KENTUCKY TRANSPORTATION CABINET

2011

Data Needs Analysis

Kentucky UNBRIDLED SPIRIT

Pre-Design Scoping Study

11-1079.00 KY 2011

Bridge Replacement

Bell County, KY

M.P. 8.49

District 11 Highway Design

I. INTRODUCTION

This study is a Data Needs Analysis (DNA) of the bridge replacement project in Bell County, Item No. 11-1079.00

A. STUDY PURPOSE

The purpose of this Preliminary Scoping Analysis is to illustrate with discussion the elements of Purpose and Need as defined by the National Environmental Policy Act (NEPA), which will aid in determining the purpose and need for this bridge replacement project. This analysis will provide detail concerning project estimates, existing transportation corridors in the system region, possible alternatives, specific project details and classifications, environmental concerns and considerations, transportation demand and traffic forecasting, safety considerations, and other issues that will be required to assist the project design team in the preliminary stage of this project.

B. LOCATION

This bridge replacement project is located on KY 2011 in Bell County, approximately 0.5 miles south of the KY 2011 and KY 66 intersection. This bridge is located at Milepoint 8.49 crossing Red Bird Creek in the Beverly community. This project is located in a section of the Daniel Boone National Forest known as the Redbird Purchase Unit (see Figure 1).

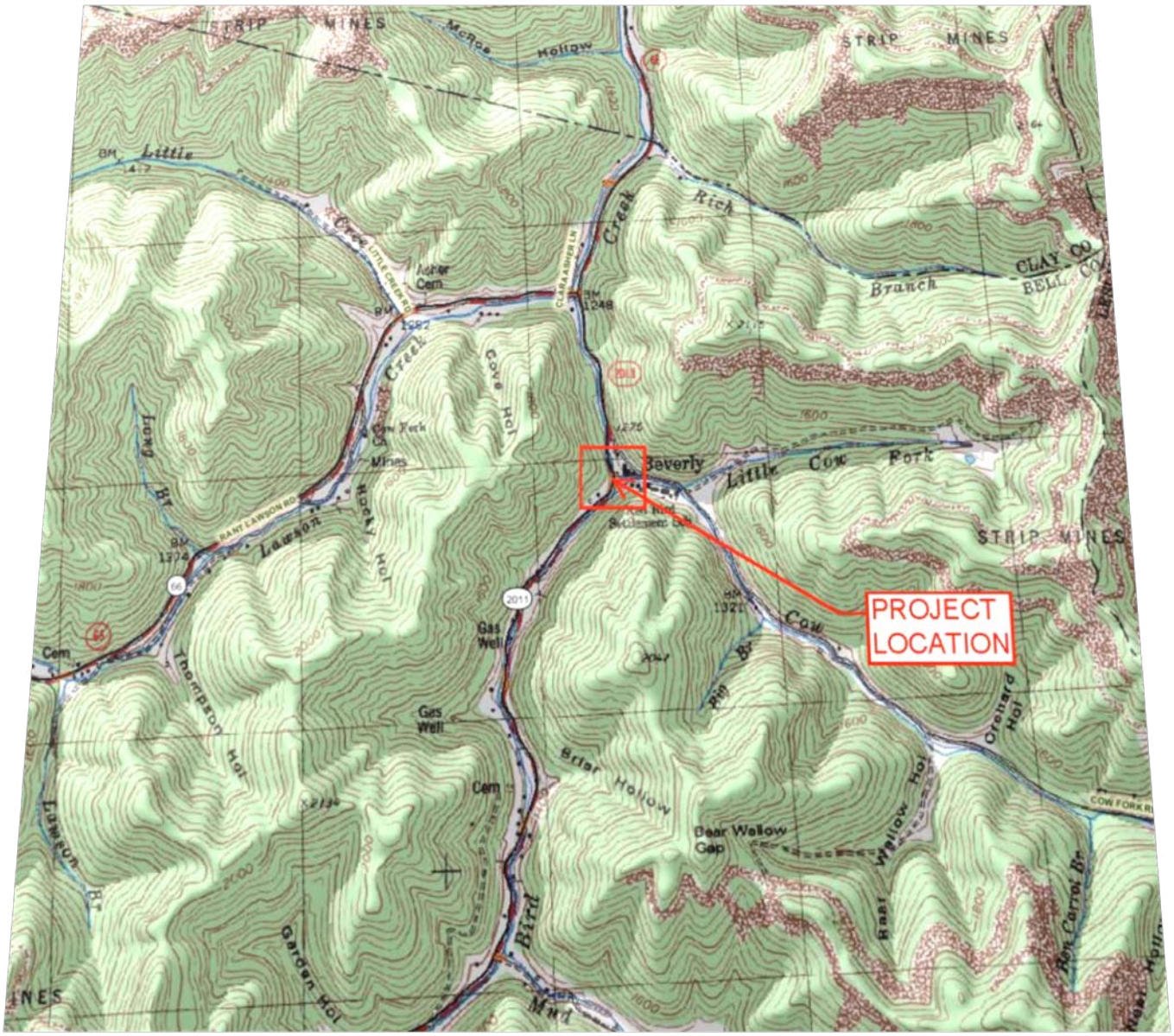


FIGURE 1: PROJECT LOCATION MAP

II. PROJECT PURPOSE AND NEED

A. LEGISLATION

This project is listed in the 2010 Recommended Highway Plan. Design phase funding of $150,000 was authorized in October 2010 utilizing federal bridge replacement funds. The table below explains the preconstruction project status as per the 2010 Recommended Highway Plan:

ITEM 11-1079.00, KY 2011 BRIDGE REPLACEMENT

PHASE	Funding	Year	Estimate
Right-of-Way	BRX	2014	$250,000
Utilities	BRX	2014	$150,000
Construction	BRX	2016	$550,000

REPLACE BRIDGE ON KY -2011 (MP8.498) OVER RED BIRD CREEK; 0.55 MILES SOUTH OF JCT KY66;

B. PROJECT STATUS

This project is currently in the preliminary scoping study stage. Traffic forecast information was obtained in January 2011. A paving contract for KY 2011 from approximately Milepoint 6.5 to Milepoint 9.0 was completed in fall 2010.

C. SYSTEM LINKAGE AND ROADWAY DESCRIPTION

KY 2011 is a rural secondary road that connects KY 221 (Straight Creek Road) to KY 66 in eastern Bell County. KY 221 is one of two roads that connect the Pineville region of eastern Bell County to US 421 and Harlan County. KY 66 is a connector for Pineville and east Bell County to Clay County and the Hal Rogers Parkway (approximately 20 miles north of the project). See Figure 2 below for system linkage map.

