

Hydraulics Unit Pre-Design Report (Pre-Scoping) for Structure #: 960733

Date: 01/07/2020

County: Wilkes	Stream: Cub Creek	Assigned to:
Road #: SR 2516	Road Name: Industrial Park Rd	Prepared By: HPM/WSH
Division: 11	Location: 0.6 mi W JCT SR 1001 (Brushy Mtn Rd)	Hydro Reviewer: MTS/JLM
Latitude: 36.13315	Longitude: -81.15497	Project Type: 17BP.11.R.154

Existing Structure

Structure Type: Steel Deck/I Beams	Yr Built: 1974			
Span Arrangement: 1 @ 35'-10"	OAL (ft): 36.0	Skew: 60	Abutment Type: Vertical -Timber	
Number of Barrels: @ Span (ft): x Rise (ft):				
Bed to Crown (ft): 14.0	Clear Roadway (ft): 24.1	Water Depth (ft): 2.0	Superstructure Depth:	
ADT: 900	Year ADT: 1996	Scour Code (item113): U	Prior Survey Completed: No	Survey Date:
Drainage Area: 12.1 Sq. Mi.	Drainage Area Source: USGS Stream Stats	Roadway Overtops at Q100: Yes		
Discharge Method: USGS Regression Equations	USGS Region: 2- Mountains	Stream Gage Number(if applicable):		
Q10 (cfs): 2,000.0	Q25 (cfs): 2,600.0	Q50 (cfs): 3,100.0	Q100 (cfs): 3,700.0	QBFE (cfs): 7,443.0
Structure in Flood Hazard Zone: Yes	Panel #: 3867	Panel Date: 03/02/2009	Type of FIS: LIMITED	Date of FIS:

Environmental

Quad Map: WILKESBORO, NC	River Basin: Yadkin-Pee Dee	Buffer Rule:			
Primary Stream Classification		Other Stream Classification			
☐ Class B	☒ Class C	☐ SA	☐ SB	☐ Anadromous Fish	☐ Area of Environmental Concern
☐ SC	☐ SWL	☐ WL	☐ WS I	☐ CAMA County	☐ Federal Wild & Scenic Rivers
☐ WS II	☐ WS III	☐ WS IV	☐ WS V	☐ HSB Required	☐ NC Natural & Scenic Rivers
Supplemental Stream Classification		☐ Impaired [303d]	☐ Primary Nursery Area	☐ TVA	☐ Designated Shellfish Harvesting Area
☐ FWS	☐ HQW	☐ NSW	☐ ORW	☐ Designated Public Mountain Trout Waters	
☐ Sw	☐ Tr	☐ UWL	☐ w/in 0.5mi. of CA		

Up/Down Stream Features

Upstream Feature: Bridge	Structure Type: Cored Slab		
Location: 125 ft W JCT SR 2588 (Walnut Way)	Span Arrangement: 1 @ 41'-3", 1 @ 56'-3"	OAL (ft): 98.0	
Structure #: 960028	Route: SR 2467	Number of Barrels: @ Span (ft): x Rise (ft):	
Latitude: 36.10121	Longitude: -81.16582		
Prior Survey Completed: Yes	Survey Date: 08/01/1967	Bed to Crown (ft): 13.0	Year Built: 2009
Downstream Feature: Culvert	Structure Type: RCBC		
Location: 0.4 mi S JCT NC 16/NC 18	Span Arrangement:	OAL (ft):	
Structure #: 960080	Route: US 421 BYP	Number of Barrels: 3 @ Span (ft): 12.0 x Rise (ft): 11.0	
Latitude: 36.13584	Longitude: -81.15483		
Prior Survey Completed:	Survey Date:	Bed to Crown (ft): 40.0	Year Built: 1966

