

Stream Classification C, Sw

DENR River Basin Info. CAPE PRAR

OFFICE ESTIMATE BRIDGE LENGTH 155'



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION PM ISSUED / SHORED STRUCTURE / TEMP REPAIRS /
STRUCTURE DATA CHANGES

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY ROBESON BRIDGE NUMBER 770059 INSPECTION CYCLE 2 YRS
ROUTE SR1924 ACROSS BIG MARSH SWAMP M.P. 0

LOCATION 1.2 MI.S.JCT.NC20

SUPERSTRUCTURE REINFORCED CONCRETE FLOOR ON CONT I-BEAMS

SUBSTRUCTURE EBTS&IBTS:RC CAPS/TIM.PILES,TIM.CRUTCH BTS&CROSS CAPS

SPANS 20 SPANS VAR.CTS.SEE WORK SHEET

LONGITUDE 78° 55' 21.76" LATITUDE 34° 46' 55.61"

INSPECTION DATE 05/13/2014 PRESENT CONDITION FAIR

PRESENT POSTING N NOT POSTED PROPOSED POSTING _____

OTHER SIGNS PRESENT 4 DELINEATORS



LOOKING NORTH (BARKER TEN MILE ROAD)

Fracture Critical	<u>No</u>
Temporary Shoring	<u>Yes</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	_____

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 06/17/2014

COUNTY :	DIVISION :	DISTRICT :	STRUCTURE NUMBER :	LENGTH :	
ROBESON	6	1	770059	155	FEET

ROUTE CARRIED :	FEATURE INTERSECTED :
SR1924	BIG MARSH SWAMP

LOCATED :	BRIDGE NAME :	CITY :
1.2 MI.S.JCT.NC20		

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
09	NFA	NFA	2700 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 :	VC	0	FT	HC	0	FT	HT. CRN. TO BED :	12	FT	WATER DEPTH :	5	FT
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SUPERSTRUCTURE : REINFORCED CONCRETE FLOOR ON CONT I-BEAMS

SUBSTRUCTURE : EBTS&IBTS:RC CAPS/TIM.PILES,TIM.CRUTCH BTS&CROSS CAPS

SPANS : 20 SPANS VAR.CTS.SEE WORK SHEET CONT.

BEAMS OR GIRDERS : 12 LINES 4X12 CONT.I-BEAMS @ 2'2.75 CENTERS

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
5 RC/4 AWS		25.33 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :
24 FT	25.5 FT	LT .75 FT RT .75 FT

VERT.CL.OVER :
999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :	TTST	28	DATE	06/16/2014
HS-1	HS-1	I-Bm@1 ft	SV 19				

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

UNDER ROUTES AND CLEARANCES

REMARKS :

DOWNSTREAM			UPSTREAM		
Distance (Station) (ft)	Sounding (ft)	Description	Distance (Station) (ft)	Sounding (ft)	Description
145.5	7.7	BENT 19	145.5	9	BENT 19
154.6	7.8	GROUND AT CAP	154.6	8.3	BED AT CAP
154.8	4	Top of Cap			
155	2.7	TOP OF BULKHEAD			

$$\begin{array}{r}
 14.4 \\
 4.0 \\
 \hline
 10,4 \times 1.5 \times 2 = 31.2 + 20 = 51.2 + \frac{113.60}{53} = 104.2 \text{ say } 105
 \end{array}$$