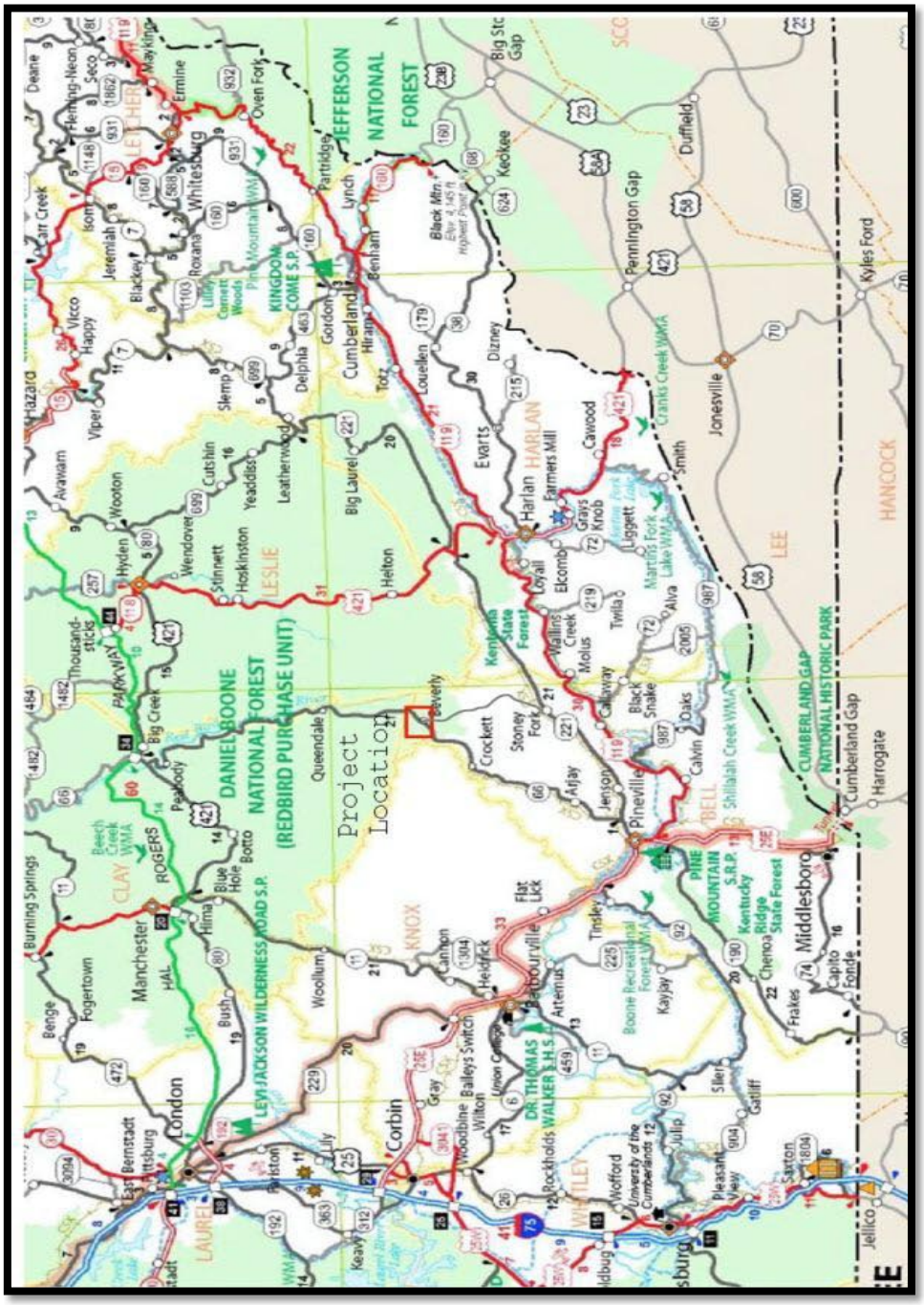


FIGURE 2: SYSTEM LINKAGE MAP

Table 1 below is the roadway classification and project specific data:

Table 1: Roadway Classification and Information

State Classification System - Rural Secondary	**AASHTO Classification System - Rural Minor Collector**
Roadway is NOT on National Truck Network	**Roadway is NOT on National Highway Network**
Roadway is NOT a Kentucky Coal Haul Route*	**Truck Weight Classification - Class A**
Roadway is NOT a designated Bike Route	**Bridge Identification Number (BIN) - 007B00074N**

* KY 66 is listed as a coal haul route (located approximately 0.5 miles north of KY 2011).

D. MODAL INTERRELATIONSHIPS

KY 2011 does not have any public transit along this route. There are no railroads located near the project.

E. SOCIAL DEMANDS & ECONOMIC DEVELOPMENT

KY 2011 is a secondary road used to allow residents access to KY 66 and KY 221. Residents also use KY 2011 to commute to nearby Red Bird Mission School. There is limited development potential for this rural residential area due to limited access to the community and considerable distance to nearest city (Pineville is approximately 15 southwest from project site). Also, access to both major arterials US 25E and Hal Rogers Parkway are both at least 20 miles from project site.

F. TRANSPORTATION DEMAND

Appendix A contains the latest traffic forecast report performed by KYTC in January 2011. Table 2 contains a summary of the traffic forecast report.

TABLE 2 TRAFFIC FORECAST KY 2011

M.P. 8.478 – 8.518

DESCRIPTION	2010 (CONSTRUCTION YEAR)	2030 (DESIGN YEAR)
ADT	550	700
DHV	60	100
% TRUCKS	10.4	13
20 YR ESALs	----	300,000

No turning movements were performed for this project.

G. SAFETY

Collision data for KY 2011 was obtained using the Kentucky State Police database for the years ranging from 2001 to 2010. No accidents or collisions were reported during this period for the project location. The bridge has a weight limit sign posted for three tons, and also has a "One Lane Bridge" posting. See picture 1 below.

Picture 1: Existing deck condition

H. ROADWAY DEFICIENCIES

a. Mainline Geometries

The current posted speed limit for this project is 55 mph. Currently, immediately upon exiting the bridge northbound on KY 2011, KY 2011 intersects Cow Fork road as a T-intersection. This intersection is currently a one way stop for residents on Cow Fork Road approaching KY 2011. This current alignment is sub-standard, as can be seen from Picture 2 below. Clearly, the home below is in danger of being struck by an automobile. The existing curve to the south of the bridge has a sub-standard 278' radius. According to KYTC's "Common Geometric Practices for Rural Collector Roads", 965' is the minimum radius for a 55 mph design speed using a standard maximum superelevation rate of 8%. See Pictures 2 and 3 below for view of existing alignment.

Picture 2: Northbound curve exiting bridge

Picture 3: Southbound curve approaching bridge

b. Bridge

As mentioned earlier, this bridge has a posting for a three ton weight limit and also is posted as a one lane bridge. As can be seen from Pictures 4-6, the deck has deteriorated to the extent that a structural steel plate has been placed to allow traffic use. Table 3 lists some general characteristics from the latest bridge inspection performed March 2010. Some comments include: spalls and cracks with exposed steel in deck, cracked beams with rusted and exposed steel, section loss, and the need of replacement of longitudinal shear keys. See Appendix B for full structure report.

TABLE 3: STRUCTURE REPORT DATA

BIN	007B00074N
S.R.	3.5
Desc.	50’ Single Span Concrete Beam / Girder
M.P.	8.498
Age	42 Yrs
Out to Out Width	24.0’
Skew	35^{o}
Curb to Curb Width	22.3’

Picture 4

Picture 5

Picture 6

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

According to preliminary environmental studies, there appears to be no significant impact for this project. Please see Appendix C for the preliminary environmental overview.

IV. PRELIMINARY PROJECT INFORMATION

A. Existing Conditions

Below is a table showing the project descriptions for KY 2011

TABLE 4: KY 2011 RED BIRD CREEK BRIDGE PROJECT DESCRIPTION

KY 2011 REDBIRD CREEK BRIDGE REPLACEMENT	
Item No.	11-1079.00
County	Bell
County Code	007
Milepoint	8.498
Project Length	0.1 Miles
Posted Speed	55 MPH

Table 5 lists Existing and Design Criteria Roadway Data, as per KYTC's "Common Geometric Practices for Rural Collector Roads"

TABLE 5: KY 2011 EXISTING ROADWAY DATA

Item	Existing Data	Typical	Project Team Recommendation
Speed	55 MPH (Posted)	35	35
No. Lanes	2	2	2
Lane Width	9'	11'	11'
Shoulder Width	2'-varies	5' – 8%	2' – 2%
Minimum Radius (south curve)	278.15'	314*	314'
Minimum Radius (north curve)	1146'	314*	314'
Maximum Grade	<3%	N/A	Match existing

*Maximum Superelevation Rate = 8%

B. Utility Coordination

There are existing water and gas lines on this project, as per site visits and use of KYTC ArcGis information.

V. PURPOSE AND NEED STATEMENT

The purpose of this project is to replace the unsafe, substandard bridge structure. This project is needed to improve the geometrics, safety, and overall highway performance for the residents of this rural region of Southeast Kentucky.

KY 2011 connects KY 66 and KY 221 allowing residents of the Beverly community access to the Hal Rogers Parkway in Clay County and the City of Pineville and US 25 East in Bell County. This rural roadway provides residents and emergency personnel vital access to remote areas of east Bell County and Red Bird Mission School. Without this bridge, residents and students of Red Bird School would be faced with a 50 minute, 34 mile detour onto a coal haul road. The existing bridge has numerous substandard issues. The southern approach curve is inadequate, which could result in potential residential property damage due to the potential of accidents while motorist exit the existing bridge northbound.

VI. POSSIBLE ALTERNATES

The following segments show the five alternates, including a no-build alternate, which was discussed by the project team. The proposed new alignment is shown in red.

A. **Alternate #1 - No Build**

Leave this bridge as is and do not perform any operations to bridge or approach.

