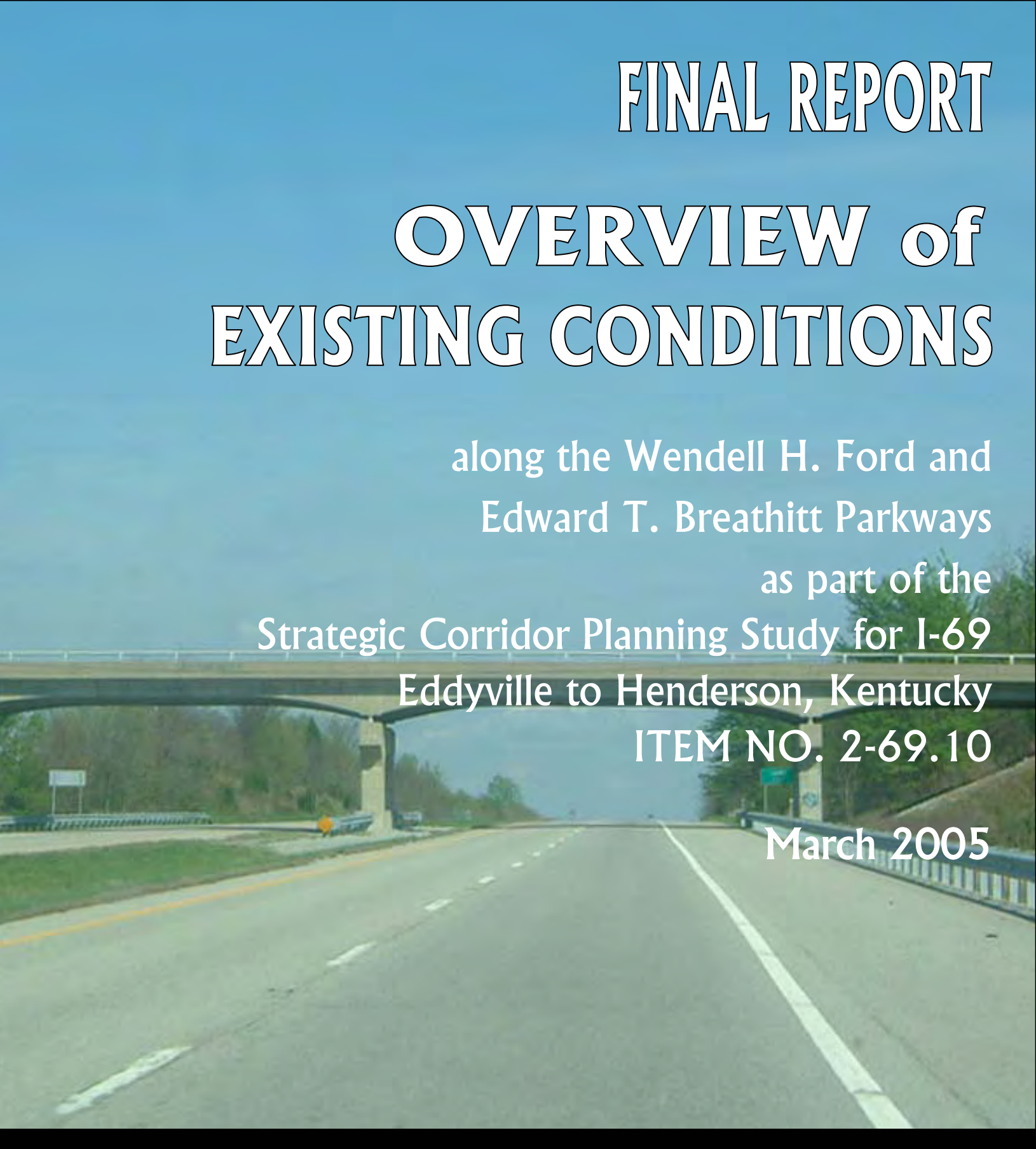

FINAL REPORT

OVERVIEW of EXISTING CONDITIONS

along the Wendell H. Ford and
Edward T. Breathitt Parkways
as part of the
Strategic Corridor Planning Study for I-69
Eddyville to Henderson, Kentucky
ITEM NO. 2-69.10

March 2005

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prepared by:

KENTUCKY TRANSPORTATION CABINET

ENGINEERS PLANNERS ECONOMISTS
Wilbur Smith Associates

I-69: EDDYVILLE TO HENDERSON CORRIDOR PLANNING STUDY

EXECUTIVE SUMMARY

Kentucky Transportation Cabinet - Division of Planning

March 2005

The Kentucky Transportation Cabinet (KYTC) has undertaken a corridor planning study for the portion of Interstate 69 (I-69) from Eddyville to Henderson, Kentucky. A Notice to advise the public of this study was published in the Federal Register, Vol. 67, No. 184 on Monday, September 23, 2002.

The study area for this section (shown at right) includes the following routes:

- The Wendell H. Ford (Western Kentucky) Parkway, from I-24 near Eddyville in Lyon County to the Edward T. Breathitt (Pennyrile) Parkway in Hopkins County, hereinafter called the Ford Parkway and Breathitt Parkway, respectively; and
- The Breathitt Parkway, from the Ford Parkway in Hopkins County to Henderson at or near the Henderson Bypass (KY 425) in Henderson County.

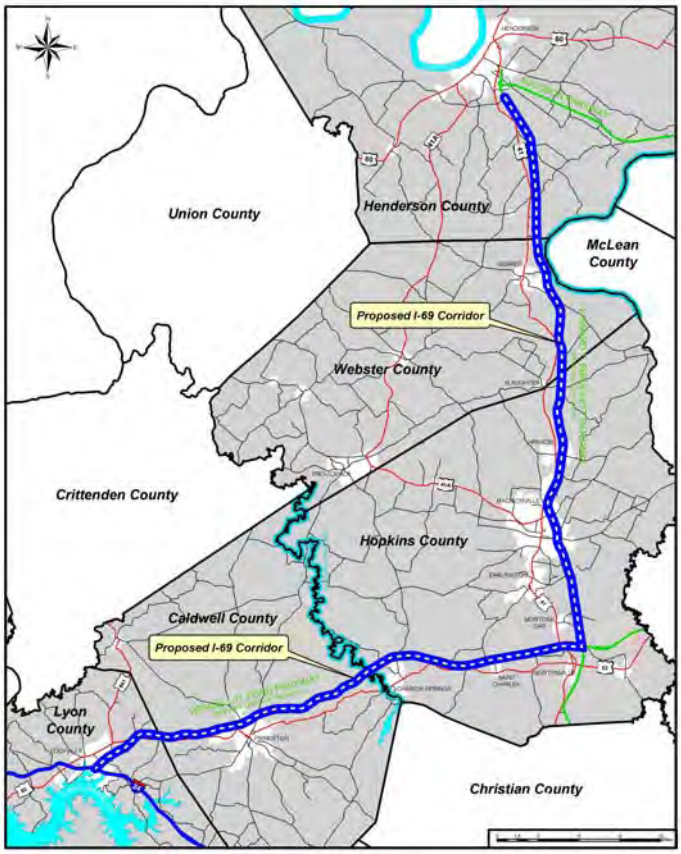
STUDY PURPOSE

The primary purpose of the study is to review existing conditions along the Ford Parkway and the Breathitt Parkway to:

- Identify locations where either or both of the Parkways adequately meet AASHTO highway design guidelines for interstates;
- Evaluate the degree to which the Parkways meet or fall short of those guidelines, if problem areas are found;
- Identify options for making improvements to the Parkways to address any problem areas; and
- Make recommendations regarding the suitability of routing I-69 along the Ford and Breathitt Parkways.

