

KENTUCKY TRANSPORTATION CABINET  
 DEPARTMENT OF HIGHWAY DESIGN  
 DIVISION OF HIGHWAY DESIGN

**DESIGN EXECUTIVE SUMMARY**

County: BALLARD Item No.: 1-115.00

Federal Project No.: FD04 1550 C004 E143 UPN: \_\_\_\_\_

MARS No.: C-03060711 UPN: \_\_\_\_\_

**Project Description:**

Phase I and II of US 60 from Stafford Lane east to the Ballard-McCracken County line, a distance of approximately 3.8 miles. New alignment and major widening.

**Roadway Classification:**

Local  Collector  Arterial  Interstate  Rural  Urban

ADT(current) 6770 ADT ( 2027 ) 10,060 DHV ( 2027 ) 1170

Posted Speed Limit:  55 (rural)  35 (urban)  Other (Specify): \_\_\_\_\_

Design speed selected by the Project Team 60 MPH

Concurrence in noted Typical Exceptions to be obtained from Director of Design.

DESIGN CRITERIA	EXISTING	TYPICAL	PROJECT TEAM RECOMMENDATION
Number of Lanes	<u>2</u>	<u>2</u>	<u>4</u>
Pavement Width	<u>11' Lanes</u>	<u>12' Lanes</u>	<u>12' Lanes</u>
Shoulder Width, Slope	<u>1' @ 4%</u>	<u>8' @ 4% Paved</u>	<u>12' @ 4% Paved</u>
Bridge Width	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Minimum Radius (e <sub>max</sub> = <u>4%</u> )	<u>950'</u>	<u>1505'</u>	<u>7500'</u>
Maximum Grade	<u>5.28%</u>	<u>4%</u>	<u>2.65%</u>
Minimum Sight Distance	<u>360'</u>	<u>570'</u>	<u>914.22'</u>
Border Area (urban)	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

**Design Criteria Notes:**

**DESIGN EXECUTIVE SUMMARY (continued)**

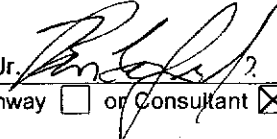
Access Control Type: Partial Control (1200 FT. MIN. SPACING)

Environmental Action: N/A Approval Date: \_\_\_\_\_

Existing Pavement Depths: \_\_\_\_\_

- Attachments:
- (1) Map showing project location.
  - (2) Typical sections, including any bridges, on "8 1/2 X 11".
  - (3) Cost comparison table of alternates vs. Six-Year Plan.

- Discussions:
- (1) Alternatives considered including Preferred and No Build.
  - (2) If Preferred alternate cost is 15% or more above Six -Year Plan cost.
  - (3) Maintenance of Traffic Plan.
  - (4) Avoidance Alternatives to Water-Related Impacts.
  - (5) Consideration for bicycle and pedestrian facilities.
  - (6) Purpose and Need Statement.

Submitted By: Ben T. Quinn, Jr.  Date: 07/03/2007  
Project Engineer, check one: (Depart of Highway  or Consultant  )