B. **Alternate # 2 - West Alternate**

Construct a new bridge to the west of the existing bridge, while keeping the existing bridge open for traffic while new bridge construction is taking place. This will allow the approach curves to be within the 35 MPH design criteria as set forth in KYTC's "Common Geometric Practices for Rural Local Collectors." Minimal right of way will need to be purchased; however, no homes are forecasted to be impacted by this alternate. This alternate requires minimal approach work for Cow Fork Road (rural local road). See Picture 7 below for Alternate #2.

Alternate # 2 – West Alternate Estimate

Phase	**Estimate**
ROW	$100,000
Utilities	$25,000
Construction	$575,000
Total	**$700,000**

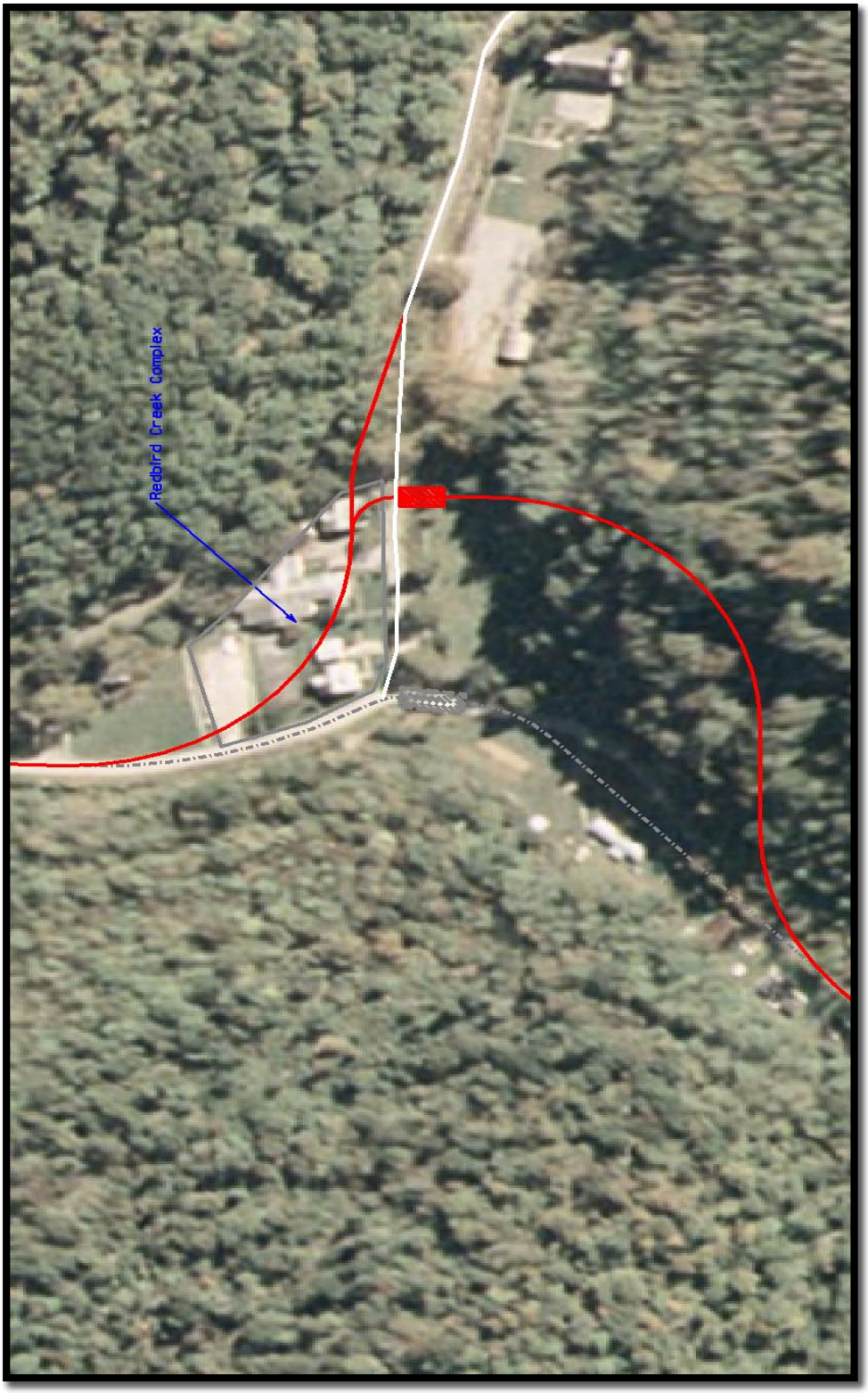
Picture 7: Alternate # 2 – West Alternate

C. **Alternate # 3 – East Alternate**

Construct a new bridge to the east of the existing structure will keeping the existing bridge open to traffic during construction. This alternate will require the most right of way to be purchased of all four alternates and the maximum approach work in order to conform to KYTC design standards. This alternate would most likely require the purchase of the entire Red Bird Creek Mission complex in order to construct the north side approach to KYTC design standards. This alternate will also require a stopping / yield condition to be implemented on the north side of the bridge. Utilities will also be impacted. See Picture 8 below for East Alternate.

Alternate # 3 – East Alternate Estimate

Phase	Estimate
ROW	$800,000
Utilities	$200,000
Construction	$700,000
Total	**$1,570,000**



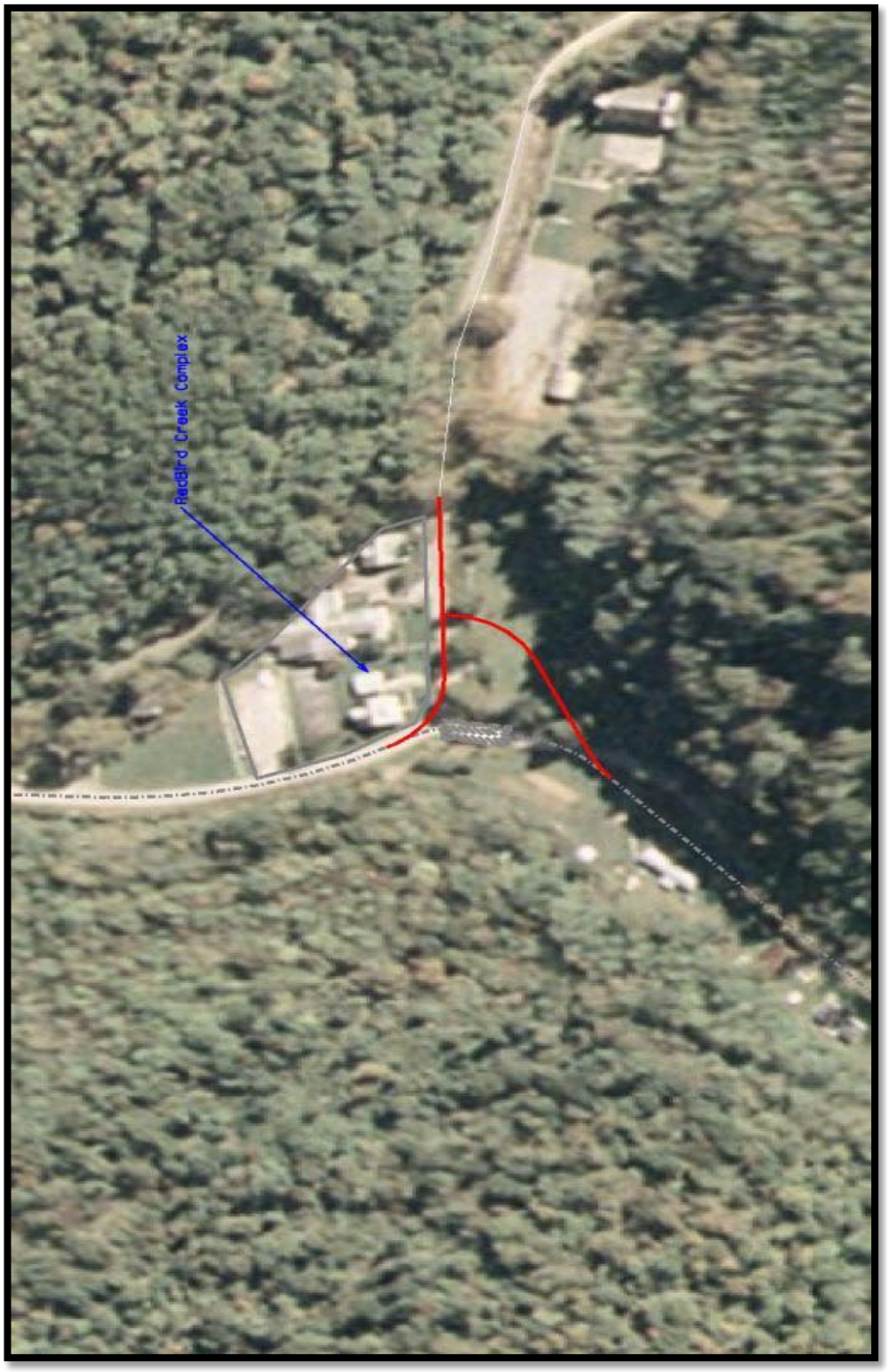
Picture 8 ; Alternate # 3 – East Alternate