PROJECT BACKGROUND

I-69 (Corridor 18) was one of several Priority Corridors identified by the U.S. Congress as part of the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and continued in subsequent federal transportation legislation.



Study Area: I-69 Eddyville to Henderson

- A national feasibility study was completed in 1995 by the Federal Highway Administration, which concluded that the future construction of I-69 from Canada to Mexico was economically feasible.
- The Corridor 18 Special Issues Study, completed in 1997, identified a Representative Corridor along the Parkway system in Kentucky, which best serves the purposes of Corridor 18 and yields the most benefits relative to facility costs.
- In recent years, the Transportation Cabinet has a goal to utilize as much of the existing infrastructure as possible. Thus, I-66 (Corridor 3) and I-69 (Corridor 18), would be routed along the state's existing Parkway system to the maximum extent possible.

This study has integrated the national I-69 goals with the local needs and concerns identified for the Eddyville to Henderson segment. Preliminary project goals have been established to help form the basis of the project purpose and need for this I-69 Section of Independent Utility (SIU), as follows:

- Maximize the use of the existing Parkways;
- Serve local industry; and
- Provide an improved facility for increasing truck traffic.

STUDY ACTIVITIES

The findings and recommendations identified through this study were the result of the Strategic Corridor Planning process for I-69. Study activities included the following:

- Data collection, review and analysis utilizing the KYTC's Highway Information System, as-built plans, crash data, and other information provided by local Highway District offices;
- Implementation of a Public Involvement Plan including meetings with the Project Team, local officials, interest groups and the public;
- Determination of AASHTO minimum design criteria to compare against the existing conditions of the Parkways in order to identify locations that do not meet AASHTO guidelines;
- Development and evaluation of five (5) improvement options representing incremental levels of investment; and
- Recommendations, including identification of additional study needs and next steps to further define deficiencies along the Parkways and validate the recommended alternative.

KEY FINDINGS

In their present form, the Ford and Breathitt Parkways do not operate in a manner appreciably different from the way they would operate if they were designed to meet existing design guidelines for interstate highways. These two Parkways already provide many basic design characteristics, or physical features, that are common for interstate highway facilities, such as full control of access, divided cross-sections, two travel lanes in each direction, and 70 mile-per-hour design speeds.

It is the actual dimensions of some of these physical features (the width of medians, the length and curvature of ramps, the width of bridges, the height of overpasses, etc.) on the Parkways that do not meet the minimums for current interstate design standards. To facilitate an understanding of where the deficiencies are relative to each other, the locations have been summarized on the attached figures. Deficiencies are coded to match the legend on each map.

The findings presented here are based on available data and limited field reviews. Additional analysis in future phases of this project will serve to further define the conclusions and recommendations drawn from this analysis.

The key findings include the following:

Operational Considerations and Safety

Crash data for the Parkways were considered for a four-year period from 1998 to 2001.

- Crash Analysis (Ford Parkway): When compared to other state parkways, there is one high crash segment along the Ford Parkway near the US 62 interchange at Eddyville in Lyon County (MP 3.702 to MP 5.610) where the crash rate exceeds the statewide average for all parkways. 72% of these accidents were a combination of collisions with fixed objects or animals. Another segment between MP 0.000 and MP 3.702, just east of the I-24 interchange in Lyon County, nearly exceeds the statewide average for parkways and should be considered a potential high crash segment.
- Crash Analysis (Breathitt Parkway): When compared to other parkways, there is one high crash segment where the actual crash rate exceeds the statewide average for Parkways. The high crash segment is in Hopkins County between MP 41.002 and MP 42.437, near the KY 70/85 exit at Madisonville. Sixty-nine percent (69%) of these accidents are the result of rear-end collisions likely related to the ramp operations at Interchange 42 at Madisonville. There is also one potential high crash segment in Hopkins County between MP 42.437 and 44.337, near the US 41A exit at Madisonville.
- Crash Analysis (as an Interstate): When compared to Kentucky interstate highways, rather than state parkways, one additional high crash segment was identified along the Ford Parkway located just east of the I-24 interchange in Lyon County (between MP 0.000 and MP 3.702). 74% of these crashes are either a collision with an animal or fixed object.

- Potential High Crash Segments: There are five (5) additional segments considered to be potential high crash segments, including three (3) in Hopkins County and two (2) which are side-by-side in Webster County.
- Additional Finding Related to Crash Analysis: There were only 6 crashes coded as 'median cross-over' or 'head-on' collisions on the parkways. Three interchanges are located in high crash locations – Exits 1 and 4 on the Ford Parkway and Exit 42 on the Breathitt Parkway. Further analysis in the high crash segments may identify corrections related to horizontal clearance, wildlife measures, ramp design or operational controls. However, this is not unlike other existing interstates in Kentucky.
- Traffic Volumes (2002): Existing traffic volumes along the Ford Parkway range from 9,000 vpd in Lyon County to 10,900 vpd in Hopkins County. For the Breathitt Parkway, 2002 traffic volumes range from 10,500 vpd in Hopkins County near the Ford Parkway to 26,400 vpd in Hopkins County (within the urban area of Madisonville).
- Truck Percentages (2002): Existing truck percentages range from 25.0% to 31.3% along the Ford Parkway while truck percentages range from 22.9% to 32.9% along the Breathitt Parkway.
- Traffic Volumes without I-69 (2030): Average annual growth rates along the Parkways range from 1.7% to 2.1%. These rates result in traffic volumes ranging from 15,100 to 18,100 vpd along the Ford Parkway and from 17,200 to 43,500 vpd along the Breathitt Parkway.
- Traffic Volumes with I-69 (2030): Assuming I-66 and I-69 will travel along a portion of the Ford Parkway, growth rates range from 3.2% to 3.7% along the Ford Parkway. Rates range from 2.2% to 2.3% along the Breathitt Parkway. These result in traffic volumes ranging from 23,100 to 30,500 vehicles per day along the Ford Parkway and from 19,100 to 50,500 vehicles per day along the Breathitt Parkway.
- Truck Percentages (2030): Future truck volumes were not forecast as part of this study; however, truck traffic is expected to increase substantially if the national goals of I-69 are met.
- Level of Service (2002): All Parkway segments operate at LOS C or better in the Year 2002 and should therefore be considered acceptable at present.
- Level of Service (2030): Future year (Year 2030) levels of service are expected to operate at acceptable conditions throughout the study area both with and without the I-69 designation, since only one segment along either Parkway is expected to fall below LOS C. This segment, expected to operate at LOS D, is found in Hopkins County in the urban area of Madisonville and can, therefore, be considered an acceptable LOS.

Mainline Geometry/Typical Section

- Design Speed: The Ford and Breathitt Parkways meet or exceed minimum design speed guidelines for interstate highways in rural and urban areas.
- Lane Width: Lane widths on the mainline of the two Parkways meet the minimum AASHTO guidelines for freeway design.
- Outside Shoulder Width: It is anticipated that all of the existing outside shoulders will meet interstate highway criteria for shoulder width.
- Inside Shoulder Width: The Parkways do not fully conform to AASHTO design guidelines for inside shoulder widths on freeways. All of the Ford Parkway and sections of the Breathitt Parkway have 3' inside shoulder widths, while guidelines recommended a 4' inside shoulder.
- Median Width: The existing median width along the Breathitt Parkway meets AASHTO standards for rural freeways with the exception of a short roadway section between Milepoint 39.550 and Milepoint 42.437 in Hopkins County. While portions of the Ford Parkway also meet accepted practice, the majority in Caldwell and Hopkins Counties do not meet current AASHTO standards.
- Clear Zones: It is not possible to evaluate the applicability of current design standards and availability of acceptable clear zones with the information currently available.
- Guardrail Placement and Condition: Sufficient information does not exist on the as-built plans to evaluate the placement of guardrail along the I-69 corridor.
- Superelevation: The design speeds and maximum radius used for the design of the mainline sections of the existing Parkways are acceptable and in general compliance with the

intent of the current AASHTO design guidelines.