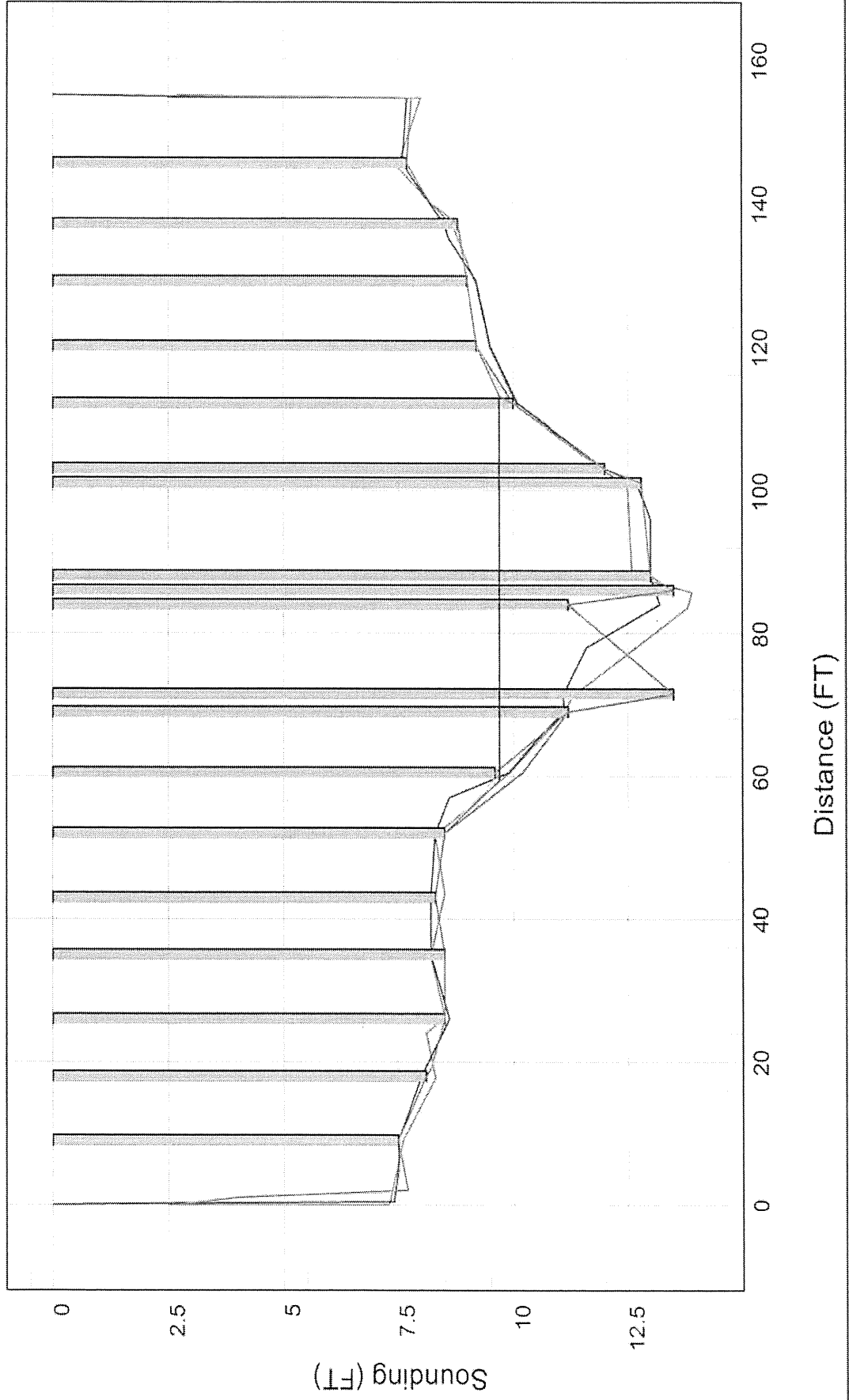
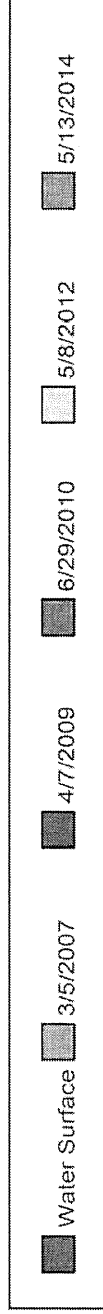
Bridge: 770059

County ROBESON

Date: 05/13/2014

STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)







Unknown Foundation Determination

Substructure Report

**Robeson County #770059
SR 1924 over Big Marsh Swamp**

FDH Project # 04-0101E(334)

Submitted by:

A handwritten signature in cursive script, reading "J. Darrin Holt".

J. Darrin Holt, Ph.D., P.E.
President

FDH Engineering, Inc.
PO Box 33037 Raleigh, NC 27636-3037
T: (919) 755-1012 F: (919) 755-1031
www.fdh-inc.com
info@fdh-inc.com

July 7, 2005



Report Submitted to: Mr. Jerry Beard. PE
NCDOT Hydraulics Unit
1590 Mail Service Station
Raleigh, NC 27695-1590

Facility Carried: SR 1924

Feature: Big Marsh Swamp

Original Construction: 1955 **Year Reconstructed:** 1985/1987 **ADT:** 2800 (2001)

Work Performed: Site visit, records search

Substructure Type: Timber Piles

No. of Interior Bents: 19 Total (includes 8 original bents, 11 added bents) plus 4 crutch bents

Piles per Bent: 4 Timber piles at the end bents and interior bents.

Reference Document(s):

Pile Driving Records for the added bents in 1985 and 1987.

Field Work Performed and Comments / Field Observations:

No noticeable scour had occurred at this bridge. Evidence suggests water line does get near the bottom of the pile caps. Water had low flow the day of our visit.

Information used for evaluating the foundation

- Pile Driving Records

Conclusions

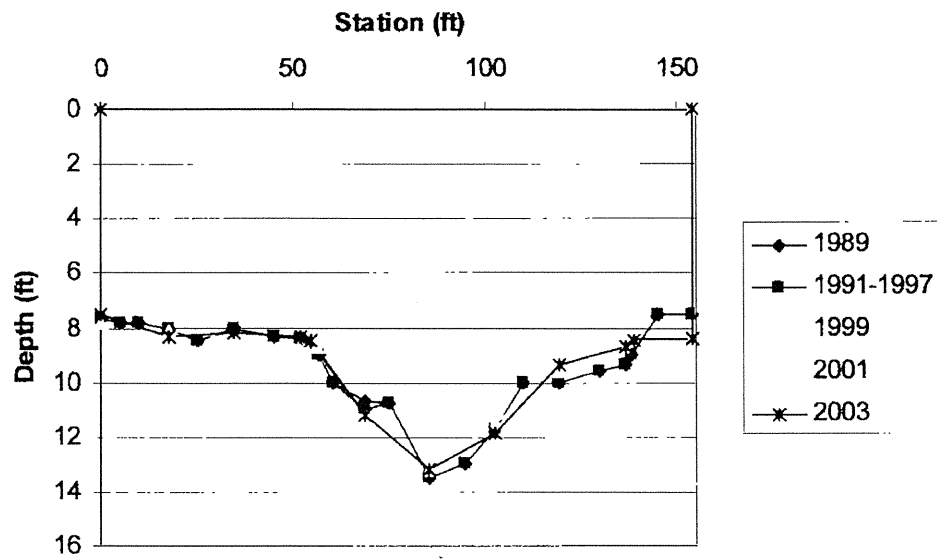
This structure had eight (8) original timber pile supported bents with reinforced concrete caps in 1955. In 1985, four (4), two (2) pile crutch bents, with timber caps, were added and pile records exist. In 1987, 11 additional timber pile bents with timber caps were added between and next to the original bents. Pile records also exist for these piles.