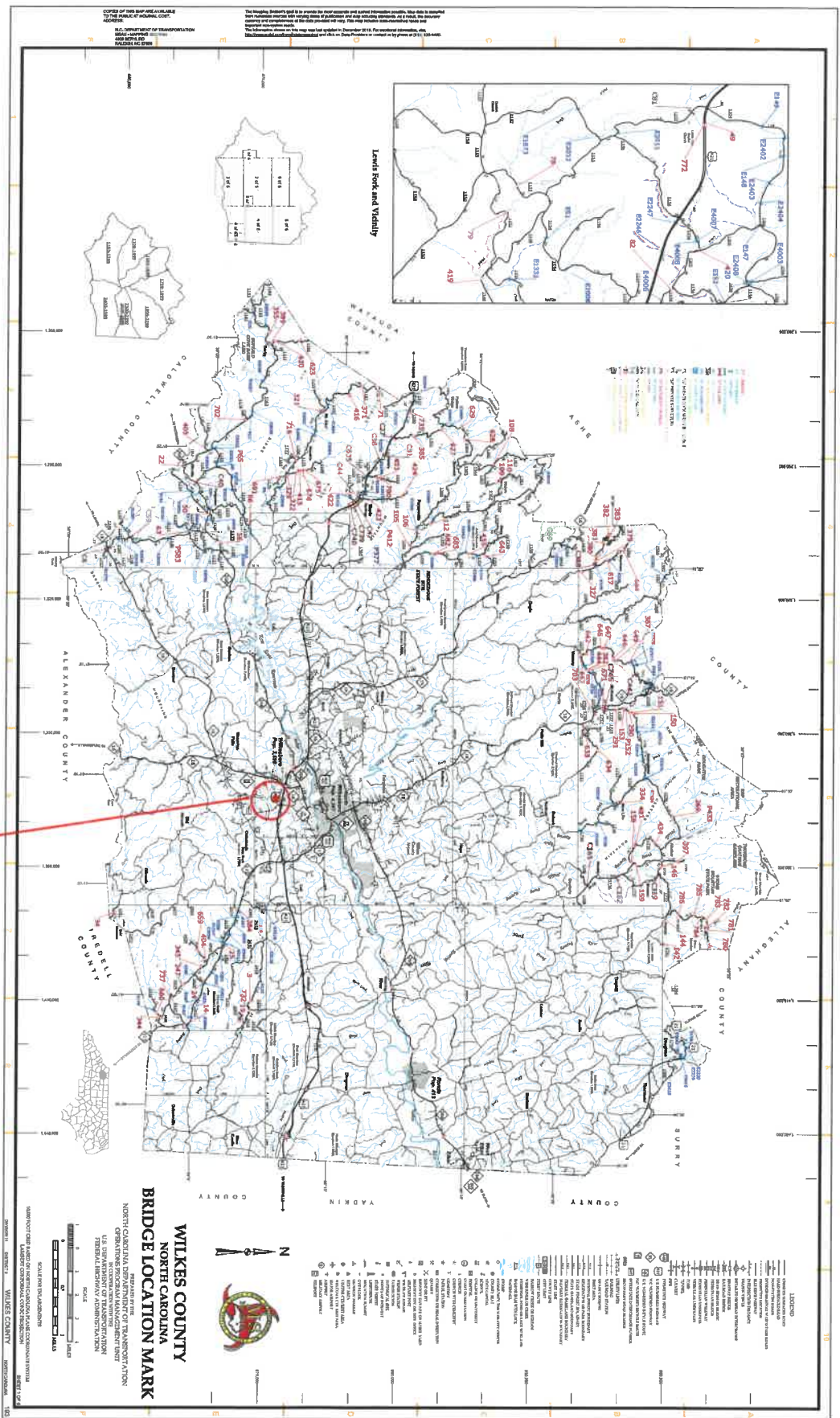
Preliminary Structure Estimate [Office Estimate]

Structure Type:	Skew:
Dimensions/Spans:	

Notes

Stream #: 12-41

960733



#733

[illegible][illegible]