- Horizontal Alignment: The horizontal curvature for the Parkways is acceptable and in general compliance with current AASHTO design guidelines.
- Vertical Alignment: The majority of vertical curves along the Parkways are sufficient to meet current AASHTO guidelines. Of the five (5) unacceptable vertical curves, three (3) are located on the Ford Parkway and two (2) on the Breathitt Parkway.

Bridges and Overpasses

- Lateral Clearance (Ford Parkway): Of the 22 mainline bridges along the Ford Parkway, 14 (70%) fail to meet the minimum 38'-00" lateral (horizontal) clearance.
- Lateral Clearance (Breathitt Parkway): Of the 28 mainline bridges on the Breathitt Parkway, 14 (50%) fail to meet the minimum lateral (horizontal) clearance.
- Vertical Clearance: Five (5) overpass structures along the two Parkways do not meet minimum vertical clearance standards of 16'-00".
- Functional Adequacy: Thirteen (13) bridges are considered functionally obsolete. Of these thirteen (13) structures, 2 pass over the Parkways (both along the Ford Parkway) and 11 are mainline bridges (6 on the Breathitt Parkway and 5 on the Ford Parkway). Two (2) overpasses are considered structurally deficient, with one located along each Parkway.

Interchanges and Ramps

- Design Speed: Although there was insufficient information from the as-built plans to properly locate or quantify possible deficiencies on the Ford and Breathitt Parkways, many of the ramps do not meet the minimum guidelines for design speed.
- Lane Width: Lane widths ranged from 15’ to 18’ and are acceptable and in general compliance with AASHTO guidelines.
- Shoulder Width: Ramps at interchanges on the two Parkways do not meet AASHTO guidelines for shoulder width.
- Horizontal Alignment: Many of the directional and loop ramps at the existing interchanges do not meet recommended design guidelines for horizontal alignment.
- Vertical Alignment: The as-built plan sets do not provide vertical profile information for ramps. However, it is not anticipated that significant problems exist in this area.
- Superelevation: Many of the directional and loop ramps have superelevations that exceed the 8% maximum.
- Speed-Change Lanes: Existing ramps on the Ford and Breathitt Parkways do not meet the minimum guidelines for tapers.
- Weaving Characteristics: There are three (3) interchanges where the length of weaving is below recommended design guidelines. Two are on the Ford Parkway: KY109 at MP 24.437 in Hopkins County and the Breathitt Parkway at MP 38.373 in Hopkins County. The third is the KY 56 interchange on the Breathitt Parkway at MP 62.632 in Webster County.

POTENTIAL IMPROVEMENT ALTERNATES

Alternates for I-69 include the following:

- No Build Alternate – KYTC could elect to participate no further in developing I-69, thus, leaving a gap in the national I-69 route. Under this scenario, the Parkways would still connect the sections of I-69 in Tennessee and Indiana.
- Minor Upgrades and Spot Safety Improvements to the Parkways – This alternate would address key safety and operational concerns but obtain design exceptions or approval of design flexibility for a number of circumstances where the Parkways do not meet current AASHTO guidelines.
- Partial Reconstruction of the Parkways – This alternate would enable the Parkways to meet most AASHTO guidelines but attempt to maintain improvements within the right-of-way by making extensive use of median barriers and guardrail along the parkways.
- Full Reconstruction and Widening of the Parkways – This alternate would enable the Parkways to meet full AASHTO guidelines by obtaining additional right-of-way along the Parkways for widening and reconstruction.

The construction of a new I-69 route on new alignment would not maximize the use of the existing Parkway system and would not ultimately meet the purpose and need for the I-69 project. For this reason, this alternate has been dismissed from further consideration.

Comparison of Preliminary Cost Estimates

Alternative	Meet Current Standards	Future Expansion w/o Additional ROW[2]	Impact on Environment	Cost (million)	Cost per Mile (million)
1. No Build	No	n/a	Least	$0.0[3]	$0.0
2. Minor Upgrade	Yes[1]	No	Least	$151.7	$1.9
3. Partial Reconstruction	Yes	No	Minimal	$379.7	$4.7
4. Full Reconstruction	Yes	Yes	Minimal	$851.8	$10.6
5. New Alignment	Yes	n/a	Substantial	$1,364.0	$22.0

[1] Improvements under this alternate would be targeted toward upgrading the design features along the routes that potentially represent the most significant safety and operational issues. Design exceptions would be considered where safety and operational conditions would not create an undue risk to motorists.

[2] This column answers the question: If additional travel lanes are required to meet future capacity after I-69 improvements are made, could the lanes be added within the right-of-way provided under each alternative?

[3] Funding for routine maintenance activities would still be needed.

These alternatives represent incremental levels of infrastructure investment to implement I-69 between Henderson and Eddyville. The table provides a cost comparison of each of the potential alternatives. Although dismissed from further consideration, a cost estimate for construction of a new alignment parallel to the parkways is included for comparison purposes.

CONCLUSIONS

Based on the Strategic Corridor Planning process, the following study findings identify considerations for the selection of a recommended improvement option. These include the following:

- It can generally be concluded that the sections of the Breathitt and Ford Parkways under consideration for designation as I-69 are currently providing efficient and safe travel routes through the Western Kentucky region.
- In the short-term, designating these roadways as I-69 would not substantially alter their operating characteristics in a manner that would be different than the conditions currently experienced along the two Parkways today.
- Other interstate highways across Kentucky and throughout the United States have varying degrees of design characteristics that do not meet current interstate standards. Therefore, signing the Ford and Breathitt Parkways as I-69 today may not be an unrealistic option and merits further investigation.
- In the long-term, I-69 will begin developing across the country and additional traffic and trucks will be induced to the corridor. Addressing the major geometric deficiencies along the parkways would help improve safety and operational conditions.
- Independent of the decision of when the Parkways should be officially designated as I-69, it will be necessary to provide for a systematic program of highway improvements along the Parkways.
- The program of identified improvements should serve to maintain acceptable operational levels of service and safety and address the areas along the Parkways that do not meet interstate design criteria.

RECOMMENDATIONS

It is recommended that Alternative 2, Minor Upgrades and Spot Safety Improvements, proceed into future phases of project development, as needed, based on the following:

- Major construction of an Interstate 69 route on new alignment should be dismissed from further consideration because it would not meet the first goal established for the project, to maximize the use of existing Parkways.
- The other major reconstruction alternates, Alternates 3 and 4, should also be dismissed from further consideration in future project development, since each would require additional right-of-way. Maximizing the use of existing right-of-way supports context-sensitive design principles and maximizes the use of existing infrastructure, resulting in the least

potential impact on the environment, the community, and local owners of homes and businesses.