Recommended By: \_\_\_\_\_ Date: \_\_\_\_\_  
Project Manager

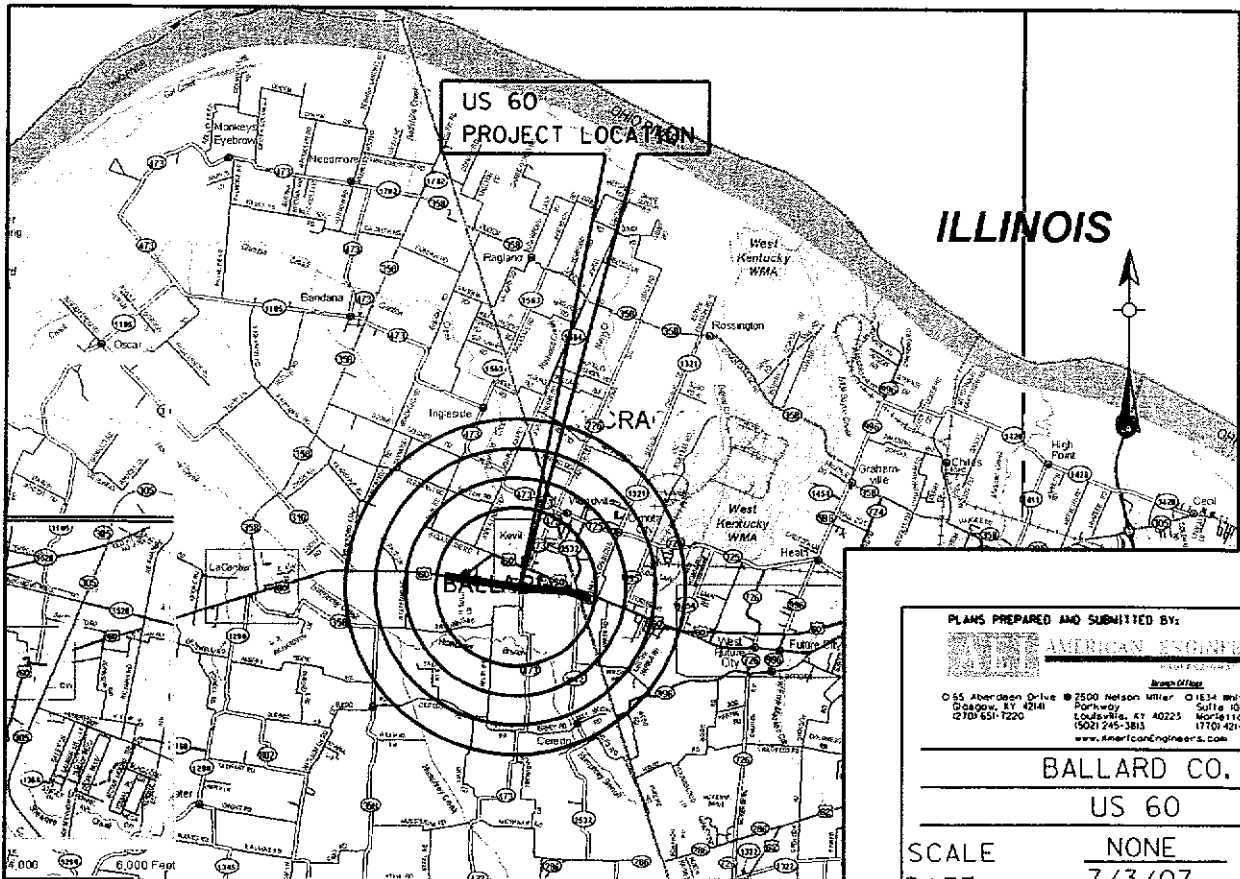
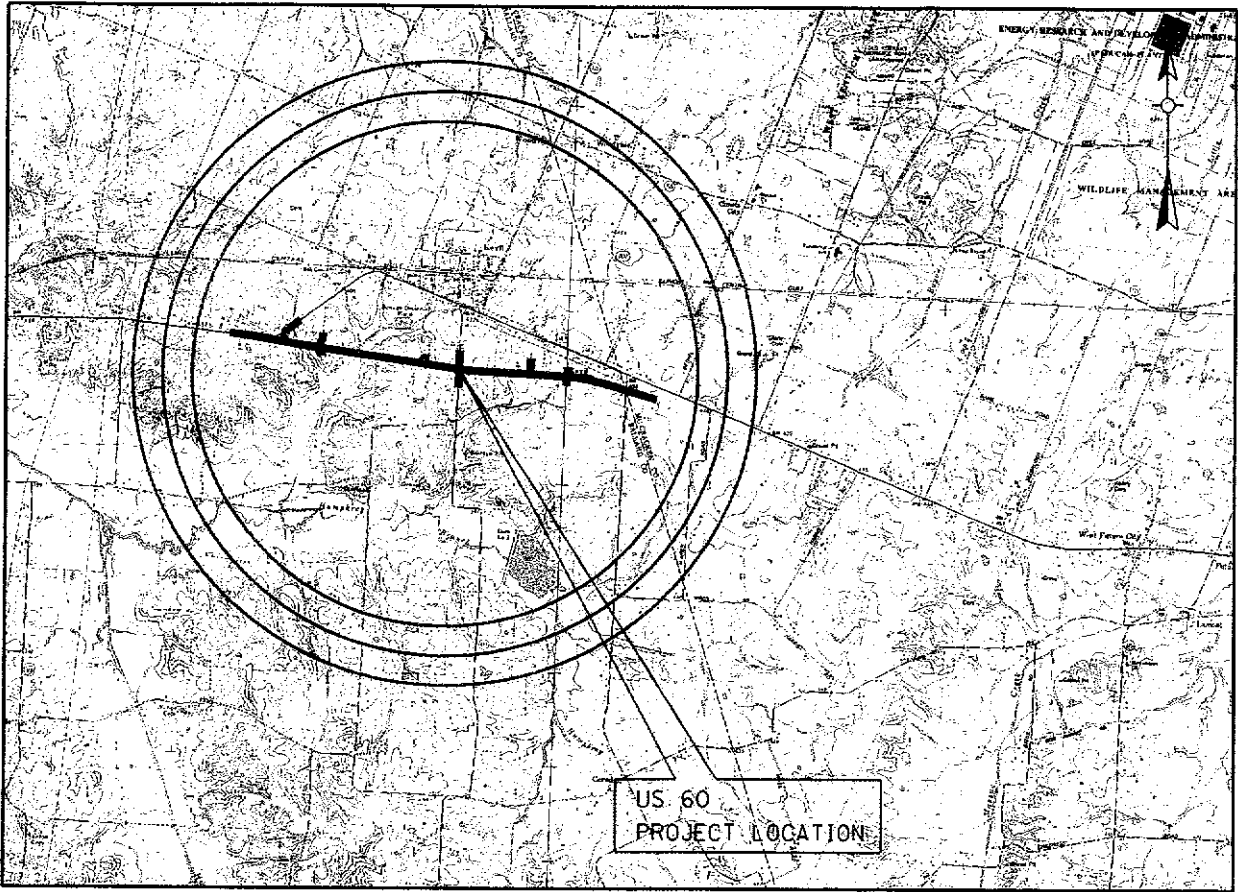
Recommended By: \_\_\_\_\_ Date: \_\_\_\_\_  
Location Engineer