WILKES COUNTY
NORTH CAROLINA

PREPARED BY THE
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
OPERATIONS PROGRAM MANAGEMENT UNIT
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

[illegible]

10,000 FOOT GRID BASED ON NORTH CAROLINA PLANE COORDINATE SYSTEM
LAMBERT CONFORMAL CONIC PROJECTION

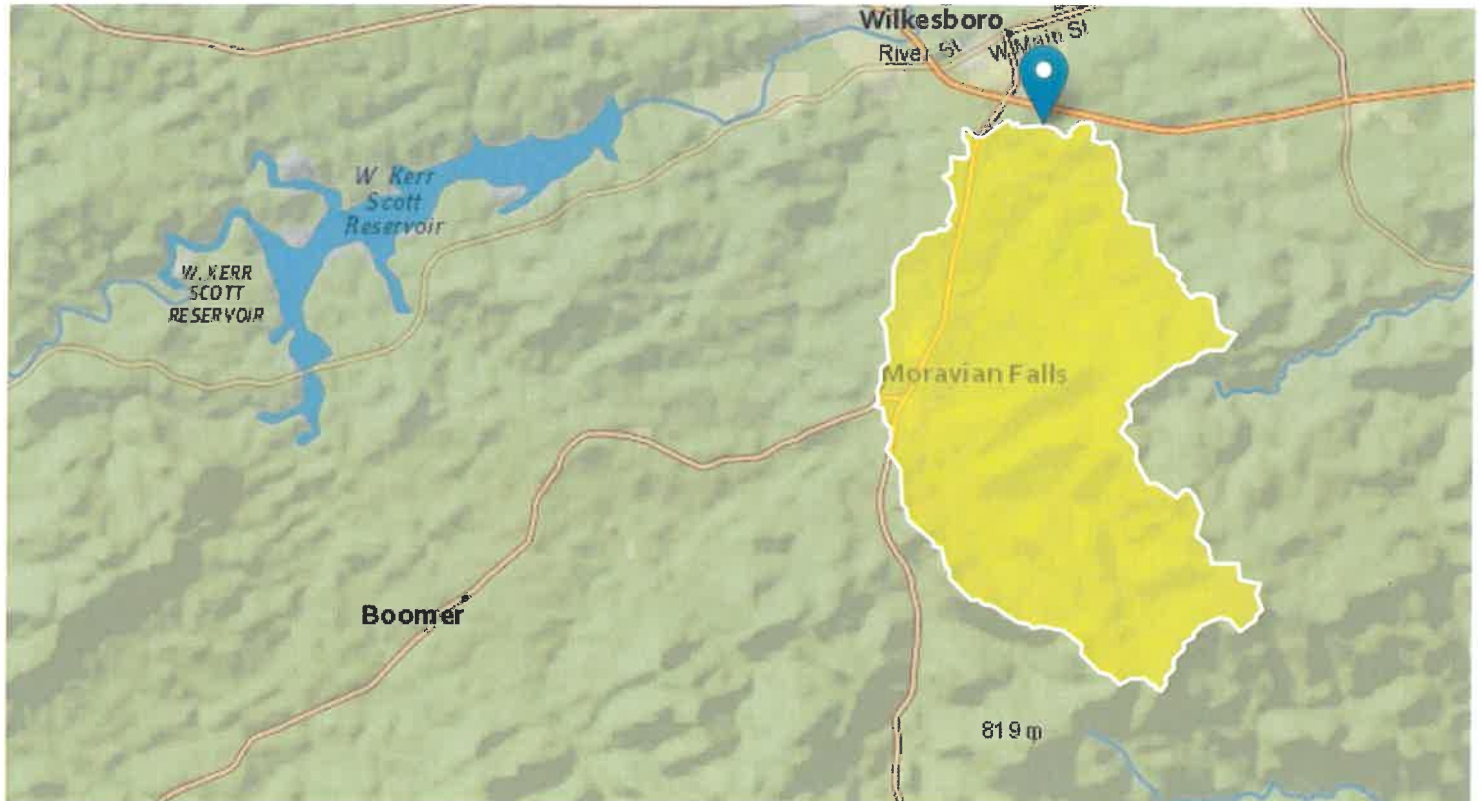
StreamStats Report

Region ID: NC

Workspace ID: NC20200108152058079000

Clicked Point (Latitude, Longitude): 36.13313, -81.15508

Time: 2020-01-08 10:21:13 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	12.1	square miles
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	2.65	percent
LC06IMP	Percentage of impervious area determined from NLCD 2006 impervious dataset	2.64	percent

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	12.1	square miles	0.04	41
LC11IMP	Percent_Impervious_NLCD2011	2.65	percent	2	54.6

Urban Peak-Flow Statistics Parameters[47 Percent (5.73 square miles) Region 1 Piedmont Urban over 3 sqmi 2014 5030]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	12.1	square miles	3	436
LC06IMP	Percent Impervious NLCD2006	2.64	percent	0	47.9

Urban Peak-Flow Statistics Flow Report[53 Percent (6.36 square miles) Region 2 Urban Blue Ridge FS007-00]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE
Urban 2 Year Peak Flood	410	ft^3/s	40.4
Urban 5 Year Peak Flood	753	ft^3/s	38.5
Urban 10 Year Peak Flood	1030	ft^3/s	38.3
Urban 25 Year Peak Flood	1600	ft^3/s	38.7
Urban 50 Year Peak Flood	1950	ft^3/s	37.8
Urban 100 Year Peak Flood	2330	ft^3/s	37.8