D. **Alternate #4 – Existing Alignment with East Diversion**

This alternate requires the construction of an onsite diversion for traffic while the existing structure remains in place and a new structure is constructed in place. The proposed diversion was analyzed using a 15 MPH design speed to conform to KYTC design standards. This alternate also requires a stop / yield condition for the north side approach at the diversion location. Right of way impact will be considerable, along with utilities. Once complete, the approaches for the new structure will continue to be substandard as listed in KYTC's "Common Geometric Practices for Rural Local Collectors." Picture 9 shows the alternate with diversion.

Alternate # 4 – Existing Alternate with East Diversion

Phase	Estimate
ROW	$55,000
Utilities	$20,000
Construction	$700,000
Total	**$775,000**



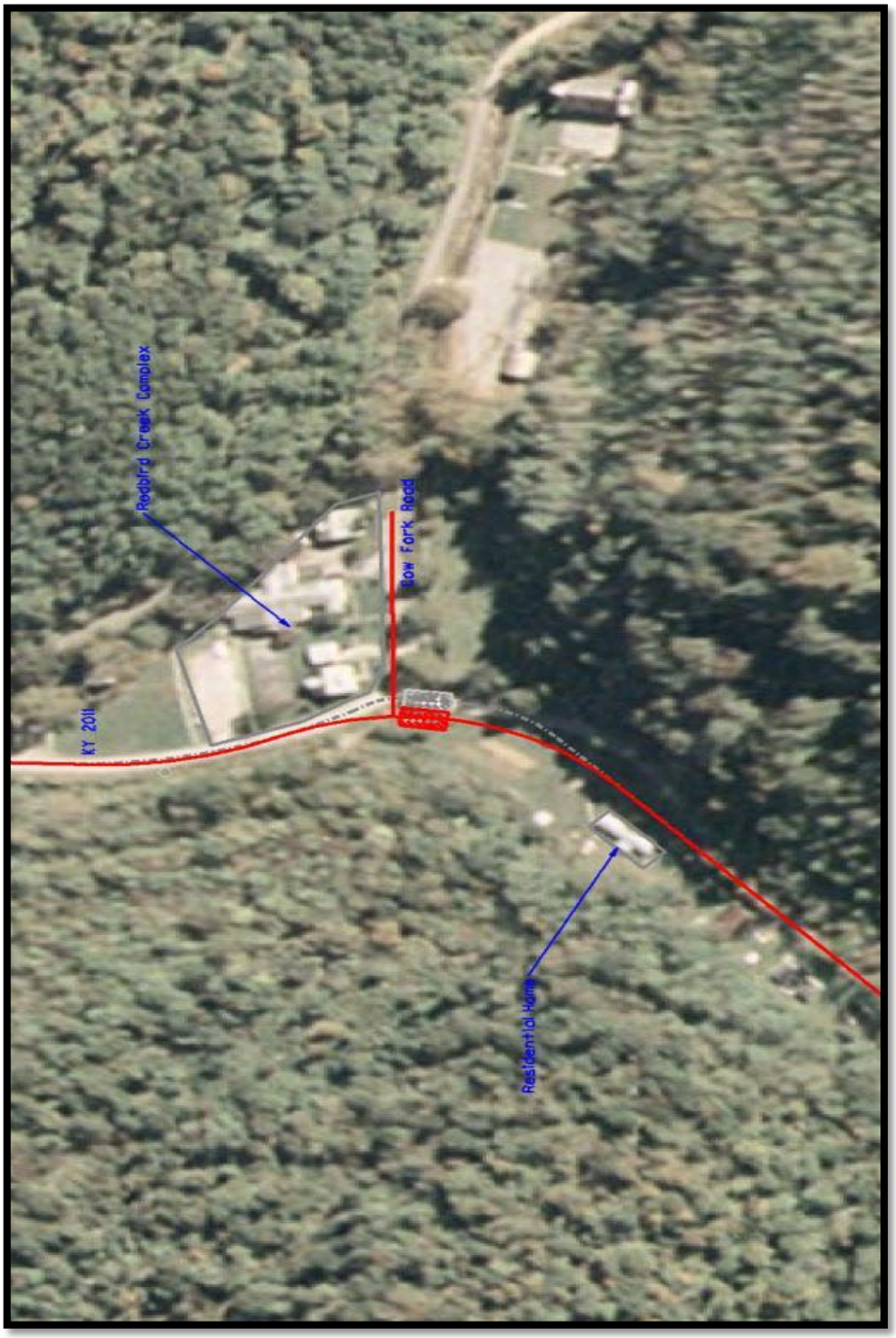
Picture 9: Alternate # 4 – Existing Alternate with East Diversion

E. **Alternate 5 – Existing Alignment with West Diversion**

This alternate would allow the construction of a new structure to be completed in place of the existing structure while traffic is allowed to utilize an onsite diversion to the west. This alternate would require minimal temporary easement purchase, however KY 2011 alignment will continue to be sub-standard and existing structures in Red Bird Creek complex will be in danger of being struck by vehicles. This alternate, along with Alternate 4, will have the greatest impact on Red Bird Creek. See Picture 10 for Alternate 5 layout.

Alternate # 5 – Existing Alternate with West Diversion

Phase	Estimate
ROW-Easement	$30,000
Utilities	$20,000
Construction	$700,000
Total	**$750,000**



Picture 10: Existing Alternate with West Diversion

VII. SUMMARY

The purpose of this Data Needs Analysis (DNA) is to collect data for the scoping phase of this project in order for current and future design team members to have access to complete project information. Item No. 11-1079.00 is a bridge replacement project located at Milepoint 8.49 on KY 2011 over Red Bird Creek in Bell County. This rural minor collector serves as access for residents of the Beverly community and is a link between U.S. Highway 25 E via KY 221 and the Hal Rogers Parkway via KY 66. This rural secondary roadway provides residents and emergency personnel vital access to remote areas of east Bell County and Red Bird Mission School.

As can be seen in this report, NEPA guidelines were followed for this project, including the consideration of roadway geometries (existing and proposed) and traffic and crash data. Multiple onsite investigations were performed. Below are a few key notes that the project team considered while developing this report:

A. Develop a plan to replace the existing structure while minimizing approach work.
B. Develop an alternate that will have minimal impact to Red Bird Creek.
C. Minimize impact to Red Bird Creek Mission complex.

These project improvements will provide an adequate bridge structure for the residents of this rural region of Southeast Kentucky while also improving the geometrics, safety, and overall highway performance. The goal of this project scoping document is to stay within the realms of a bridge replacement project as set forth in the **2010 Recommended Highway Plan.**

Based on the information provided in this report, the project team recommends **Alternate #2-West Alternate** for construction. Below is a list of reasons Alternate #2 was selected:

A. Alternate #2 remains in the "Bridge Replacement" scope as listed in the 2010 Highway Plan with minimal approach work performed with this bridge replacement.
B. The West Alternate is cost effective.
C. The West Alternate has minimal, if any, impact to Red Bird Creek Mission complex and other residential areas.
D. Alternate #2 will improve the geometry of KY 2011, which will in turn improve the safety of the roadway.