Recommended By: \_\_\_\_\_ Date: \_\_\_\_\_  
T.E.B.M. for Location

Comments:

GEOMETRIC APPROVAL GRANTED BY:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Director, Division of Highway Design



PLANS PREPARED AND SUBMITTED BY:

**AMERICAN ENGINEERS, INC.**

*Engineering & Construction Services*

Office: 2500 Nelson Miller Parkway, Suite 101, Louisville, KY 40225, 502-245-3813, www.AmericanEngineers.com

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**BALLARD CO.**

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**US 60**

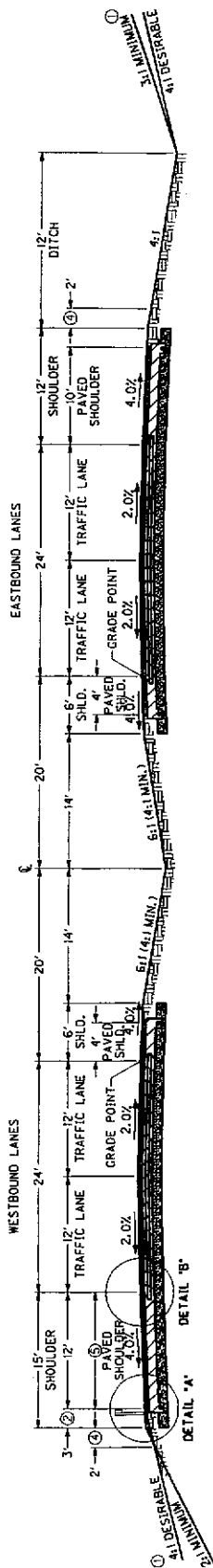
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SCALE NONE

DATE 7/3/07

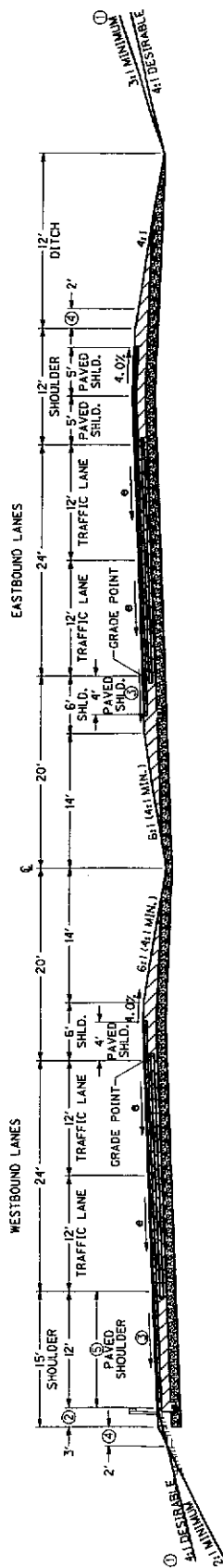
CHECKED BY BTQ

# TYPICAL SECTIONS US 60



DESIGN SPEED = 55 m.p.h.