- Routing I-69 along the Ford and Breathitt Parkways is perhaps the most context-sensitive solution possible. In particular, using the existing Parkways as I-69 would minimize negative impacts resulting from construction of a new facility on new alignment, thus, providing the ultimate "minimal impact" alternative.
- The Ford Parkway and Breathitt Parkway adequately meet AASHTO guidelines for most design elements. Some deficiencies are minor and could be accepted as design exceptions. There are a few deficiencies that should be addressed in the near future, particularly those that deal with public safety. Alternate 2 would address these issues.
- Many deficiencies on the existing Parkways could be considered acceptable under the principle of design flexibility. Flexibility is allowed in AASHTO guidelines if flexible design options are supported by engineering studies. In recent years, flexibility and context-sensitive solutions have been encouraged due to public concern about the community and environmental impacts of highway projects.
- Precedents already exist at locations along many interstate highways throughout the United States where expressways currently operate safely and effectively with design conditions that do not meet current AASHTO guidelines.
- Using the existing Parkways as I-69 addresses another issue, i.e., financial feasibility, since Alternate 2 along the existing Parkways offers the lowest cost solution at a time when government must ensure that funds are used more effectively.
- Minor improvements can be made to the existing Parkways under Alternate 2 to address operational and safety problems for a fraction of the cost of the other alternates, and yield most of the same benefits. The money saved could be used to advance other segments of I-69 in Kentucky, or consider I-69 connectors to other cities not directly along the route.
- Minor improvements can be made more quickly to the existing Parkways under Alternate 2, allowing the route to be designated as I-69 sooner and thus expedite the economic benefits.
- If I-69 Alternate 2 is implemented along the Ford and Breathitt Parkways, a program of improvements to upgrade the Parkways could be developed. This program could be phased-in over time in a fiscally-responsible manner as funds are available and as operational conditions warrant, rather than implementing improvements that do not appear to be needed now or in the immediate future.
- Public involvement to date has indicated that most support routing I-69 along the existing Parkways, rather than constructing a new facility. There also appears to be strong support for I-69 designation of the Parkways at the earliest possible date and for designating connector routes to other communities not directly served by the I-69 corridor.

RECOMMENDED NEXT STEPS

Regardless of the direction of future I-69 corridor initiatives and the level of reconstruction along the Parkways, short and long range improvement strategies are recommended. To develop a program of improvements, additional data collection and analyses are recommended:

- Operational Considerations – Further analysis of safety and operational considerations may include field review of high crash segments, clear zones, and existing sign installations.
- Mainline Geometry and Typical Section – Field review of roadway cross-sections would determine consistency with original construction specifications. Further study is needed to determine the most appropriate median and guardrail treatments.
- Bridges – Additional data collection is required to obtain vertical bridge clearances at the edge of the outside shoulder, as recommended by AASHTO. The condition and application of bridge safety appurtenances should also be reviewed for corrections.
- Interchanges and Ramps – Interchanges and ramps require the most additional study. Items include designs that contribute to safety and operational problems, mainline capacity constraints, or weaving problems.

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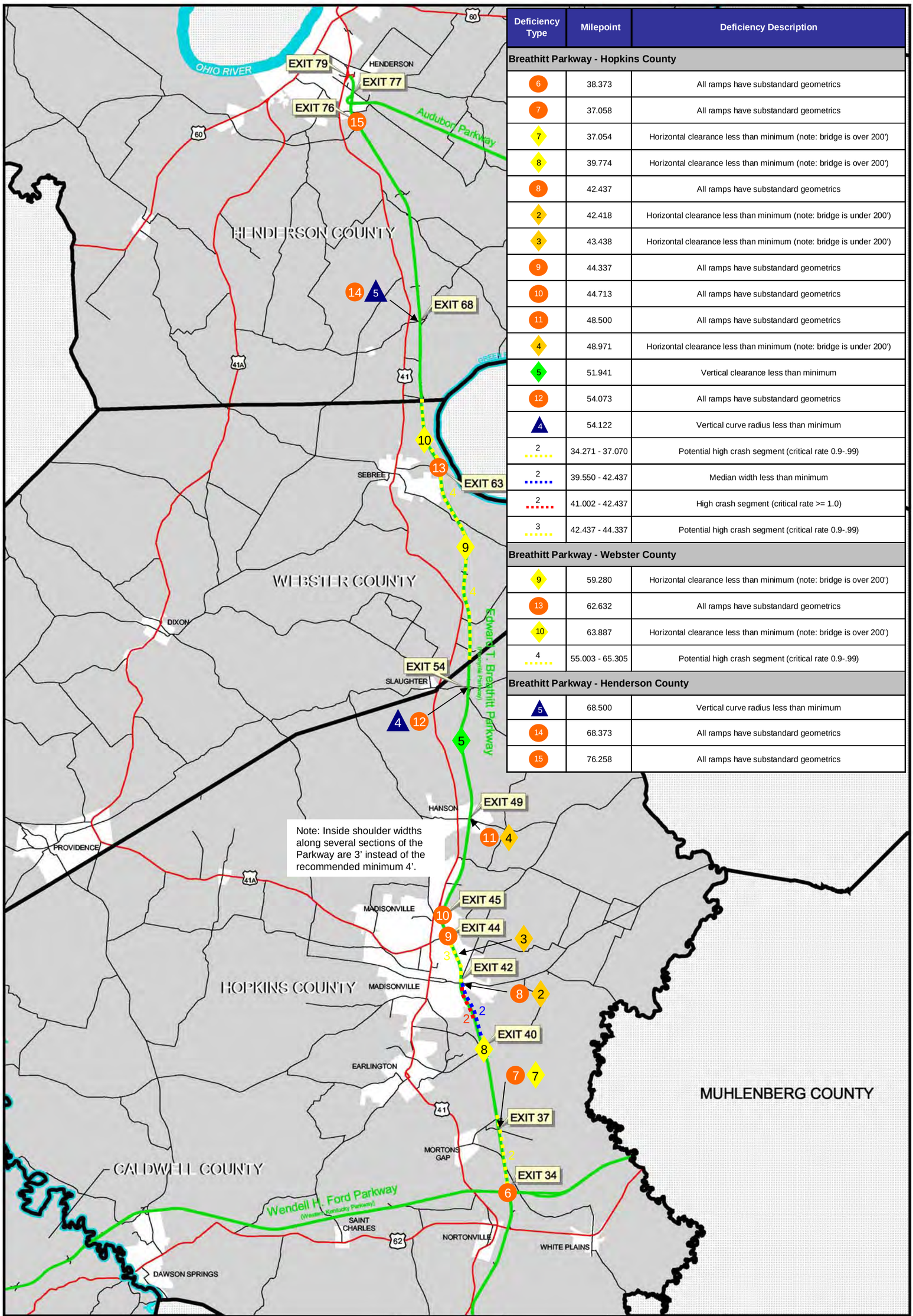