If further discussion of this project is needed, please contact:

Taylor Davis, Highway Design / Planning Branch

Kentucky Transportation Cabinet

603 Railroad Ave.

Manchester, KY 40965

APPENDIX A: TRAFFIC FORECAST

Executive Summary

Traffic Forecast Report
Bell County
Bridge Replacement over Red Bird Creek
Item No. 11-1079.00

Prepared for:

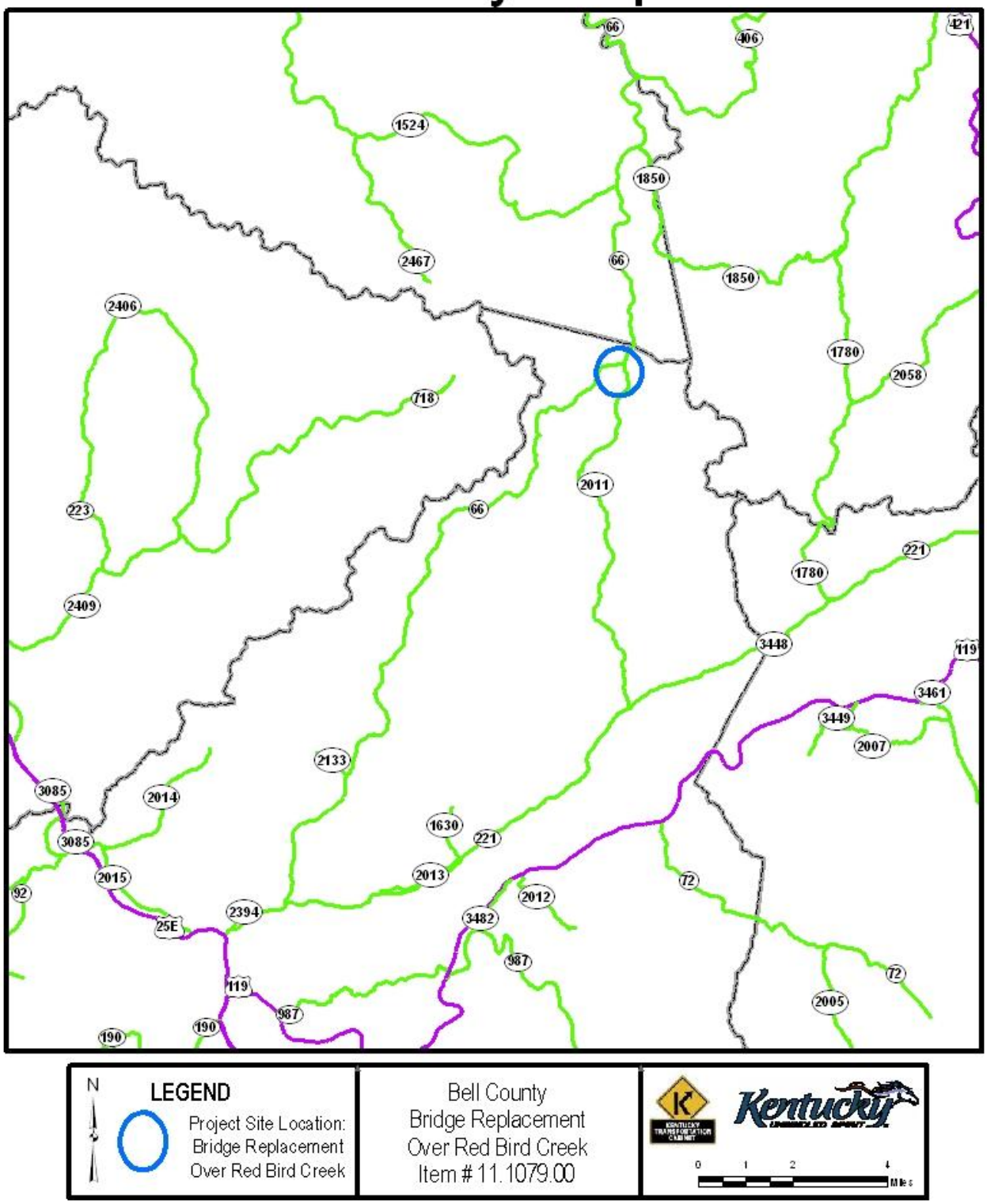
Prepared by:
Daniel Hulker
Division of Planning
Kentucky Transportation Cabinet
January 7, 2011

Table of Contents

Commonly Used Abbreviations and their Descriptions

ADT	Average Daily Traffic	Without any adjustment
DHV	Design Hour Volume	30th highest hour of a year
ESAL	Equivalent Single Axle Load	A measure of traffic's impact on roadway
%T	Truck Percentage	The percentage of trucks to total volume
FC	Functional Class	Refers to a road's importance
GR	Growth Rate	A value normally compounded annually
PHF	Peak Hour Factor	Considers a 15 minute spike in an hourly count
K-Factor	K-30th hour Factor	DHV divided by ADT (DHV/ADT)
D-Factor	Directional Factor	Percentage of dominant flow to total
MP	Mile Point	Miles increase easterly and northerly
ATR	Automatic Traffic Recorder	A permanent & continuous recording station
KYSTM	Kentucky Statewide Model	A computerized representation of KY roads

Vicinity Map



Traffic Forecast Executive Summary
Bell County: Replace Bridge Over Bird Creek
Item No. 11-1079.00

FORECAST SUMMARY

This project calls for replacing the bridge over Red Bird Creek on KY 2011 in Bell County from milepoints 8.478 to 8.518. The forecast analyzes DHVs, ADTs, and ESALs for the build scenario.

FORECAST TYPE

The following types of forecasts were developed:

- 2010 and 2030ADT and DHV values
- 20-year ESALs

CURRENT-YEAR VOLUMES

Current year volumes were based on the 2008 volume count from station 007026 at milepoint 8.112.

DESIGN-YEAR/GROWTH FACTORS

Design year volumes were based on the historic volume counts from station 007026 at milepoint 8.112. Station 007026 showed an exponential growth rate of 1%. Bell County's population as a whole is projected to have a negative growth rate.

DESIGN HOUR FACTORS

The design hour factor (for 2010 and 2030) was calculated from the peak hour of station 007026 and the ESAL spreadsheet.

TRUCK PERCENTAGE

Functional Class averages were used to calculate the truck percentages. KY 2011 is not on a coal route, but KY 66 just north of the bridge is on a coal route. For the purpose of this forecast, 10.4% was used as the percent trucks for 2010 and a 1.0% annual growth rate was used to predict 2030 truck volumes.