See the attached CAD drawings for the specifics and copies of the pile driving records.

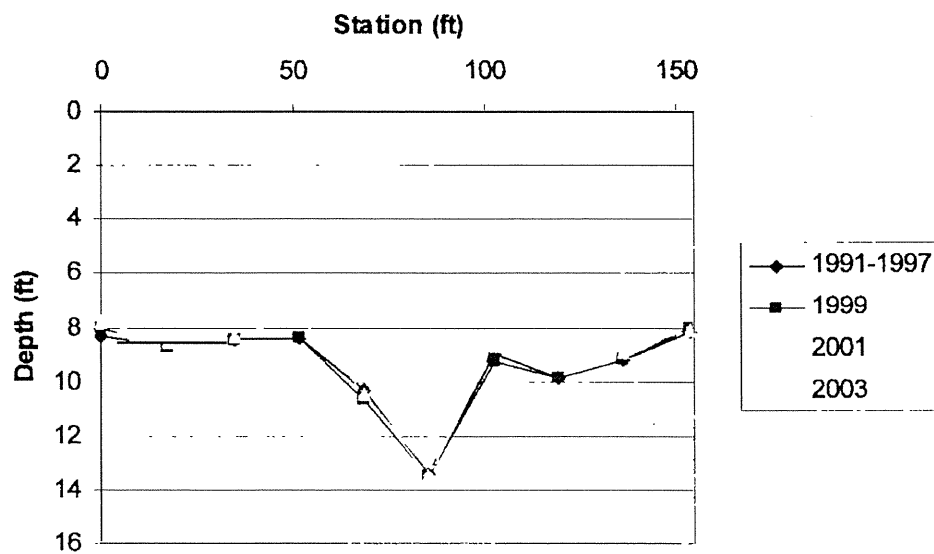
General Comments

Professional judgments are incorporated into this report. These are based on our evaluations of field information gathered, on our understanding of the characteristics of the project, and on our experience and capabilities with the topic of unknown foundations. We guarantee only that our work and judgments rendered meet the standard of care of our profession.

Robeson Co. #770059
Downstream Cross Section (from top of rail)



Robeson Co. #770059
Upstream Cross Section (from top of rail)



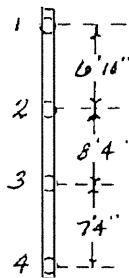
PILE RECORD

Height of Hammer DIESEL ICE MODEL 180
 Drop used for test, "H" in feet _____

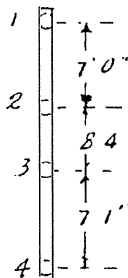
Bridge No. 59
 County ROBERTSON
 Bent No. 1, 3 & 5

SKETCH SHOWING LOCATION OF PILES

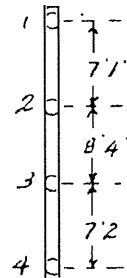
BENT 1



BENT 3



BENT 5



Pile No.	Beginning Length	Cut-Off	Length in Place	Embedded Length	Penetration Last 5 Blows	Computed Bearing Tons	Date Driven	Initial
BENT #1								
1	27'6"	5'	22'6"	16'6"	2 7/8"	20.9	11-16-87	OEX
2	27'6"	5'	22'6"	17'6"	2 3/4"	21.6	11-16-87	OEX
3	27'	3'6"	23'6"	19'0"	2 1/2"	23.1	12-1-87	OEX
4	28'	4'	24'	21'0"	2 5/8"	22.3	12-1-87	OEX
BENT #3								
1	27'6"	4'	23'6"	19'	2 3/4"	21.6	11-17-87	OEX
2	27'6"	4'8"	22'10"	18'	2 3/4"	21.6	11-17-87	OEX
3	27'	3'6"	23'6"	18'6"	2 1/8"	20.9	11-24-87	OEX
4	28'	3'6"	24'6"	20'	3"	20.3	11-24-87	OEX
BENT #5								
1	27'6"	3'8"	23'4"	19'4"	2 3/4"	21.6	11-17-87	OEX
2	27'	4'4"	22'8"	18'4"	2 7/8"	20.9	11-17-87	OEX
3	27'	3'6"	23'6"	19'6"	2 5/8"	22.3	11-24-87	OEX
4	28'	4'	24'	19'8"	2 3/4"	21.6	11-24-87	OEX

REMARKS: Note anything that may affect the bearing capacity of piles.