Urban Peak-Flow Statistics Flow Report[47 Percent (5.73 square miles) Region 1 Piedmont Urban over 3 sqmi 2014 5030]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SEp
Urban 2 Year Peak Flood	880	ft^3/s	459	1690	34.4
Urban 5 Year Peak Flood	1520	ft^3/s	833	2770	31.4
Urban 10 Year Peak Flood	2000	ft^3/s	1110	3580	30.7
Urban 25 Year Peak Flood	2640	ft^3/s	1450	4830	31.4
Urban 50 Year Peak Flood	3140	ft^3/s	1690	5850	32.4
Urban 100 Year Peak Flood	3670	ft^3/s	1900	7060	34.2
Urban 200 Year Peak Flood	4210	ft^3/s	2120	8380	35.8
Urban 500 Year Peak Flood	4980	ft^3/s	2400	10400	38.7

Urban Peak-Flow Statistics Flow Report[Area-Averaged]

Statistic	Value	Unit
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Statistic	Value	Unit
Urban 2 Year Peak Flood	633	ft ³ /s
Urban 5 Year Peak Flood	1120	ft ³ /s
Urban 10 Year Peak Flood	1490	ft ³ /s
Urban 25 Year Peak Flood	2090	ft ³ /s
Urban 50 Year Peak Flood	2520	ft ³ /s
Urban 100 Year Peak Flood	2960	ft ³ /s

Urban Peak-Flow Statistics Citations

Mason, Robert R., Jr.; Fuste, Luis A.; King, Jeffrey N.; Thomas, Wilbert O., Jr., 2002, The National Flood-Frequency Program -- Methods for Estimating Flood Magnitude and Frequency in Rural and Urban Areas in North Carolina, 2001: U.S. Geological Survey Fact Sheet 007-00, 4 p. (<http://pubs.er.usgs.gov/publication/fs00700>)

Feaster, T.D., Gotvald, A.J., and Weaver, J.C., 2014, Methods for estimating the magnitude and frequency of floods for urban and small, rural streams in Georgia, South Carolina, and North Carolina, 2011 (ver. 1.1, March 2014): U.S. Geological Survey Scientific Investigations Report 2014-5030, 104 p. (<http://pubs.usgs.gov/sir/2014/5030/>)