RURAL (NORMAL) SECTION  
NEW CONSTRUCTION



RURAL (SUPERELEVATED) SECTION  
NEW CONSTRUCTION

## PROJECT COST ESTIMATES

The following tables summarize the current estimates for this project:

<b>Construction</b>	<b>Item 1-115.00</b>	<b>Item 1-118.00</b>
<b>Alternate A</b>	\$12,517,456	\$11,675,450
<b>Alternate B</b>	\$16,260,022	\$12,279,355
<b>Alternate C</b>	\$16,733,458	\$12,145,124
<b>Alternate D</b>	\$14,200,391	\$12,184,415

Item No. 1-115.00

<b>Item</b>	<b>6-yr Plan</b>	<b>Current Estimate</b>
<b>Construction (*)</b>	<i>Not Funded</i>	\$12,517,456
<b>Utilities</b>	\$2,500,000	
<b>R/W</b>	\$4,500,000	
<b>Total</b>		

Item No. 1-118.00

<b>Item</b>	<b>6-yr Plan</b>	<b>Current Estimate</b>
<b>Construction (*)</b>	<i>Not Funded</i>	\$11,675,450
<b>Utilities</b>	<i>Not Funded</i>	
<b>R/W</b>	<i>Not Funded</i>	
<b>Total</b>	<i>Not Funded</i>	

(\*) Alternate A is the project team preferred alignment

## DISCUSSION OF COST DEVIATION FROM THE 6-YR PLAN

The project is currently not funded for construction within the active 6-yr plan. For this reason, a cost comparison was not made.

## DISCUSSION OF ALTERNATIVES

This project initially began with Phase I and Phase II design of US 60 for Item No. 1-115.00—a 3.2 mile section of US 60 in Ballard County that extended from Stafford Lane east to the McCracken County / Ballard County line. The eastern most tie-in, at the county line, links the AEI design section to the section of US 60 being designed by the local District office. It was the western most termini of AEI's section, again, initially at Stafford Lane that resulted in the Department wanting to ensure that continuity would exist between AEI's 4-lane western section of US 60 and future western continuations of US 60, yet to be developed widening. For this reason, AEI was requested to study an additional 1.8 mile section of US 60, westward to near LaCenter. This additional 1.8 mile section is noted as Item No. 1-118.00 and involves only Phase I design.

Four alternatives were considered for the US 60 improved corridor (Item No.'s 1-115 and 1-118). All four alternatives involved a rural, 4-lane bifurcated roadway that would achieve a 60-mph design speed—this typical section is a continuation of the already improved, built sections of US 60 going west from Paducah. These alternates—discussion includes both Item Numbers 1-115 and 1-118—are summarized as follows:

Alternate A, the preferred alternate, begins along existing US 60, just north of the existing bridge traversing Humphrey Creek. It gradually transitions away from existing US 60 and follows a new, cross country southern route across farmland, generally maintaining a roughly 1000 ft offset from existing US 60 and moving in a northeasterly direction toward the existing US 60 hairpin curves, just east of Stafford Lane. It crosses Stafford Lane, KY 473, and Amy Lynn Road, all to the south of existing US 60. It maintains this new southern alignment all the way to the McCracken-Ballard County Line where it ties into the District's design section of US 60 at County line road.

Alternate B begins along existing US 60, just north of the existing bridge traversing Humphrey Creek. It gradually transitions away from existing US 60 and follows a new, cross country southern route, generally maintaining a roughly 200 ft offset from existing US 60 until it nears the hairpin curve of US 60 near Sta. 101+00. Once past the hairpin curve, Alternate B generally follows the corridor of Alternate A crossing Stafford Lane, KY 473, and Amy Lynn Road, all to the south of existing US 60. It maintains this new southern alignment all the way to the McCracken-Ballard County Line where it ties into the District's design section of US 60 at County line road.