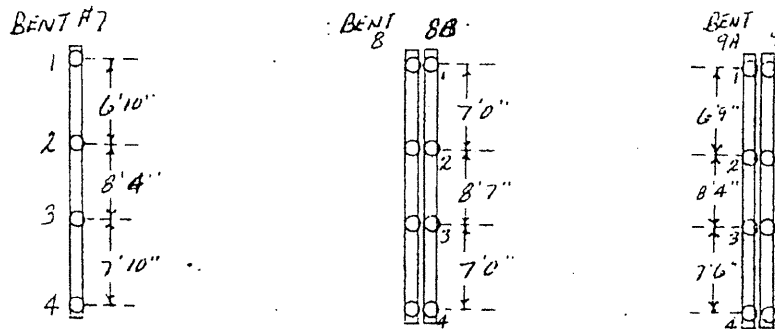
ALL BENTS CONSIST OF TIMBER PILE, 12"X12"X26' TIMBER CAP,
 12"X12"X26' TIMBER PILE, 12"X12"X26'

PILE RECORD

Type of Hammer DIESEL ICE MODEL 180
 Sledge used for test, "H" in feet _____

Bridge No. 59
 County ROBESON
 Bent No. 7, 8B, 9A

SKETCH SHOWING LOCATION OF PILES



Pile No.	Beginning Length	Cut-Off	Length in Place	Embedded Length	Penetration Last 5 Blows	Computed Bearing Tons	Date Driven	Initial
BENT #7								
1	27'6"	4'8"	22'10"	19'	2 3/8"	22.3	11-17-87	DEX
2	27'	4'	23'	19'	2 3/8"	22.3	11-17-87	DEX
3	27'	3'6"	23'6"	19'6"	2 3/4"	21.6	11-24-87	DEX
4	30'	4'	26'	21'8"	3"	20.3	11-24-87	DEX
BENT #8B								
1	27'6"	4'2"	23'4"	17'6"	2 3/4"	21.6	11-18-87	DEX
2	27'	3'6"	23'6"	17'6"	2 3/4"	21.6	11-18-87	DEX
3	30'	4'	26'	20'	2 1/2"	23.1	11-23-87	DEX
4	30'	3'6"	26'6"	20'4"	2 1/2"	23.1	11-23-87	DEX
BENT #9A								
1	30'	4'4"	25'8"	18'	2 1/2"	23.1	11-18-87	DEX
2	30'	4'	26'	18'2"	2 1/2"	23.1	11-18-87	DEX
3	30'	3'6"	26'6"	18'4"	2 1/2"	23.1	11-24-87	DEX
4	30'	4'	26'	18'6"	2 1/2"	23.1	11-24-87	DEX

REMARKS: Note anything that may affect the bearing capacity of piles.

PILE RECORD

ght of Hammer DIESEL ICE MODEL 180

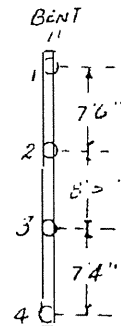
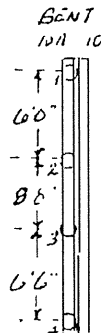
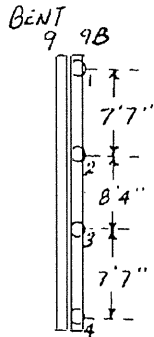
Drop used for test, "H" in feet _____

Bridge No. 59

County ROBESON

Pile No. 98, 10A, 11

SKETCH SHOWING LOCATION OF PILES



Pile No.	Beginning Length	Cut-Off	Length in Place	Embedded Length	Penetration Last 5 Blows	Computed Bearing Tons	Date Driven	Initial
BENT #98								
1	30'	6'6"	23'6"	16'	2 3/4	21.6	11-19-87	QEX
2	30'	3'6"	26'6"	18'	2 1/2	23.1	11-19-87	QEX
3	30'	4'	26'	18'	2 1/2	23.1	11-23-87	QEX
4	30'	4'	26'	18'6"	2 1/2	23.1	11-23-87	QEX
BENT #10A								
1	30'	10'	20'	16'	3 3/4	21.4	9-4-85	QEX
2	30'	3'8"	26'6"	21'6"	2 1/2	23.1	11-2-87	QEX
3	30'	3'6"	26'6"	20'6"	2 1/2	23.1	11-23-87	QEX
4	40'	23'	17'	14'	4 3/8"	19.3	9-3-85	QEX
BENT #11								
1	30'	4'4"	25'8"	21'8"	2 1/2	23.1	11-18-87	QEX
2	27'	3'6"	23'6"	18'6"	2 7/8	20.9	11-19-87	QEX
3	30'	7'	23'	17'6"	2 1/2	23.1	11-23-87	QEX
4	30'	3'6"	26'6"	20'6"	2 3/4	21.6	11-23-87	QEX

REMARKS: Note anything that may affect the bearing capacity of piles.

* PILES 1 & 4 BENT #10A WERE DRIVEN 9-85 USING A 3000 LB. HAMMER WITH AN 8' DROP USED FOR TEST.