Deficiency Type	Milepoint	Deficiency Description
Breathitt Parkway - Hopkins County		
6	38.373	All ramps have substandard geometrics
7	37.058	All ramps have substandard geometrics
7	37.054	Horizontal clearance less than minimum (note: bridge is over 200')
8	39.774	Horizontal clearance less than minimum (note: bridge is over 200')
8	42.437	All ramps have substandard geometrics
2	42.418	Horizontal clearance less than minimum (note: bridge is under 200')
3	43.438	Horizontal clearance less than minimum (note: bridge is under 200')
9	44.337	All ramps have substandard geometrics
10	44.713	All ramps have substandard geometrics
11	48.500	All ramps have substandard geometrics
4	48.971	Horizontal clearance less than minimum (note: bridge is under 200')
5	51.941	Vertical clearance less than minimum
12	54.073	All ramps have substandard geometrics
4	54.122	Vertical curve radius less than minimum
2	34.271 - 37.070	Potential high crash segment (critical rate 0.9-.99)
2	39.550 - 42.437	Median width less than minimum
2	41.002 - 42.437	High crash segment (critical rate >= 1.0)
3	42.437 - 44.337	Potential high crash segment (critical rate 0.9-.99)
Breathitt Parkway - Webster County		
9	59.280	Horizontal clearance less than minimum (note: bridge is over 200')
13	62.632	All ramps have substandard geometrics
10	63.887	Horizontal clearance less than minimum (note: bridge is over 200')
4	55.003 - 65.305	Potential high crash segment (critical rate 0.9-.99)
Breathitt Parkway - Henderson County		
5	68.500	Vertical curve radius less than minimum
14	68.373	All ramps have substandard geometrics
15	76.258	All ramps have substandard geometrics

Deficiencies Legend

- Horizontal Clearance (Bridge over 200')
- Horizontal Clearance (Bridge under 200')
- Vertical Clearance
- Vertical Alignment
- Interchange
- Median
- High Crash Segment (based on average rates for Interstates)
- Potential High Crash Segment (based on average rates for Interstates)

4 0 4 8 Miles

Location Map

EDUCATION PAYS

Deficiencies Summary
Breathitt Parkway

I-69 Corridor

Henderson, Webster, Hopkins Caldwell, and Lyon Counties, Kentucky
Item No. 2-69.10

Deficiency Type	Milepoint	Deficiency Description
Ford Parkway - Lyon County		
1	0.001	Horizontal clearance less than minimum (note: bridge is over 200')
1	0.000	All ramps have substandard geometrics
2	3.708	All ramps have substandard geometrics
1	0.000 - 5.610	High crash segment (critical rate >= 1.0)
Ford Parkway - Caldwell County		
1	11.357	Horizontal clearance less than minimum (note: bridge is under 200')
1	11.714	Vertical curve radius less than minimum
3	11.700	All ramps have substandard geometrics
1	11.700	Vertical clearance less than minimum
2	13.120	Vertical clearance less than minimum
3	17.308	Vertical clearance less than minimum
4	20.880	Vertical clearance less than minimum
2	21.752	Horizontal clearance less than minimum (note: bridge is over 200')
1	9.880 - 21.764	Median width less than minimum

Deficiency Type	Milepoint	Deficiency Description
Ford Parkway - Hopkins County		
3	22.003	Horizontal clearance less than minimum (note: bridge is over 200')
4	24.437	All ramps have substandard geometrics
4	28.346	Horizontal clearance less than minimum (note: bridge is over 200')
2	32.733	Vertical curve radius less than minimum
5	33.872	Horizontal clearance less than minimum (note: bridge is over 200')
6	36.900	Horizontal clearance less than minimum (note: bridge is over 200')
3	37.357	Vertical curve radius less than minimum
5	38.373	All ramps have substandard geometrics
1	21.764 - 38.332	Median width less than minimum
1	24.435 - 31.581	Potential high crash segment (critical rate 0.90 - 0.99)

Note: Inside shoulder widths along several sections of the Parkway are 3' instead of the recommended minimum 4'.

MADISONVILLE
EARLINGTON
HOPKINS COUNTY
MORTONS GAP
Edward T. Breathitt Parkway (Pennyrile Parkway)
Wendell H. Ford Parkway (Western Kentucky Parkway)
EXIT 24
EXIT 38
SAINT CHARLES
NORTONVILLE
WHITE PLAINS
DAWSON SPRINGS
PRINCETON
EXIT 13
EXIT 12
EXIT 4
EXIT 1
EDDYVILLE
LYON COUNTY
LAKE BARKLEY
CHRISTIAN COUNTY
641
62
41
24

Deficiencies Legend

- Horizontal Clearance (Bridge over 200')
- Horizontal Clearance (Bridge under 200')
- Vertical Clearance
- Vertical Alignment
- Interchange
- Median
- High Crash Segment (based on average rates for Interstates)
- Potential High Crash Segment (based on average rates for Interstates)

3 0 3 6 Miles

N W E S

Location Map

Deficiencies Summary
Ford Parkway
I-69 Corridor
Henderson, Webster, Hopkins Caldwell, and Lyon Counties, Kentucky
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FROM EDDYVILLE TO HENDERSON, KENTUCKY
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PROPOSED INTERSTATE 69 CORRIDOR
FROM EDDYVILLE TO HENDERSON, KENTUCKY
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OVERVIEW OF EXISTING CONDITIONS

PROPOSED INTERSTATE 69 CORRIDOR
FROM EDDYVILLE TO HENDERSON, KENTUCKY
ITEM NO. 2-69.10

II. EARLY COORDINATION AND PUBLIC INVOLVEMENT

As part of the planning study for I-69 from Eddyville to Henderson, a series of meetings with local officials and the public was conducted at the outset of the project. As discussed in Chapter I, a legal notice was issued prior to these meetings to notify the public that the study had begun and that input would be sought from the public, governmental resource agencies, and other interests.

The meetings with local officials and the general public were intended to gain initial public input on the issues and concerns related to a potential I-69 Corridor. Input was also actively sought from environmental resource agencies that may have involvement in future project development activities.

In order to provide general project information and background for discussion at the early coordination meetings, preliminary project materials were developed. An eight-page project brochure was assembled, providing information on previous I-69 corridor studies and on relevant features of the proposed I-69 corridor between Eddyville and Henderson under consideration in this study. Data collection, analysis and mapping efforts also provided existing traffic, projected future traffic, vehicle crash locations, and existing conditions on the Ford and Breathitt Parkways. Preliminary research related to minimum and maximum design guidelines was assembled. A slide presentation was developed to assist in the discussion of previous, current and future I-69 activities.

The preliminary project materials were designed and arranged in various formats for the early coordination meetings, depending on the audience. Materials presented to local officials, stakeholders, the general public, and various resource agency groups are described in the following sections, along with the subsequent preliminary feedback.

Detailed summaries of local and public comment surveys, minutes of local meetings, and resource agency letters are included for reference in **Appendices B, C,** and **D**.

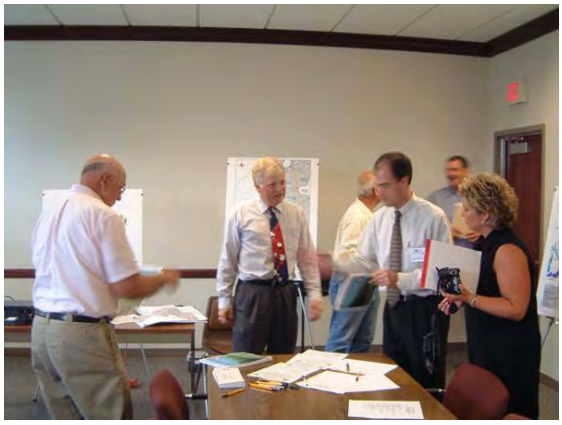
A. Local Officials and Stakeholders Meetings (July 16-18, 2002)

A round of meetings with local officials and stakeholders in the project corridor began the process of coordination for the I-69 study between Eddyville and Henderson. These local meetings were held July 16, 17, and 18, 2002 at four locations along the proposed corridor: Eddyville, Princeton, Madisonville, and Henderson, Kentucky. The purpose of the meetings was to introduce the project, discuss potential project issues, and solicit input from the local area leaders. Minutes from the local officials and stakeholders meetings and a summary of questionnaire responses are provided in **Appendix B**.