Alternate C begins along existing US 60, just north of the existing bridge traversing Humphrey Creek. Alternate C continues the existing US 60 tangent line from the bridge and extends this tangent to the north along a new, cross country alignment. It continues in an eastern direction for roughly 1-mile of new alignment, gradually transitioning back to existing US 60 near Sta. 275+00. It follows existing US 60, as a widening & overlay, for approximately ½-mile up to the hairpin curve. From this point, the alignment continues to the northeast along a cross country alignment, bypassing the City of Kevil to the north. Once past Kevil, the project transitions back to the McCracken-Ballard County Line where it ties into the District's design section of US 60.

Alternate D begins along existing US 60, just north of the existing bridge traversing Humphrey Creek. It gradually transitions away from existing US 60 and follows a new, cross country southern route, to the north of Alternate A, but to the south of Alternate B—following a more northeastern alignment to the hairpin curve. At the intersection with the hairpin curve, this alignment continues to follow the same corridor as Alternate C does to the end of the project.

The four aforementioned alternates were presented at the Preliminary Line and Grade meeting. During the PL&G meeting, Alternate A was ultimately chosen by the Project Team as the preferred alignment.

Alternate A was chosen by the project team for several reasons, including:

- Lessened impact to existing houses and utilities along the corridor,
- Avoidance of several large ponds and improved stream crossing,
- Constructability and ease of maintenance of traffic during construction,
- Logical, begin and end points between future sections of US 60 widening improvements,

Phase II construction plans for Alternate A, under the Item No. 1-115 section of the corridor involve widening that occurs near the existing US 60 hairpin curve at Sta. 151+88. Temporary ties to existing US 60 will be provided and maintained until the funding is available for Item No. 1-118. This alignment continues in an easterly direction across farmland until it ties in with the District's design section.

## **DISCUSSION OF MAINTENANCE OF TRAFFIC PLANS**

Because the majority of the project involves a new corridor, the only involvement with traffic during construction will be at the intersections with existing roads and at the eastern and western tie-ins.

Thru traffic along Sullivan Lane will be maintained during construction on the existing Sullivan Lane alignment, as the proposed re-alignment of Sullivan Lane, due to access control spacing, will occur roughly 80-ft west of current location.

Reconstruction of KY 473 within the US 60 project limits will require closure of KY 473 thru traffic, except for a few local residents residing within the immediate project limits. This will require that KY 473 traffic detour around the construction zone using the local, County roads for parts north or south of the intersection.

Amy Lynn Road will remain open to traffic during construction, as the existing road dead-ends immediately south of the US 60 project and only serves approximately 5 residences. Measures will be maintained during construction to afford the residences connectivity along this road.

Relative to the eastern tie-in, the District has devised the traffic control scheme to facilitate traffic control at the County line road connection point. Relative to the western tie-in, the widened US 60 road transitions from a 4-lane bifurcated section back to the existing 2-lane section tangent to the southern most edge of the existing hairpin curve. This tie-in will be built under traffic and will involve barrels or cones; the use of flaggers during grade, drain and surfacing activities, but at all times, two-way traffic can be maintained.

## **CONSIDERATION FOR BICYCLE AND PEDESTRIAN FACILITIES**

The preferred alignment and chosen typical section are for a rural, partially controlled access roadway. The corridor is not immediately near an urban center or a high density residential area. The land use area near this project is primarily farming, and thus the need for bicycle or pedestrian accessibility was believed by the project team to be minimal. The existing roads in

the area of this project, that would intersect with the improved US 60 are narrow or have no shoulders on them, the need for pedestrian and/or bicycle facilities is very minimal. No mention was made from the public at any time about the community's desire for these facilities.

## **PURPOSE AND NEED**

To provide the public with a safe travel route, enhanced capacity, and improved traffic operation for the continued widening of the US 60 corridor.