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Application Version: 4.3.11

960733



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STRUCTURE MANAGEMENT UNIT

ATTENTION: **CRITICAL FIND, PAR'S, STRUCTURE IS NEWLY DEFICIENT, NEW SALVAGE BEAM SKETCH**

Structure Safety Report

Routine Element Inspection - Contract

INSPECTION DATE: 04/02/2019

DIVISION: 11 COUNTY: WILKES STRUCTURE NUMBER: 960733 FREQUENCY: 24 MONTHS

FACILITY CARRIED: SR2516 MILE POST: _____

LOCATION: 0.6 MI.W.JCT.SR1001

FEATURE INTERSECTED: CUB CREEK

LATITUDE: 36° 7' 59.31" LONGITUDE: 81° 9' 17.93"

SUPERSTRUCTURE: STEEL PLANK FLOOR ON I-BEAMS

SUBSTRUCTURE: E.BTS:TIMBER CAPS/TIMBER PILES @ 6'-4 CENTERS

SPANS: 1 SPAN. SEE SPAN PROFILE SHEET FOR SPAN DETAILS

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

NBI GRADES: DECK 7 SUPERSTRUCTURE 5 SUBSTRUCTURE 4 CULVERT N

POSTED SV: Not Posted POSTED TTST: Not Posted

OTHER SIGNS PRESENT: 4 DELINEATORS



WEST APPROACH 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

DIRECTION OF INSPECTION W-E

DIRECTION MATCHES PLANS

INSPECTED BY BRANDON ELLIOT	SIGNATURE 	ASSISTED BY JOSH KENNEDY
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960733