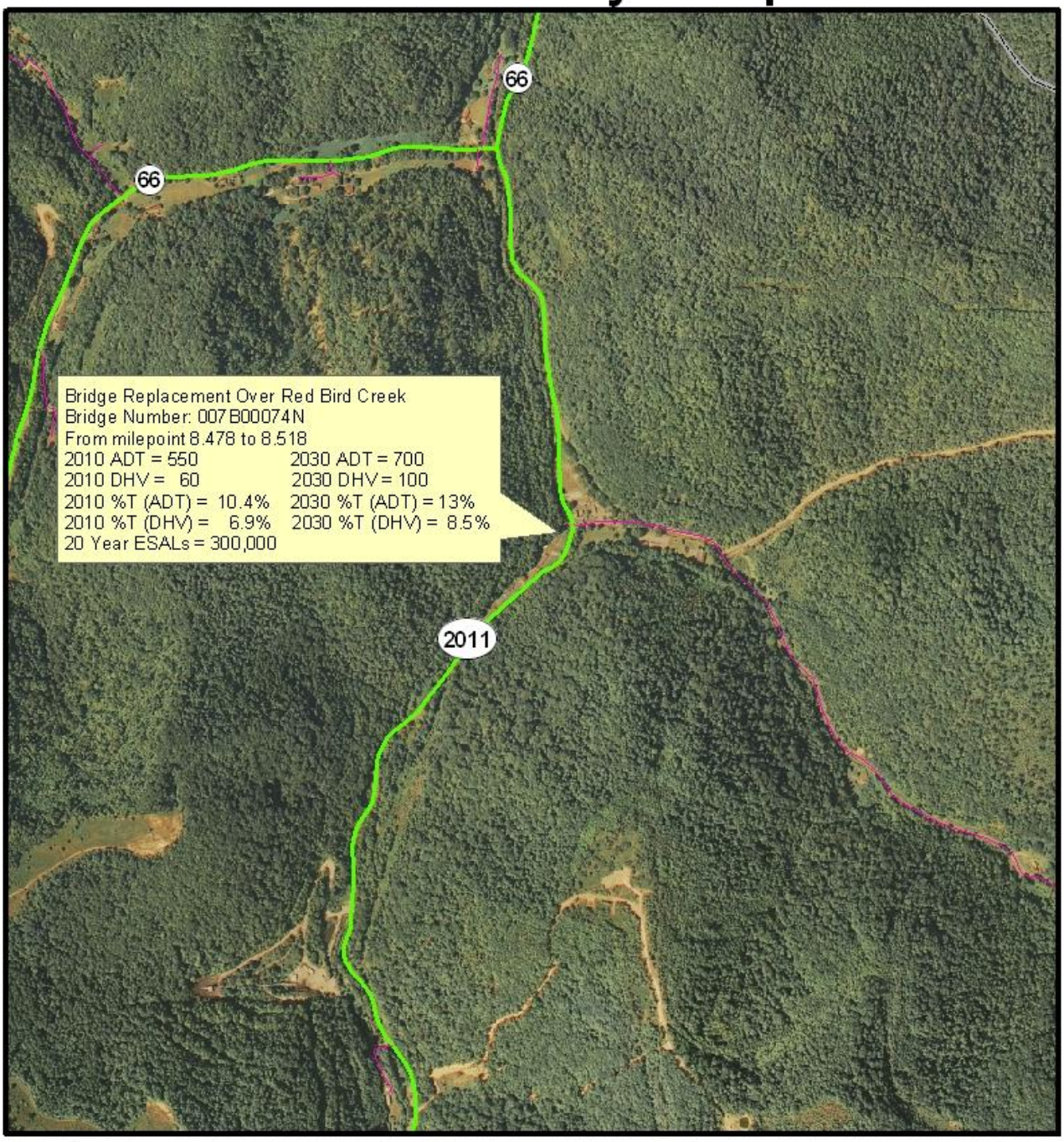
ESALs

ESAL values were calculated from the ESAL spreadsheet. FC averages from the 2007 aggregated ESAL report generated by the Kentucky Transportation Center in collaboration with the Tpransportation Cabinet were used to estimate 20-yr ESALs.

TURN MOVEMENTS

Turn movements were not requested and therefore not included.

Summary Map


66
66
Bridge Replacement Over Red Bird Creek
Bridge Number: 007B00074N
From milepoint 8.478 to 8.518
2010 ADT = 550
2030 ADT = 700
2010 DHV = 60
2030 DHV = 100
2010 %T (ADT) = 10.4%
2030 %T (ADT) = 13%
2010 %T (DHV) = 6.9%
2030 %T (DHV) = 8.5%
20 Year ESALs = 300,000
2011


N
LEGEND
Project Site Location:
Bridge Replacement
Over Red Bird Creek
Bell County
Bridge Replacement
Over Red Bird Creek
Item # 11-1079.00
Kentucky
0 0.05 0.1 0.2 0.3
Miles

FORECAST OF EQUIVALENT SINGLE AXLE LOAD ACCUMULATIONS (20-year)

ROUTE ID:

County	Bell County
Road Name	KY 2011
Functional Class	8 - Rural Minor Collector
Project Description	Bridge Replacement over Red Bird Creek
Scenario	Build
Segment Description	Bridge Replacement over Red Bird Creek

Date	11/24/10
Forecaster	Daniel Hulker
MARS No.	8443201D
Item No.	11-1079.00
Route No.	2011
Beg. MP	8.478
End MP	8.518
T.F. No.	10.034
No. of Lanes	2
1 or 2 way	2

REFERENCES:

Previous Forecasts	None
Traffic Volume	007-026
Milepoint	8.112
Truck Percent	007-026
Milepoint	8.112
ESAL Information	2007 Aggregated ESALS
Growth Rate	1.20%

K- Factor Value	10.4%
K-Factor Source	007-026
PHF	0.84

Full Route Unique Identifier: 007-KY-2011 -000

TRAFFIC PARAMETERS:

		Present Year	Growth Rate	Construction Year	Median Year	Design Year
		2010		**2010**	**2020**	**2030**
Volume	(AADT)	550	1.20%	550	620	700
Percent Trucks	(%T)	10.4%	1.0%	10%	11%	13%
Number of Trucks		60	2.2%	60	70	90
Percent Trucks Hauling Coal	(%CT)	0%	0.0%	0%	0%	0%
Non-Coal Trucks:						
Axles/Truck	(A/T)	3.100	0.70%	3.100	3.324	3.564
ESALs/Axle	(ESAL/A)	0.254	1.60%	0.254	0.298	0.349
Coal Trucks:						
Axles/Truck	(A/CT)	0	0.00%	0.000	0.000	0.000
ESALs/Axle	(ESAL/CA)	0	0.00%	0.000	0.000	0.000

ESAL CALCULATIONS: SEE ATTACHED ESAL CALCULATION SHEET

Design ESALs in Critical Lane: 300,000

General Comments:

Bridge Replacement over Red Bird Creek N/A (Build)

Year	ADT	Car %	Truck %	Cars	Trucks	CT%	AX/T	ESAL/AX	AX/CT	ESAL/CA	LDF	ESALs	
2010	550	89.6%	10.4%	493	57	0.00%	3.10	0.25	0	0	0.500	8,669	
2011	557	89.5%	10.5%	498	58	0.00%	3.12	0.26	0	0	0.500	9,050	
2012	563	89.4%	10.6%	504	60	0.00%	3.14	0.26	0	0	0.500	9,448	
2013	570	89.3%	10.7%	509	61	0.00%	3.17	0.27	0	0	0.500	9,864	
2014	577	89.2%	10.8%	514	62	0.00%	3.19	0.27	0	0	0.500	10,299	5-yr ESALs 50,000
2015	584	89.1%	10.9%	520	64	0.00%	3.21	0.27	0	0	0.500	10,754	
2016	591	89.0%	11.0%	526	65	0.00%	3.23	0.28	0	0	0.500	11,230	
2017	598	88.8%	11.2%	531	67	0.00%	3.26	0.28	0	0	0.500	11,726	
2018	605	88.7%	11.3%	537	68	0.00%	3.28	0.29	0	0	0.500	12,246	
2019	612	88.6%	11.4%	543	70	0.00%	3.30	0.29	0	0	0.500	12,789	10-yr ESALs 100,000
2020	620	88.5%	11.5%	548	71	0.00%	3.32	0.30	0	0	0.500	13,356	
2021	627	88.4%	11.6%	554	73	0.00%	3.35	0.30	0	0	0.500	13,950	
2022	635	88.3%	11.7%	560	74	0.00%	3.37	0.31	0	0	0.500	14,570	
2023	642	88.2%	11.8%	566	76	0.00%	3.39	0.31	0	0	0.500	15,219	
2024	650	88.0%	12.0%	572	78	0.00%	3.42	0.32	0	0	0.500	15,897	15-yr ESALs 200,000
2025	658	87.9%	12.1%	578	79	0.00%	3.44	0.32	0	0	0.500	16,606	
2026	666	87.8%	12.2%	584	81	0.00%	3.47	0.33	0	0	0.500	17,347	
2027	674	87.7%	12.3%	591	83	0.00%	3.49	0.33	0	0	0.500	18,121	
2028	682	87.6%	12.4%	597	85	0.00%	3.51	0.34	0	0	0.500	18,931	
2029	690	87.4%	12.6%	603	87	0.00%	3.54	0.34	0	0	0.500	19,778	20-yr ESALs 300,000
2030	698	87.3%	12.7%	610	89	0.00%	3.56	0.35	0	0	0.500	20,664	

HISTORICAL POPULATION SUMMARY

	1950 Population	1960 Population	1970 Population	1980 Population	1990 Population	2000 Population	50 - 60 Pct Change	60 - 70 Pct Change	70 - 80 Pct Change	80 - 90 Pct Change	90 - 00 Pct Change
Kentucky	-	3,038,156	3,220,711	3,660,334	3,686,892	4,041,769	-	6.0%	13.6%	0.7%	9.6%
Bell Co	-	-	31,121	34,330	31,506	30,060	-	-	10.3%	-8.2%	-4.6%