To introduce the National I-69 Corridor project, attendees were shown a video tape presentation entitled *The New I-69 Corridor,* distributed by the Federal Highway Administration, which gives the I-69 national project perspective and explains how the Eddyville to Henderson portion and other SIUs fit into the larger plan. Also provided were a slide presentation and a summary brochure, each describing tasks involved with study of the Eddyville to Henderson section of I-69, as well as a project study area map.

A number of exhibit boards were developed for discussion at the local meetings, as shown in **Appendix B**. These included:

- The I-69 Project Study Area;
- Three Alternatives for the Henderson to Evansville I-69 Segment (which lies north of the current study's focus area);
- Typical Section Renderings for the Existing Parkways, plus Minimum and Maximum Interstate Scenarios;
- Sample Analysis to be Completed as part of this Study (Vertical Bridge Clearances);
- Year 2002 Traffic and Level of Service;
- Year 2030 Traffic and Level of Service without the I-66 and I-69 Corridors;
- Year 2030 Traffic and Level of Service with the I-66 and I-69 Corridors; and
- Vehicle Crash Analysis showing High Crash Locations.



Local Meeting in Eddyville
July 16, 2002

Local Meeting in Princeton
July 17, 2002

Local Meeting in Madisonville
July 17, 2002

Local Meeting in Henderson
July 18, 2002

A total of 49 local officials and stakeholders attended the four project meetings held in July of 2002. Thirty-eight (38) attendees completed a written survey questionnaire provided at the meetings (see **Appendix B**) and an additional five (5) survey forms were mailed in after the meetings. The survey results indicate the following:

- 98% (42 of 43 respondents) of the attendees think the I-69 project would be beneficial to the region.
- Public perception of the main issues along the existing Parkways includes traffic congestion, high speeds, large trucks, poor sight distance, substandard curves, narrow lanes, narrow shoulders, and stopped vehicles.
- Survey respondents indicated that additional access is needed near the Princeton Industrial Park, 4 Star Industrial Park, KY 862, US 41, US 62 and KY 935. Improved access is suggested on the Ford Parkway at Exit 4, Exit 13 and Dawson Springs. Improved access is suggested on the Breathitt Parkway at Nortonville, Exit 37, Exit 40, Madisonville, Sebree and Exit 68.
- Local officials also recommended that the main areas to be avoided by future improvements include natural areas or habitats and historic or cultural sites, followed by businesses, commercial properties, and hazardous sites.

Additional comments received through the meetings with local officials and stakeholders are included in the minutes in **Appendix B** and are summarized below:

- There is likely to be a lot of local interest and participation in this project.
- Local citizens are not likely to be opposed to reconstruction of the existing Parkway system.
- More than one design (some minimum and some maximum) should be considered where possible along the future corridor.
- The urban areas and interchanges along the existing Parkways should be given first priority for improvement.
- New interchanges would be beneficial at the 4 Star Industrial Park and the Tyson complex.
- Connecting the County Seats of Livingston, Crittenden, and Lyon Counties would be ideal for any future I-69 Corridor.
- Morganfield and Marion should also be connected to the I-69 Corridor.

B. Public Meetings (September 23 - October 1, 2002)

The project's public coordination efforts continued with a series of four public meetings held between September 23 and October 1, 2002 in Eddyville, Princeton, Madisonville and Henderson. Each public open house was arranged with several project information stations, with KYTC staff and consultants available to answer questions and discuss issues.

At the sign-in station, attendees were given a survey questionnaire, project brochure and information regarding KYTC roadway projects. After signing in, attendees were invited to watch *The New I-69 Corridor* video and a slide presentation that included

information on: the study area; preliminary project goals; traffic, design and environmental considerations; public involvement opportunities; and contact information.

A number of exhibit boards were arranged in a semi-circle for discussion at the public meetings, as shown in **Appendix C**. These included the following titles:

- Study Area
- Where else will I-69 go?
- How many cars and trucks are on the Parkways today?
- How many cars and trucks will be on the Parkways in 30 years?
- Where are the most crashes occurring?
- Parkway Conditions and Options for I-69
- Examples of Highway Design Issues
- Examples of Traffic and Access Issues
- Examples of Environmental Issues
- Environmental Issues Need Special Consideration

Public Involvement Meetings, Fall 2002

A total of 211 local citizens attended the four public involvement sessions held in the Fall of 2002. Eighty-three (83) completed survey questionnaires were returned at the public involvement sessions or were mailed in following the meetings. The survey results indicate the following:

- 92% (76 of 83) indicated that the I-69 project would be beneficial to the region.
- Public perception of the main issues identified along the existing Parkways includes narrow shoulders, large trucks, too much traffic, high speeds, surface repair, and signs and markings.
- Respondents identified safety issues along the existing Parkways, including interchanges and ramps, standing water, narrow or raised medians, narrow or soft shoulders, and large truck traffic.
- The public recommended improvements to a number of existing interchanges along the Parkways. Along the Ford Parkway, these include Exit 1 and Exit 24. Along the Breathitt Parkway, these include Exit 37, exits near Madisonville, and Exit 63.
- Additional access points to the Parkways were also recommended. Along the Ford Parkway, these include: near the Princeton Industrial Park, at KY 93, east of KY 293, and in Lyon County near the Riverport Authority and Mineral Mound State Park. Along the Breathitt Parkway, these include: near Nortonville, at KY 814, at KY 416, and between Madisonville and Henderson.
- Survey respondents recommended that the main areas to be avoided by future improvements include historic or cultural sites, followed by personal properties or homes.

During the public meetings, some local officials and other citizens expressed support for implementing future I-69 signage along the Parkways. The previous (2002) and current editions (2004) of the *Kentucky Official State Highway Map* identify the study sections of the Breathitt and Ford Parkways as Future I-69. Currently, there are no physical route designation signs along the Parkways or directional signs in the vicinity of the Parkway that are labeled as "Corridor 69." Public meeting discussions included concern about having the route labeled on the map, but having no signs along the Parkways, since this may confuse motorists.

Future Interstate Corridor 69 signs are posted along portions of the proposed I-69 corridor in other states.

Future Interstate Corridor 69 signs are currently being posted along sections of the proposed route in other states. Similar signing also exists for other proposed interstate highway corridors and FHWA has adopted guidelines for the design and placement of these signs. Within the State of Texas, over two dozen signs currently exist along the proposed route through the state denoting the "Future Interstate Corridor" for I-69. Local citizens have expressed support for erecting signs on the Ford and Breathitt Parkways to represent their designation as "Corridor 69" or "Future Interstate Corridor 69."

Additional comments received through the public meetings are included in the minutes in **Appendix C** and are summarized below:

- Completion of the I-69 Corridor may assist the local economy.
- The existing Parkways should be upgraded before considering a new interstate through the area. This would be less expensive.
- Interchanges along the Parkways should be upgraded as part of the future improvements.
- There are other roadways in the area that need improvement more than the Parkways. Highway funds and tax dollars should be spent elsewhere.
- Planned improvements to US 641 should be considered when final decisions are made regarding I-69.
- The I-24 interchange should be reconstructed, avoiding the surrounding lakes and natural areas.
- The existing interchange between the Ford Parkway and the Breathitt Parkway should be improved.
- The existing Parkways do not provide for adequate run-off, resulting in standing water and frequent hydroplaning.
- Using the existing Parkways for the I-69 corridor will not serve the community of Hopkinsville.
- Right-of-way needs along any I-69 corridor should be minimized wherever possible.
- Property owners should be involved in discussions of right-of-way needs and fair property values.
- Any guardrails or barriers added to the existing Parkways should include breaks for access by emergency vehicles.