**BALLARD COUNTY**  
**US-60**  
**ITEM NO. 1-115.00**  
**ITEM NO. 1-118.00**

**AVOIDANCE ALTERNATIVES TO WATER-RELATED IMPACTS**  
**(Supplemental to report on Preliminary Line & Grade Inspection)**

***BLUELINE STREAMS***

The reconstruction of US 60 near Kevil requires several crossings of blueline streams. Locations of the required structures are as follows:

*Item No. 1-115.00*

<u>Alternate</u>	<u>Station</u>	<u>Drainage Area</u>	<u>Structure</u>	<u>Stream</u>
A	Sta. 202+00	75.9 ac	4'x8' RCBC	Unnamed Creek
A	Sta. 249+00	204.5 ac	5'x12' dual RCBC	Unnamed Creek
A	Sta. 268+22	1.6 mi <sup>2</sup>	5'x12' dual RCBC	Unnamed Creek
B	Sta. 105+36	94.3 ac	66" RCP	Unnamed Creek
B	Sta. 159+51	0.3 mi <sup>2</sup>	5'x12' RCBC	Unnamed Creek
B	Sta. 176+57	1.6 mi <sup>2</sup>	5'x12' RCBC	Unnamed Creek
C	Sta. 355+05	114.6 ac	4'x10' RCBC	Unnamed Creek
C	Sta. 377+43	1.4 mi <sup>2</sup>	7'x14' dual RCBC	Unnamed Creek
C	Sta. 439+35	80.8 ac	4'x8' RCBC	Unnamed Creek
D	Sta. 355+05	114.6 ac	4'x10' RCBC	Unnamed Creek
D	Sta. 377+43	1.4 mi <sup>2</sup>	7'x14' dual RCBC	Unnamed Creek
D	Sta. 439+35	80.8 ac	4'x8' RCBC	Unnamed Creek

*Item No. 1-118.00*

<u>Alternate</u>	<u>Station</u>	<u>Drainage Area</u>	<u>Structure</u>	<u>Stream</u>
A	Sta. 130+00	3.0 mi <sup>2</sup>	2-span, 100-lf bridge	Unnamed Creek
B	Sta. 41+12	111.8 ac	6'x14' RCBC	Unnamed Creek
B	Sta. 43+00	3.0 mi <sup>2</sup>	2-span, 100-lf Bridge	Unnamed Creek
C	Sta. 240+84	78.3 ac	4'x8' RCBC	Unnamed Creek
C	Sta. 246+00	2.9 mi <sup>2</sup>	Single span, 60-lf bridge	Unnamed Creek
C	Sta. 302+54	123.8 ac	4'x10' RCBC	Unnamed Creek
D	Sta. 233+18	87.5 ac	96" RCP	Unnamed Creek
D	Sta. 234+00	3.0 mi <sup>2</sup>	Single span, 60-lf bridge	Unnamed Creek
D	Sta. 279+32	14.4 ac	4'x8' RCBC	Unnamed Creek
D	Sta. 302+54	123.8 ac	4'x10' RCBC	Unnamed Creek

In order to construct the US 60 near Kevil, it will not be possible to avoid these blueline stream crossings. Four alternate corridors were studied for this project. All of the alternates require the construction of new structures over blueline streams.

Alternate B generally follows existing US60 along an approximate 200-lf parallel offset. This alternate will require crossing 6 blueline streams. The alternate minimizes the impact to existing streams since it will only affect streams that are currently crossed by existing US60. However, the alternate will impact several residences and businesses.

Alternate C is a cross-country route that bypasses Kevil to the north. This alternate will also require crossing 6 blueline streams. This alternate also minimizes the impact on blueline streams, but it is not preferred due to concerns about approach road geometry with respect to Dennis Jones Road and Bradford Road.

Alternate D is a cross-country route that bypasses Kevil to the south. This alternate crosses 7 blueline streams. This alternate is beneficial since it impacts fewer residences and businesses than the other alternates, while only affecting 1 additional blueline stream.

During the Preliminary line and Grade Inspection, a decision was made to study and develop another alternate alignment. This alternate, Alternate A, is the preferred alternate and is a combination of Alternates B and D. It bypasses Kevil to the south and ties back in to existing US60 near the existing "hairpin curve." This alternate has the benefit of impacting fewer residences and businesses and will provide greater flexibility in the design of future alignments for the LaCenter Bypass. This alternate crosses 7 blueline streams.

Construction of the structures for the preferred alternate may cause changes in flood state and flood limits. However, design measures will ensure that flood stage and floodplain impacts will be limited to design manual requirements.

#### ***Wetlands***

There is no evidence of jurisdictional wetlands associated with this project.

#### ***Karst Topography***

There is no evidence of sinkholes/Karst topography associated with this project.

#### ***Floodplains***

A Flood Insurance Rate Map exists for Ballard County. The project is located in Zone X (area determined to be outside the 500 year floodplain) on the FIRM. The project is not expected to result in significant floodplain impacts.