Structure: 960733

County: WILKES

Date: 04/02/2019

Structure Photos



DOWNSTREAM STRUCTURE ELEVATION



UNDERSIDE SPAN

960733

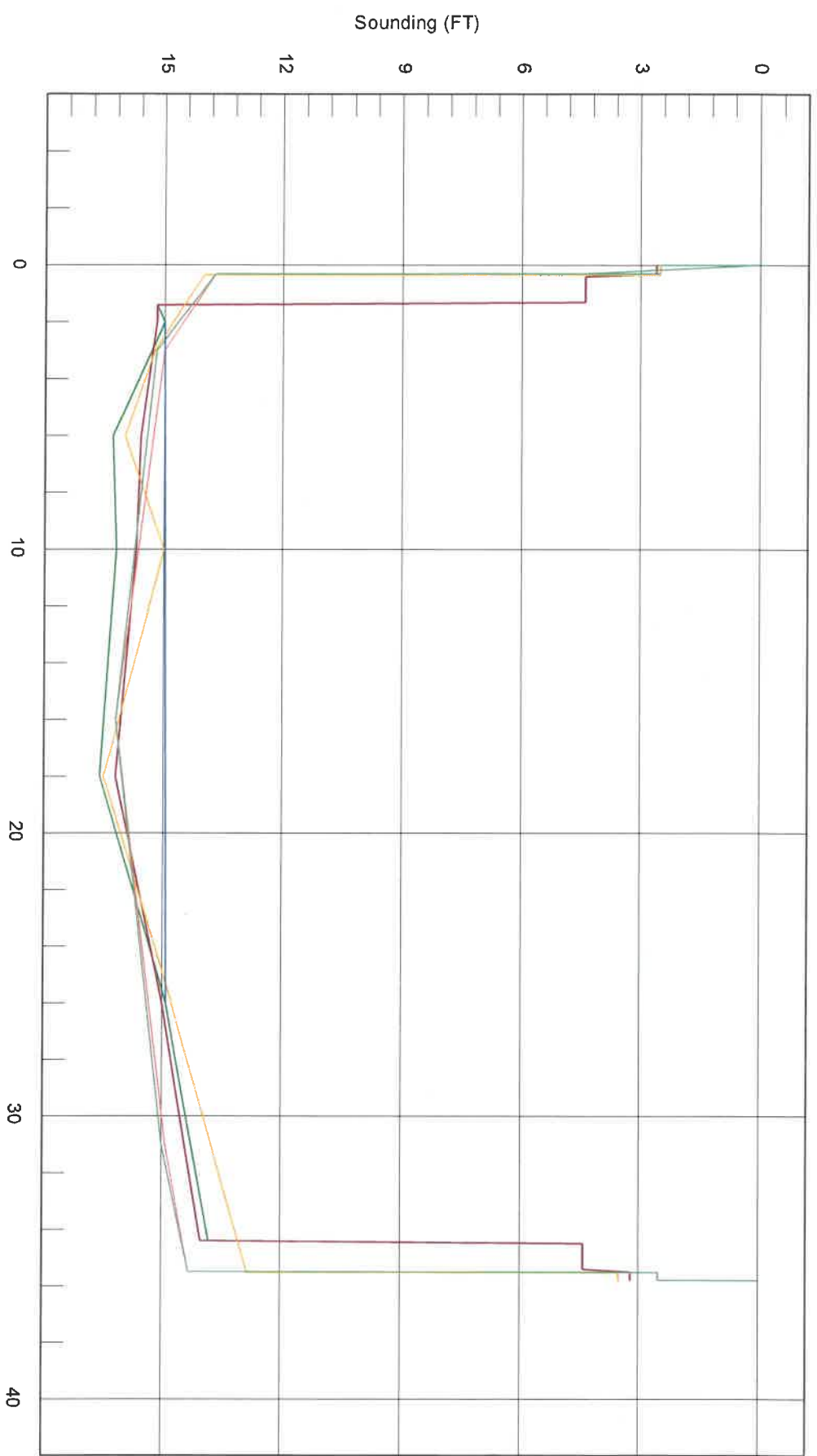
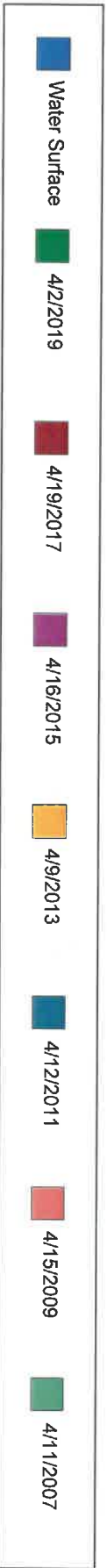
Bridge: 960733

County: WILKES

Date: 04/02/2019

Top of Rail = 0 FT (Sounding)

STREAMBED PROFILE (Downstream)



960733

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Update Date: 08/12/2019

COUNTY : WILKES	DIVISION : 11	DISTRICT : 3	STRUCTURE NUMBER : 960733	LENGTH : 36	FEET
ROUTE CARRIED : SR2516		FEATURE INTERSECTED : CUB CREEK			
LOCATED : 0.6 MI.W.JCT.SR1001		BRIDGE NAME :		CITY : WILKESBORO	
FUNC. CLASS : 19	SYST.ON : NFA	SYST.UNDER : NFA	ADT & YR : 900 1996	RAIL TYPE : LT 233 RT 233	
BUILT : 1974	BY : BMU	PROJ :	FED.AID PROJ :	DESIGN LOAD : Unknown	
REHAB :	BY :	PROJ :	ALIGNMENT : TAN	SKEW : 60	LANES : ON 2 UNDER 0
NAVIGATION : VC 0 FT	HC 0 FT	HT. CRN. TO BED : 14 FT	WATER DEPTH : 2 FT		
SUPERSTRUCTURE : STEEL PLANK FLOOR ON I-BEAMS					
SUBSTRUCTURE : E.BTS:TIMBER CAPS/TIMBER PILES @ 6'-4 CENTERS					
SPANS : 1 @ 35'-10					
BEAMS OR GIRDERS : 10 LINES 21 I-BEAMS @ 2'-7 CENTERS					
FLOOR : STL.PLK /4 AWS	ENCROACHMENT :		DECK (OUT TO OUT) : 24.083 FT		
CLEAR ROADWAY : 24.083 FT	BETWEEN RAILS : 24.667 FT		SIDEWALK OR CURB : LT FT RT FT		
VERT.CL.OVER : 999.900024 FT					
INV.RTG. : HS-19	OPE.RTG. : HS-26	CONTR.MEMBER : cap	POSTED : SV	TTST	DATE 04/14/2009
SYSTEM : Secondary S.R. Route			GREEN LINE ROUTE : N		
UNDER ROUTES AND CLEARANCES					