PILE RECORD

ght of Hammer DIESEL ICE MODEL 120

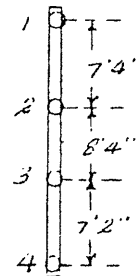
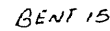
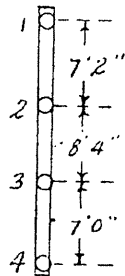
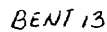
rop used for test, "H" in feet _____

Bridge No. 59

County ROBESON

Bent No. 13 & 15

SKETCH SHOWING LOCATION OF PILES

[illegible]

REMARKS: Note anything that may affect the bearing capacity of piles.



FDH
FEDERAL DESIGN & HOLDINGS
337 S. PULSON DRIVE
RALEIGH, NC 27608
PHONE (919) 750-1012
FAX (919) 750-1011



DATE 7/20/03
DRAWN BY B.L.G.
CHECKED BY J.D.H.
JOB NO. 04-0101E (A34)

SUBMITTALS		
DATE	DESCRIPTION	NOY
02/14/08	AS BUILT DRAWINGS	1

Stream Bed Soundings

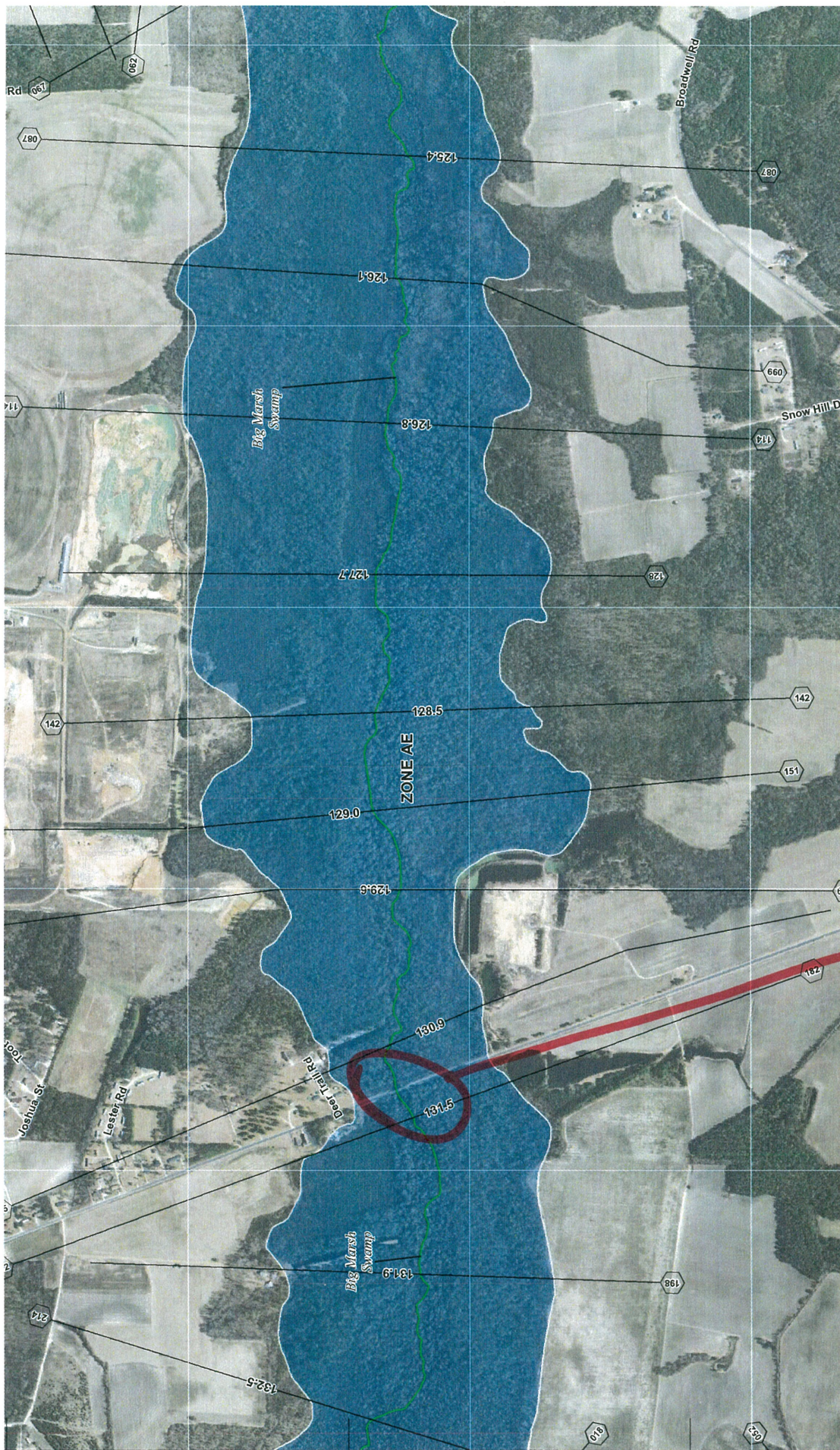
(See next sheet for profile sketch)

Bridge No: 770059 County: ROBESON Date: 05/13/2014 By: RDH

Record sounding from top of rail. Other location if needed: TOP OF RAIL

Distance from Highwater Mark to top of rail: 6.5 Location of Highwater Mark: ON PILES