C. Resource Agency Coordination

Many local, state and federal resource agencies, with diverse areas of public responsibility, were included in this planning process. Input was solicited through written requests by letter, and each agency was provided with a project information packet, including the following items:

- Existing and Future Traffic Conditions;
- Vehicle Crash Data and High Crash Locations;
- Preliminary Environmental Footprint;
- Existing Parkway Conditions; and
- Maximum and Minimum Options for a Future I-69 Corridor.

A mailing list of the agencies and copies of the written responses are included in **Appendix D**.

1. Local Agency Comments

The following local agencies offered comments or concerns regarding the project:

- The City of Mortons Gap – The city is in support of the project coming through the Hopkins County area.
- Coalfield Comments – Following the existing Parkway system will provide savings in land acquisition and potential environmental impacts. Realignment of the route (a map is provided) to provide a more direct connection from Madisonville to Dawson Springs could save up to nine miles of final length. Surface and underground mining activity areas should be avoided.
- Economic Development Corporation of Madisonville-Hopkins County – The most critical need is for signage along the current Parkway routes to show designation as future interstates and maintain consistency with the Kentucky Highway Map. Priority should be given to improving high crash locations along the existing Parkways. Bridge clearances, entrance and exit ramp lengths and median widths should meet acceptable interstate standards.
- Henderson County Riverport Authority – The project will have a positive impact on the Henderson County Riverport and the entire county. The project will be beneficial to the existing Industrial Park, creating improved accessibility and providing increased safety.
- Henderson Economic Development Council – One of the most important issues regarding the project is the need for easy north/south access to I-69 for the industries located in Henderson's Industrial Park. The Industrial Park's development plans provide for an entrance into the park where KY 2097 intersects US 41. A full I-69 interchange at KY 2097 would allow easy access into the park shortly after exiting the interstate. Henderson is currently a finalist for site selection of a large distribution company who has expressed concerns about the existing connectivity to the Natcher Parkway and US 41. The proposed interchange would benefit this company as well as others considering locating in the Industrial Park.
- Henderson-Henderson County Chamber of Commerce – The Breathitt and Ford Parkways are recommended for use as I-69. This route serves the largest population base and provides cost savings as compared to construction of a new route. It is anticipated that an eastern route for the Ohio River crossing will be forthcoming, allowing for easy access from that segment of the Breathitt Parkway.
- Hopkins County Joint Planning Commission – Local improvement needs include: reconstruction of the KY 109 interchange with the Ford Parkway; construction of a new Ford Parkway interchange with US 41 near Southside Elementary School; and reconstruction of KY 335 from the Breathitt Parkway to KY 481. Issues to consider along the existing Parkways include mined areas, animal feeding operations and wildlife refuges.
- Madisonville Community College – The potential for future economic development in the area will likely increase as a result of I-69. Being so near an interstate connecting Canada and Mexico will certainly benefit both Hopkins

County and Kentucky. Concerns were expressed about travel delay for the many students traveling the Parkways during construction times as well as the existing high crash segment near Madisonville that is noted on a handout distributed to the resource agencies.

2. State Agency Comments

The following state agencies offered comments or concerns regarding the project:

- Kentucky Geological Survey – The project is located within two physiographic regions. Part 1 includes Lyon County and Caldwell County up to the East Fork. This region includes karst features, minimal landslide hazards, gas wells, some suitable aggregate for road construction, the potential for faults or earthquake ground motion, and potential conflicts related to mineral rights. Part 2 includes the remainder of Caldwell County as well as Hopkins, Webster and Henderson Counties. This region has minimal karst features, moderate landslide hazards, potential subsidence or resource conflicts from underground coal mines, no suitable aggregate for road construction, numerous faulted areas and potential earthquake ground motion.
- KYTC Division of Aeronautics – The Division does not have any concerns about the project at this time.
- KYTC Division of Materials – A geotechnical overview was provided for the project study area. Recommendations were made relative to rock formations and appropriate uses; vertical displacement faults; previous and active coal mining locations; oil and gas extraction wells; wetland areas and blueline streams; erosion control methods; karst drainage systems and sinkholes; soil qualities; cut slopes and embankment benches; and earthquake activity. A geologic map of the study area was also included.
- KYTC Division of Multimodal Programs – The Metropolitan Planning Organization (MPO) for Henderson and the Madisonville Small Urban Area (SUA) fall within the study area. Coordination efforts should include the MPO and previous studies conducted for the SUA. The proposed corridor intersects one designated bicycle route: the TransAmerica Trail east of Sebree in Webster County. Changes to the Sebree interchange should incorporate bicycle facilities to maintain the TransAmerica Trail.
- KYTC Division of Operations – Reconstruction of the Breathitt and Ford Parkways is preferred in lieu of the construction of a parallel route.
- KYTC Division of Traffic, Permits Branch – The proposed route will be part of the National Highway System (NHS). The Permits Branch should be provided early notification of final line and grade for the route to allow for monitoring of outdoor advertising. Full access control should be in accordance with spacing requirements and 603 KAR 5:120.

3. Federal Agency Comments

The following federal agencies offered comments or concerns regarding the project:

- Federal Aviation Administration – There are four public airports in the vicinity of the proposed project. The Federal Aviation Administration should be notified via FAA Form 7460-1, "Notice of Proposed Construction," if the proposed I-69 should come within 3 miles of any of the four airports. The FAA provided Form 7460-1 along with a map highlighting the locations of the airports within the study area.
- United States Coast Guard – Because this project does not cross waterways over which the Coast Guard exercises jurisdiction for bridge administration purposes, a Coast Guard bridge permit is not required.
- United States Department of Agriculture, Daniel Boone National Forest – The project area falls outside the Daniel Boone National Forest and is not located upstream from any watersheds that drain into or through the National Forest.
- United States Department of Health and Human Services – The following areas of public health concern should be considered during the NEPA process for this project: air quality; water quality/quantity; wetlands and floodplains; hazardous materials/wastes; non-hazardous solid waste; noise; occupational health and safety; land use and housing; and environmental justice.
- United States Environmental Protection Agency – A Scoping and Streamlining Coordination Package for Interstate 69 National Environmental Policy Act (NEPA) Documentation was provided for reference in future phases of this project. Maps were also provided, detailing Potential Environmental Justice Areas, Sensitive Environmental Areas and General Landcover Types.

III. OPERATIONAL CONSIDERATIONS

There are operational factors that should be addressed to adequately assess existing conditions along the Parkways, as well as future needs related to their proposed designation as I-69. The primary considerations include crash history, traffic volumes, and operational levels of service. These factors also have some bearing on the geometric and design issues presented in the following chapters of this report.

A. Crash History and Analysis

An analysis of highway crashes was performed for this study to determine (a) whether crashes are a major concern along the Ford and Breathitt Parkways, (b) whether segments of the Ford and Breathitt Parkways have a higher rate of crashes than comparable parkway segments throughout Kentucky, and, finally, (c) whether crashes occur randomly within the study corridor or whether they may be a result of some unidentified problem along the Parkways.

1. Crash Analysis Methodology

The methodology used in this crash analysis can be referenced in the Kentucky Transportation Center's *Analysis of Traffic Accident Data in Kentucky (1995-1999)*, the most recent guideline available at the time of the analysis. This guide provides formulas, factors, and other detailed information that can be used to calculate crash rates for all roadway facilities within Kentucky. Included in this information is the critical crash rate, which is the maximum number of crashes expected along similar roadways. The guide also provides formulas to calculate the actual annual crash rate for the facility being studied, or the Parkways in this case. For this analysis, this rate is based upon the actual number of crashes along a segment for a given period of four years, the type of roadway, the length of section, and the ADT volume for the segment that is being analyzed.