Sources: US Bureau of the Census; Kentucky State Data Center

FUTURE POPULATION PROJECTIONS SUMMARY

	2005 Projection	2010 Projection	2015 Projection	2020 Projection	2025 Projection	2030 Projection	05 - 10 Pct Change	10 - 15 Pct Change	15 - 20 Pct Change	20 - 25 Pct Change	25 - 30 Pct Change
Kentucky	4,171,016	4,326,490	4,502,595	4,660,703	4,799,443	4,912,621	3.7%	4.1%	3.5%	3.0%	2.4%
Bell Co	29,254	29,656	28,907	28,118	27,337	26,546	1.4%	-2.5%	-2.7%	-2.8%	-2.9%

Sources: US Bureau of the Census; Kentucky State Data Center

ANNUAL POPULATION GROWTH RATES FROM HISTORICAL DATA AND PROJECTIONS

	50 - 60 GR	60 - 70 GR	70 - 80 GR	80 - 90 GR	90 - 00 GR	05 - 10 GR	10 - 15 GR	15 - 20 GR	20 - 25 GR	25 - 30 GR	05 - 25 GR
Kentucky	-	0.59%	1.29%	0.07%	0.92%	0.73%	0.80%	0.69%	0.59%	0.47%	0.70%
Bell Co	-	-	0.99%	-0.85%	-0.47%	0.27%	-0.51%	-0.55%	-0.56%	-0.59%	-0.34%

APPENDIX B: STRUCTURE REPORT

Structure Inventory and Appraisal Sheet (English Units)

Bridge Key: 638 **Agency ID:** 007B00074N **SR:** 3.5 **SD/FO:** SD

IDENTIFICATION

State 1:	21 Kentucky	Struc Num 8:	007B00074N
Facility Carried 7:	KY-2011	Location 9:	.55 MI SOU. OF JCT KY 86
Rte.(On/Under)5A:	Route On Structure	Rte. Signing Prefix 5B:	3 State Hwy
Level of Service 5C:	1 Mainline	Rte. Number 5D:	02011
Directional Suffix 5E:	0 N/A (NBI)	% Responsibility :	Unknown
SHD District 2:	District 11	County Code 3:	Bell (007)
Place Code 4:	FIPS 0000	Mile Post 11:	8.498 mi
Feature Intersected 6:	RED BIRD CREEK		
Latitude 16:	36d 55' 46"	Longitude 17:	083d 32' 01"
Border Bridge Code 98:	Unknown (P)		
Border Bridge Number 99:			

INSPECTION

Frequency 91:	12 months	Inspection Date 90:	3/3/2010	Next Inspection:	03/03/2011
FC Frequency 92A:	NA	FC Inspection Date 93A:	NA	Next FC Inspection:	NA
UW Frequency 92B:	NA	UW Inspection Date 93B:	NA	Next UW Inspection:	NA
SI Frequency 92C:	NA	SI Date 93C:	NA	Next SI:	NA
Element Frequency:	12 months	Element Inspection Date:	03/03/2010	Next Elem. Insp. Due:	03/03/2011

STRUCTURE TYPE AND MATERIALS

Number of Approach Spans 46: 0 Number of Spans Main Unit 45: 1

Main Span Material/Design 43A/B:

5 Prestressed Concrete 05 Multiple Box Beam

Deck Type 107:	9 Other
Wearing Surface 108A:	9 Other
Membrane 108B:	0 None
Deck Protection 108C:	None

CLASSIFICATION

Defense Highway 100:	0 Not a STRAHNET hwy	Parallel Structure 101:	No ij bridge exists
Direction of Traffic 102:	2 2-way traffic	Temporary Structure 103:	Not Applicable (P)
Highway System 104:	0 Not on NHS	NBIS Length 112:	Long Enough
Toll Facility 20:	3 On free road	Functional Class 26:	08 Rural min Collector
Defense Hwy 110:	0	Historical Significance 37:	5 Not eligible for NRHP
Owner 22:	01 State Highway Agency		
Custodian 21:	01 State Highway Agency		

CONDITION

Deck 58: 3 Serious Super 59: 3 Serious Sub 60: 5 Fair

Culvert 62: N N/A (NBI) Channel/Channel Protection 61: 4 Protection Undermined

AGE AND SERVICE

Year Built 27:	1969	Year Reconstructed 106:	Unknown
Type of Service on 42A:	1 Highway		
Type of Service under 42B:	5 Waterway		
Lanes on 28A:	2	Lanes Under 28B: 0	Detour Length 19: 16.2 mi
ADT 29:	528	Truck ADT 109: %	Year of ADT 30: 2010

LOAD RATING AND POSTING

Inventory Rating Method 65:	1 LF Load Factor	Operating Rating Method 63:	1 LF Load Factor
Inventory Rating 66:	HS1.7	Operating Rating 64:	HS1.7
Design Load 31:	4 M 18 (H 20)	Posting 70:	0 >39.9% below
Posting status 41:	P Posted for load		

GEOMETRIC DATA

Length Max Span 48:	50.0 ft	Structure Length 49:	50.0 ft
Curb/Sdwlk Width L 50A:	1.0 ft	Curb/Sidewalk Width R 50B:	1.0 ft
Width Curb to Curb 51:	22.3 ft	Width Out to Out 52:	24.0 ft
Approach Roadway Width 32: (w/ shoulders)	24.0 ft	Median 33:	0 No median
Deck Area:	1,200. sq. ft		
Skew 34:	35.00 °	Structure Flared 35:	0 No flare
Vertical Clearance 10:	99.99 ft	Horiz. Clearance 47:	22.31 ft
Minimum Vertical Clearance Over Bridge 53:	328.1 ft		
Minimum Vertical Underclearance Reference 54A:	N Feature not hwy or RR		
Minimum Vertical Underclearance 54B:	0.0 ft		
Minimum Lateral Underclearance Reference R 55A:	N Feature not hwy or RR		
Minimum Lateral Underclearance R 55:	0.0 ft		
Minimum Lateral Underclearance L 56:	0.0 ft		

APPRAISAL

Bridge Rail 36A:	0 Substandard	Approach Rail 36C:	0 Substandard
Transition 36B:	0 Substandard	Approach Rail Ends 36D:	0 Substandard
Str. Evaluation 67:	3	Deck Geometry 68:	4 Tolerable
Underclearance, Vertical and Horizontal 69:	N Not applicable (NBI)		
Waterway Adequacy 71:	7 Above Minimum	Approach Alignment 72:	4 Minimum Tolerable
Scour Critical 113:	8 Stable Above Footing		

PROPOSED IMPROVEMENTS

Bridge Cost 94:	$ 0	Type of Work 75:	Unknown (P)
Roadway Cost 95:	$ 0	Length of Improvement 76:	0.0 ft
Total Cost 96:	$ 0	Future ADT 114:	644
Year of Cost Estimate 97:	Unknown	Year of Future ADT 115:	2030

NAVIGATION DATA

Navigation Control 38:	0 0		
Vertical Clearance 39:	0.0 ft	Horizontal Clearance 40:	0.0 ft
Pier Protection 111:	1 Not Required	Lift Bridge Vertical Clearance 116:	0.0 ft

ELEMENT CONDITION STATE DATA

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
1	12/1	Bare Concrete Deck	(SF)	1,100	0 %	0	0 %	0	100 %	1,100	0 %	0	0 %	0
1	104/1	P/S Conc Box Girder	(LF)	400	68 %	270	23 %	90	5 %	20	5 %	20	0 %	0
1	215/1	R/Conc Abutment	(LF)	90	11 %	10	78 %	70	11 %	10	0 %	0	0 %	0
1	334/1	Metal Rail Coated	(LF)	100	0 %	0	0 %	0	85 %	85	0 %	0	15 %	15
1	358/1	Deck Cracking SmFlag	(EA)	1	0 %	0	0 %	0	100 %	1	0 %	0	0 %	0
1	361/1	Scour Smart Flag	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0

Structure Inventory and Appraisal Sheet (English Units)