DOWNSTREAM			UPSTREAM		
Distance (Station) (ft)	Sounding (ft)	Description	Distance (Station) (ft)	Sounding (ft)	Description
0	2.7	TOP OF BULKHEAD			
1	4	Top of Cap			
2	7.7	GROUND AT CAP	2	8.5	BED AT CAP
9	7.5	BENT 1	9	9.4	BENT 1
18	8.1	BENT 2	18	8.5	BENT 2
19	8.2				
26	8.5	BENT 3	26	8	BENT 3
35	8.5	BENT 4	35	8.4	BENT 4
43	8.3	BENT 5	43	8	BENT 5
52	8.5	BENT 6	52	7.7	BENT 6
59.5	9.7	WSWE (EAST)			
60.5	9.6	BENT 7	60.5	7.7	BENT 7
69	11.2	BENT 8	69	11	BENT 8
71.5	13.5	BENT 9	71.5	11.5	BENT 9
84	11.2	BENT 10	84	13.3	BENT 10
86	13.5	BENT 11	86	13.8	BENT 11
88	13	BENT 12	88	13.5	BENT 12
101	12.8	BENT 13	101	14.4	BENT 13
103	12	BENT 14	103	9.2	BENT 14
112	10	BENT 15	112	9.3	BENT 15
113	9.7	WSWE			
120	9.2	BENT 16	120	9.5	BENT 16
129	9	BENT 17	129	9.2	BENT 17
137	8.8	BENT 18	137	9	BENT 18
140	8.2				



ROAD 57

StreamStats Version 3 Beta**Basin Characteristics Ungaged Site Report**

Date: Wed Nov 25, 2015 3:00:44 PM GMT-5

NAD 1983 Latitude: 34.7822 (34 46 56)

NAD 1983 Longitude: -78.9226 (-78 55 22)

Label	Value	Units	Definition
DRNAREA	61.1	square miles	Area that drains to a point on a stream
PCTREG1	0	percent	Percentage of drainage area located in Region 1
PCTREG2	0	percent	Percentage of drainage area located in Region 2
PCTREG3	0	percent	Percentage of drainage area located in Region 3
PCTREG4	100	percent	Percentage of drainage area located in Region 4
LC11IMP	0	percent	Percentage of impervious area determined from NLCD 2011 impervious dataset

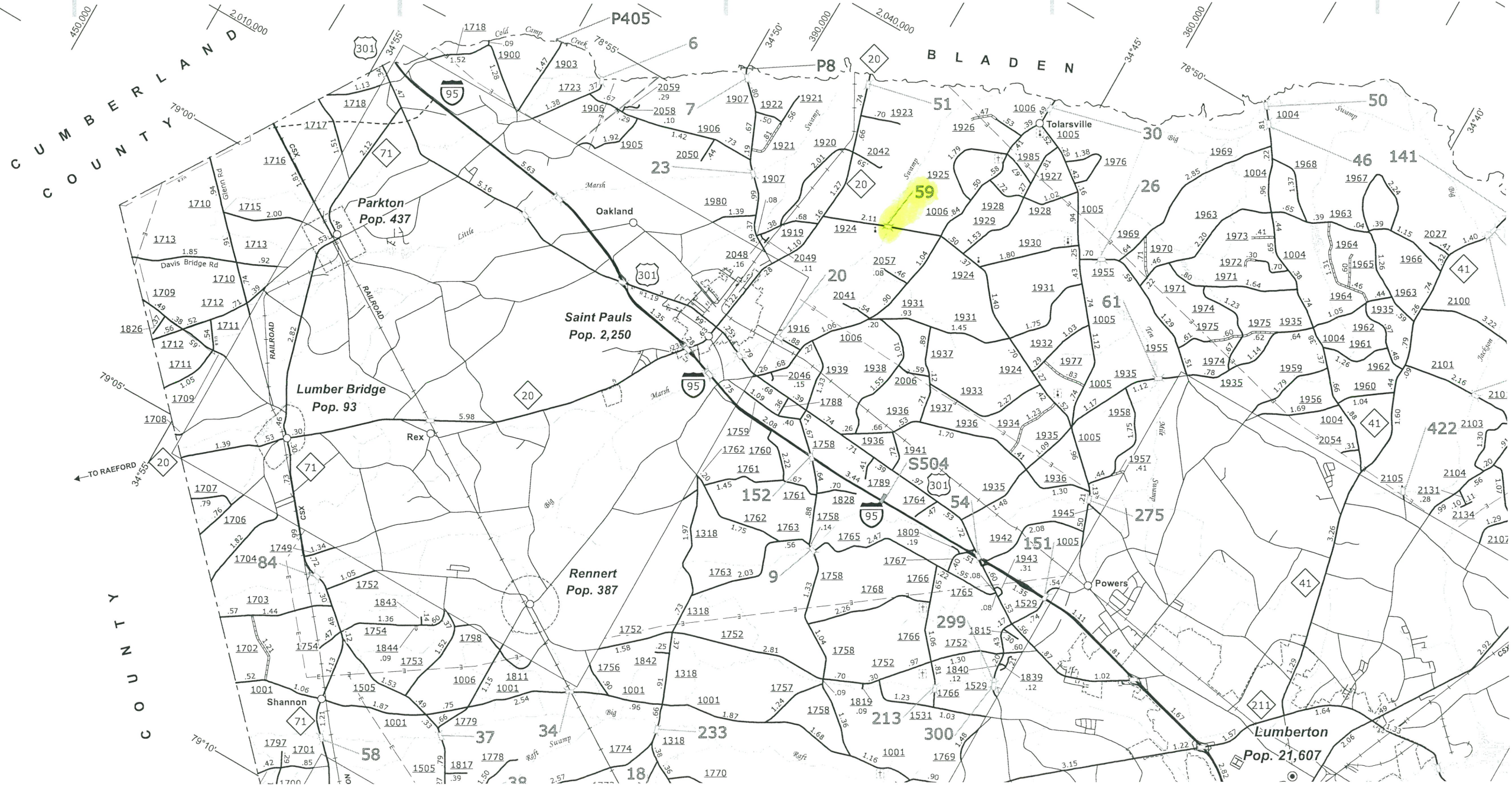
[Accessibility](#)[FOIA](#)[Privacy](#)[Policies and Notices](#)