REMARKS :

960733

U/S Feature

Structure: 960028

County: WILKES

Date: 04/01/2019

Structure Photos



bent 1



end bent 2 and slope protection

960733

D/S Feature

Structure: 960080

County: WILKES

Date: 04/30/2019

Structure Photos

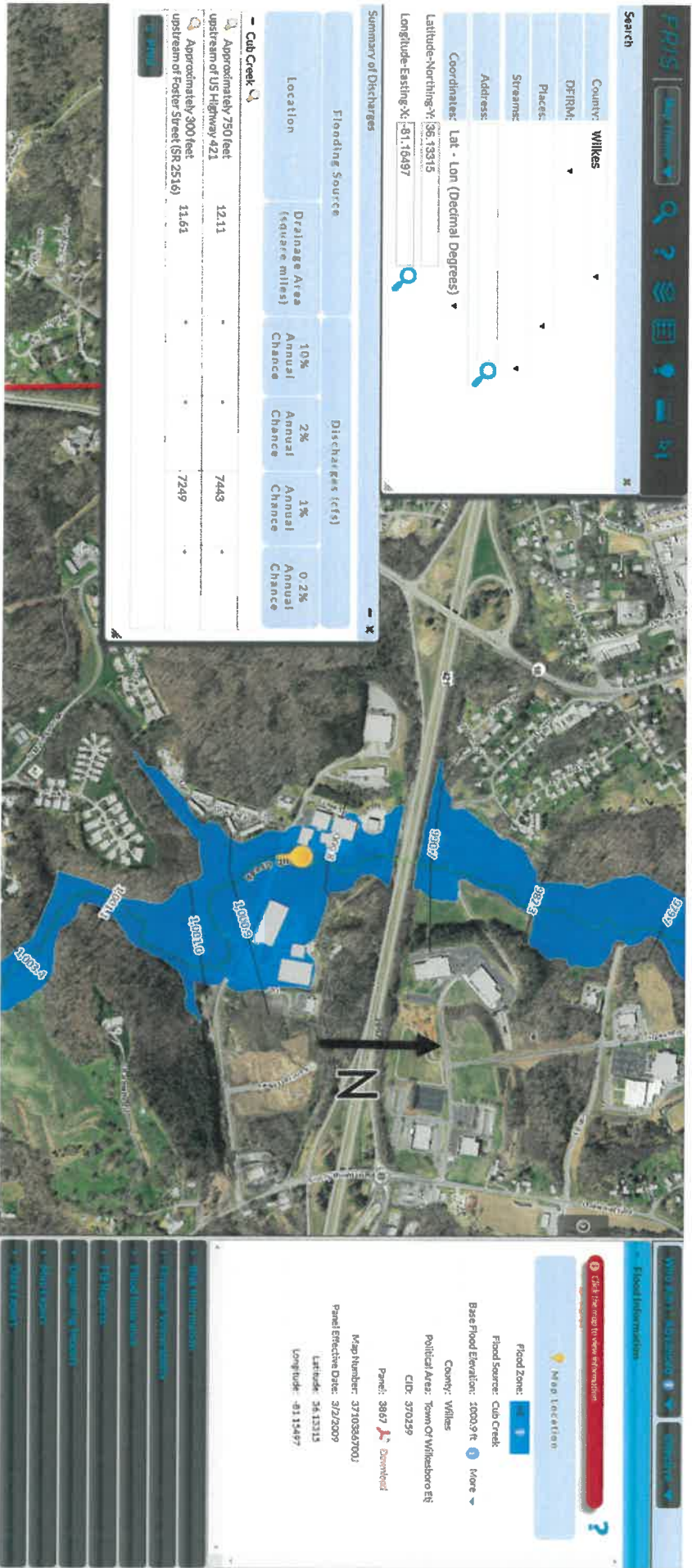


EAST OPENING

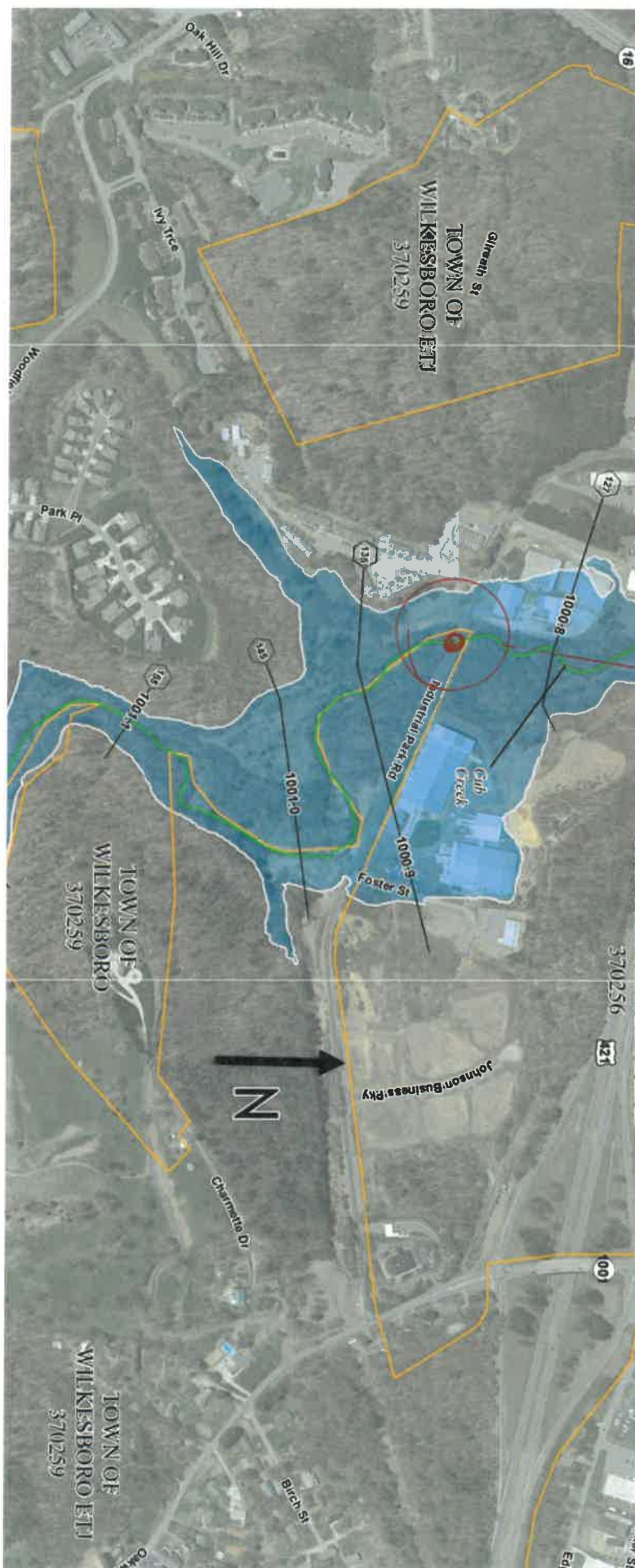


BARREL 3 UTILITY PIPE.

960733



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