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
1	363/1	Section Loss Sm/Flag	(EA)	1	0 %	0	0 %	0	100 %	1	0 %	0	0 %	0
1	503/1	RC Curb	(LF)	100	0 %	0	96 %	96	4 %	4	0 %	0	0 %	0
1	802/1	Vibrat/Oscillation	(EA)	1	0 %	0	0 %	0	100 %	1	0 %	0	0 %	0
1	803/1	Plastic Deformation	(EA)	1	0 %	0	0 %	0	100 %	1	0 %	0	0 %	0
1	808/1	Long. Shear Keys	(EA)	1	0 %	0	0 %	0	0 %	0	100 %	1	0 %	0
1	810/1	Chan Drift	(EA)	1	0 %	0	100 %	1	0 %	0	0 %	0	0 %	0
1	811/1	Embankment Erosion	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0
1	812/1	Chan Align	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0

Str Unit	Elm/Env	Description	Element Notes
1	12/1	Concrete Deck - Bare	SPALLS, CRACKING, SOME STEEL EXPOSED. PART OF DECK COVERED WITH 7/8" STEEL PLATING. SKEW PARTS OF DECK NOT COVERED
1	104/1	P/S Conc Closed Web/Box Girder	DUE TO CONDITION OF 4 MIDDLE BEAMS. BEAM 3 SPALLING STEEL IS EXPOSED LONGITUDNAL CRACKING PRESENT. BEAM 4 HAS 3 PRESTRESSED CBALES BROKEN AND 5 MORE EXPOSED VERY RUSTED SOME OF THESE HAVE BROKEN STRANDS.
1	215/1	Reinforced Conc Abutment	STREAMWEAR, CRACKING, SPALLS EASTERN WING. UNDERCUT NE WING & N. ABUT. NE WING MINOR MISALIGNMENT.
1	334/1	Metal Bridge Railing - Coated	IMPACT ON THE ENDS RUST COVERED DOWN STREAM SIDE ABUTMENT 2 HAS A 15' SECTION MISSING.
1	358/1	Deck Cracking	DUE TO CONDITION OF TOPS OF BMS ON DECK.
1	361/1	Scour	DUE TO UNDERCUT @ NE WING & N. ABUT
1	363/1	Section Loss	DUE TO CONDITION OF DECK & BEAMS
1	503/1	Reinforced Concrete Curb	IMPACT VARIOUS LOCATIONS SCALING THRUOUT
1	802/1	Vibrat/Oscillation	NOTICEABLE
1	803/1	Non-fatigue/Plastic Deformation	DUE TO CONDITION OF BOX BEAMS (4TH BM FR. DOWNSTREAM END BROKE, SAGGED).
1	808/1	Longitudinal Shear Keys	NEED REPLACED
1	810/1	Channel Drift	CREEKROCK @ OUTLET
1	811/1	Embankment Erosion	EROSION UPSTREAM, DOWNSTREAM, WINGS
1	812/1	Channel Alignment	BRIDGE IS WHERE CHANNELS FORK

BRIDGE NOTES

CONCERN WITH 3-TON POSTING BECAUSE OF PLATE STEEL DISTRIBUTING WEIGHT

PAST INSPECTION

Inspection Date: 03/03/2010 Type: 3 Substandard (12 months)

Inspector: MFROST Pontis User Key: MFROST - Mike F

Scope:

NBI: ☑ Other: ☐ Element: ☑

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

POSTED FOR 3 TONS & "ONE LANE BRIDGE" EACH SIDE.

Structure Inventory and Appraisal Sheet (English Units)

PAST INSPECTION

Inspection Date: 04/01/2009 Type: 3 Substandard (12 months)

Inspector: TFARMER Pontis User Key: TFARMER - Terry

Scope:

NBI: ☑ Other: ☐ Element: ☑

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

POSTED FOR 3 TONS & "ONE LANE BRIDGE" EACH SIDE.

PAST INSPECTION

Inspection Date: 03/28/2008 Type: 3 Substandard (12 months)

Inspector: TFARMER Pontis User Key: TFARMER - Terry

Scope:

NBI: ☑ Other: ☐ Element: ☑

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

POSTED FOR 3 TONS & "ONE LANE BRIDGE" EACH SIDE.

Structure Inventory and Appraisal Sheet (English Units)

PAST INSPECTION

Inspection Date: 03/08/2007 Type: 3 Substandard (12 months)

Inspector: TFARMER Pontis User Key: TFARMER - Terry

Scope:

NBI: ☑ Other: ☐ Element: ☑

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

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PAST INSPECTION

Inspection Date: 01/01/2006 Type: 1 SIA (Initial Inventory)

Inspector: -1 Pontis User Key: PONTIS - Pontis F

Scope:

NBI: ☑ Other: ☐ Element: ☐

Underwater: ☑ Fracture Critical: ☐

INSPECTION NOTES

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INSPECTOR WORK CANDIDATES

Work Candidate ID	Action	Object	Agency Status	Agency Priority	Assigned to a Project	Rec. Date
A-KYTC-0E117A51-00000056	Repl Elem	P/S Conc Box Girder	Under review	low	No	3/8/2007
A-KYTC-0E117A51-0000005A	Rehab Elem	R/Conc Abutment	Under review	Medium	No	3/8/2007
A-KYTC-0E117A51-00000058	Repl Elem	Long. Shear Keys	Under review	low	No	3/8/2007
A-KYTC-0E117A51-0000005C	Repl Elem	Chan Drift	Under review	Medium	No	3/8/2007
A-KYTC-0E117A51-0000005E	Pr Maint	Embankment Erosion	Under review	low	No	3/8/2007
A-KYTC-0E117A51-00000060	Repl Elem	Chan Align	Under review	low	No	3/8/2007
A-KYTC-1320FAE3-00000021	Replace	Bridge	Under review	High	No	3/3/2010

APPENDIX C: PRELIMINARY ENVIRONMENTAL OVERVIEW

KY 2011 BRIDGE REPLACEMENT
MILEPOINT 8.4
Bell COUNTY, NEAR KY-66
Item 11-1079.0

II. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Ecological Overview

This project will involve a bridge over Red Bird Creek, Bell County Kentucky in the Beverly USGS Quadrangle. The ecological impacts appear to be in a lower elevation area with a confluence floodplain. Cow Fork Creek is also in the project limits. Neither Red Bird nor Cow Fork Creeks are listed special use by KDOW. Several small to medium sized trees are in the project area that could be used by bats. There appear to be no ponds impacted. There is suitable habitat for threatened and endangered species in the project area for USFWS identified species. Current species listed for Bell County, Myotis sodalis, Indiana bat , Epioblasma torulosa rangiana, Northern riffleshell, Lampsilis abrupta, pink mucket, Obovaria retusa, ring pink, Plethobasus cooperianus, orangefoot pimpleback, Plethobasus cyphyus, sheepnose, Pleurobema clava, clubshell, Cyprogenia stegaria, fanshell, Pleurobema plenum, rough pigtoe, Alasmidonta atropurpurea, Cumberland elktoe, Trifolium stoloniferum, running buffalo clover, Phoxinus cumberlandensis, blackside dace, Etheostoma susanae, Cumberland darter, Pseudanopthalmus frigidus, icebox cave beetle. Future study will address the requirements of USFWS and prevent detriment to the protected species. Land use impacts should be temporary and should not significantly change the current use. Caution needs to be taken to ensure all waste generated at the site is placed in a designated site that is not in the floodplain and that Best Management Practice's (BMP's) are developed to adequately control erosion and run-off.

B. Socioeconomic/Environmental Justice

With no relocations, there would appear to be no environmental justice issues associated with this project. The construction should not pose hardships to community provided that a diversion should be incorporated as part of the project. Similarly, there appears to be no impacts to prime farmland.

C. Cultural/Historic Resources

A home of historic interest is located close to the project area. The bridge may qualify historic. The bridge is concrete so relocating it would be difficult. Historic significance will be determined in the project development phases.

No known archaeological sites are in the project limits. Taking into account that the area is prior disturbed by existing road construction, a phase I archaeological survey will determine cultural significance and if eligible sites are located in the project footprint.

D. Potential UST/HazMat, Air, and Noise

There is no evidence to support UST/Hazmat issues on this project. Be aware of ACM advanced notification prior to demolition and removal of the bridge. Noise issues will be temporary and limited to those associated with construction activity. No new lanes or increased traffic will be associated with this project. Temporary construction Air Quality will be controlled with good construction practices. The project area is listed as attainment for monitored air pollutants.

Photo of Bridge over Red Bird Creek