U.S. Department of the Interior | U.S. Geological Survey

URL: http://streamstatsags.cr.usgs.gov/v3_beta/BCreport.htmPage Contact Information: [StreamStats Help](#)[Streamstats Status](#)[News](#)

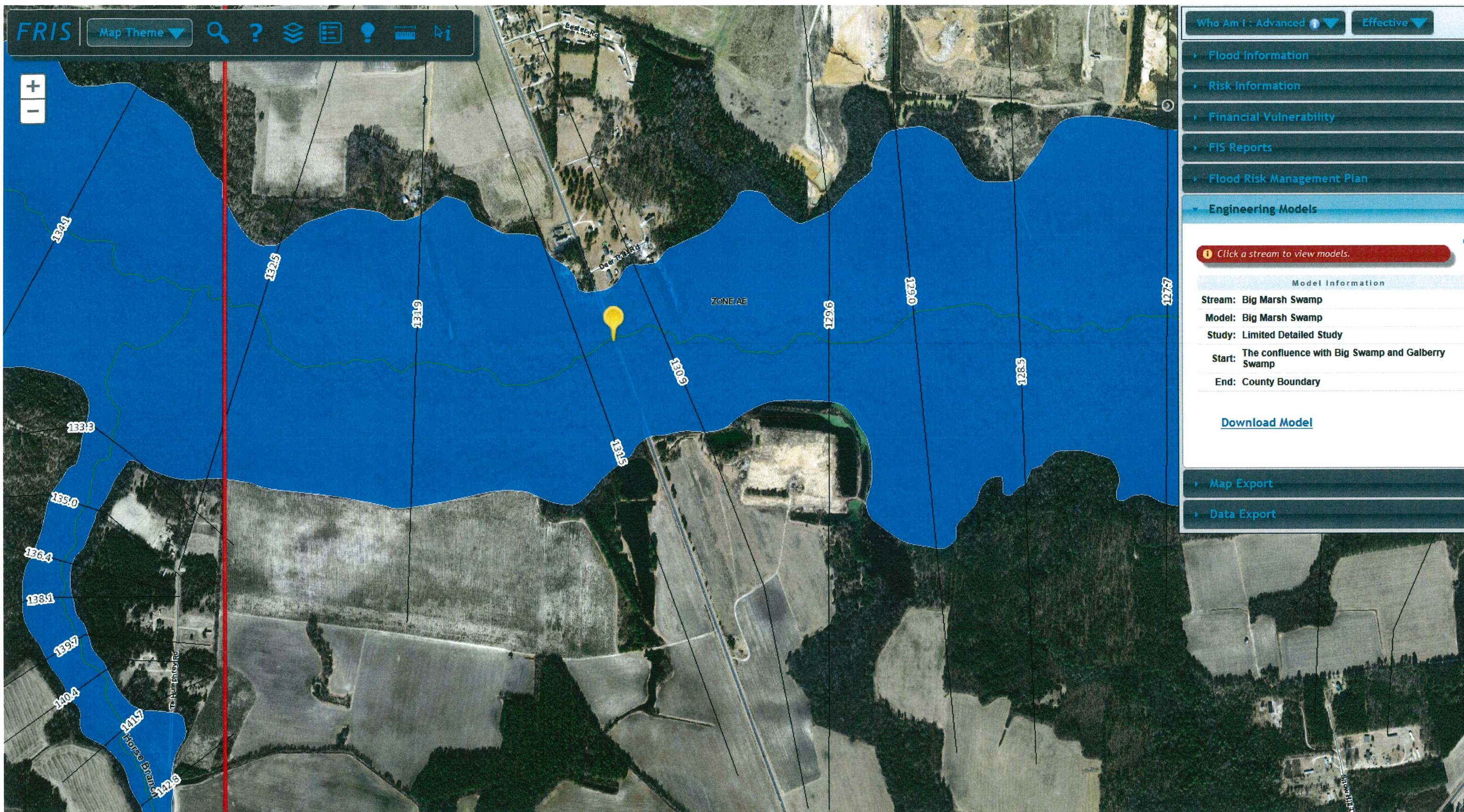
Page Last Modified: 08/24/2015 15:42:48 (Web2)

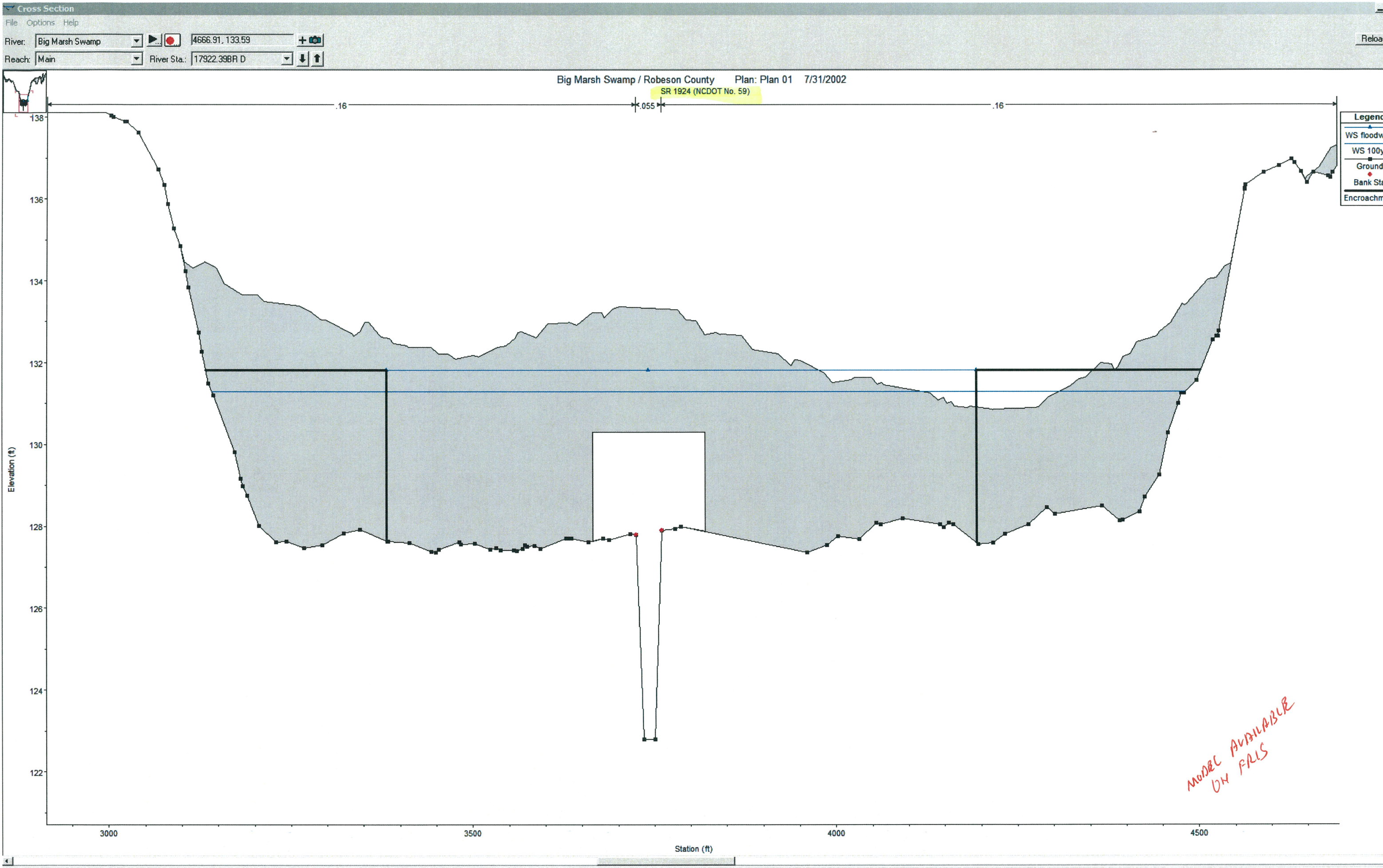




Refers to 59





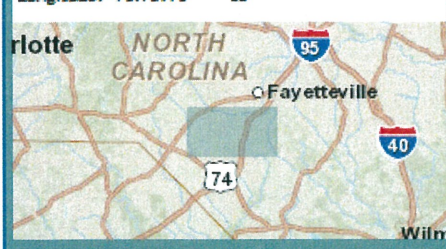


Select on a tool on the toolbar. If the icon remains depressed, click on the map to perform the desired action.

- NC Map Layers**
- ☒ Streamgages
 - ☒ Area of Limited Functionality
 - ☒ North Carolina
 - ☒ Stream Grid
 - ☒ Study Area Bndys
- Base Layers**
- ☐ Imagery
 - ☐ Street Map
 - ☐ World Topo
 - ☐ USA Topo
 - ☐ Canadian Topo
 - ☒ TNM Topo

0 1 2mi
Scale: 1 : 144,448

Latitude: 34.85381
Longitude: -78.78976 SS



StreamStats

Delineation Results

Be sure to thoroughly check the delineated basin for accuracy before using the tools below.