To determine whether a segment of roadway is a high crash segment, the critical crash rate for similar roadways is compared to the actual annual crash rate for the facility being studied. The ratio of these two rates produces a critical rate factor, or measure of crash frequency, for each segment or spot. If a segment has a critical rate factor greater than 1.00, it indicates that the segment is a high crash segment and that crashes at this location may not be occurring randomly. Also, if a critical rate factor ranges from 0.90 to 0.99, the segment is considered to be a potentially high crash segment.

2. Source and Date of Crash Data

Crash data for the Ford and Breathitt Parkways were considered for a four-year period from January 1, 1998, to December 31, 2001. This data was the most recent available at the time of analysis and was provided by the KYTC from the Collision Report Analysis for Safer Highways (CRASH) database. The data represents the crash history along the 38.3-mile section of the Ford Parkway from MP 0.000 in Lyon County to MP

38.332 in Hopkins County, and the 42.0-mile section of the Breathitt Parkway from MP 34.271 in Hopkins County to MP 76.258 in Henderson County.

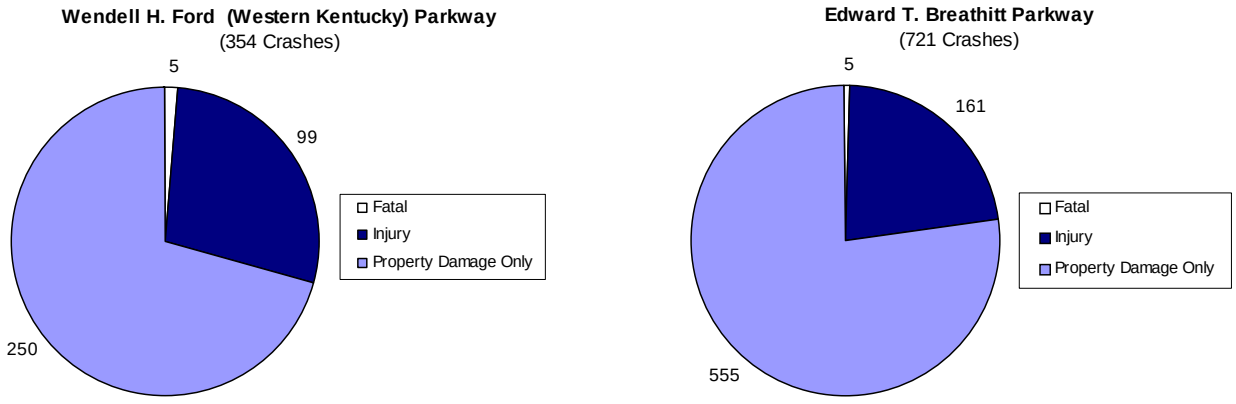
3. Types and Location of Crashes

The locations of crashes with valid milepoint designations are identified by segment along the Ford and Breathitt Parkways in **Table 2**. Each Parkway was broken into segments to be analyzed for high crash locations. A segment, in this case, is any length of roadway within the same county, having the same ADT, number of lanes, median type (divided/undivided), and functional classification (rural/urban). These criteria are used to define segments because they are the inputs necessary for calculating the Critical Rate Factor, and therefore need to be constant along any segment analyzed. Analysis segments were also kept below 10 miles in length.

As shown in **Table 2** and in the following charts, there were 1,075 reported crashes along these roadways during the period from 1998-2001. Of this total, 354 (33%) were reported on the Ford Parkway and 721 (67%) were reported on the Breathitt Parkway.

For this analysis, crashes were classified into one of three categories based on the degree of severity: fatal, injury, or property-damage-only. Of the total on the Ford Parkway, there were five (5) fatal (1%), 99 injury (28%), and 250 property-damage-only (71%) crashes. Of the total on the Breathitt Parkway, there were five (5) fatal (1%), 161 injury (22%), and 555 property-damage-only (77%) crashes.

Number of Crashes by Type
(January 1998 – December 2001)



Source: Collision Report Analysis for Safer Highways (CRASH) database

Table 2. Crash Analysis as a Parkway Facility

Ford Parkway	County	Begin MP	End MP	Length (Miles)	ADT	Number of Lanes	Divided Undivided	Rural Urban	Avg. Crash Rate	Critical Crash Rate	Crashes				HMVM	Rates per HMVM				Critical Rate Factor
											Fatal	Injury	PDO	Total		Fatal	Injury	PDO	Total	
	Lyon	0.000	3.702	3.702	9,350	4	Divided	R	60	89.06	0	10	32	42	0.51	0.00	19.79	63.32	83.11	0.93
	Lyon	3.702	5.610	1.908	9,020	4	Divided	R	60	101.80	0	9	23	32	0.25	0.00	35.82	91.54	127.35	1.25
	Caldwell	5.610	11.109	5.499	9,020	4	Divided	R	60	84.14	1	12	27	40	0.72	1.38	16.57	37.28	55.24	0.66
	Caldwell	11.109	11.700	0.591	9,020	4	Divided	U	105	206.04	0	0	3	3	0.08	0.00	0.00	38.55	38.55	0.19
	Caldwell	11.700	13.116	1.416	10,400	4	Divided	R	60	105.36	0	1	11	12	0.22	0.00	4.65	51.16	55.81	0.53
	Caldwell	13.116	21.764	8.648	9,440	4	Divided	R	60	78.70	1	14	49	64	1.19	0.84	11.75	41.11	53.70	0.68
	Hopkins	21.764	24.435	2.671	9,440	4	Divided	R	60	94.25	2	6	14	22	0.37	5.43	16.30	38.03	59.76	0.63
	Hopkins	24.435	31.581	7.146	10,400	4	Divided	R	60	79.62	0	27	48	75	1.09	0.00	24.88	44.24	69.12	0.87
	Hopkins	31.581	38.332	6.751	10,400	4	Divided	R	60	80.20	1	20	43	64	1.03	0.98	19.51	41.95	62.43	0.78
Breathitt Parkway	**County**	**Begin MP**	**End MP**	**Length (Miles)**	**ADT**	**Number of Lanes**	**Divided Undivided**	**Rural Urban**	**Avg. Crash Rate**	**Critical Crash Rate**	**Crashes**				**HMVM**	**Rates per HMVM**				**Critical Rate Factor**
											Fatal	**Injury**	**PDO**	**Total**		**Fatal**	**Injury**	**PDO**	**Total**	
	Hopkins	34.271	37.070	2.799	22,500	4	Divided	R	60	81.35	1	15	46	62	0.92	1.09	16.31	50.03	67.43	0.83
	Hopkins	37.070	41.002	3.932	21,700	4	Divided	R	60	78.28	0	13	61	74	1.25	0.00	10.44	48.97	59.40	0.76
	Hopkins	41.002	42.437	1.435	21,700	4	Divided	U	105	145.25	1	18	82	101	0.45	2.20	39.59	180.36	222.16	1.53
	Hopkins	42.437	44.337	1.900	27,000	4	Divided	U	105	136.17	0	23	70	93	0.75	0.00	30.71	93.46	124.17	0.91
	Hopkins	44.337	45.200	0.863	16,700	4	Divided	U	105	164.92	0	2	13	15	0.21	0.00	9.50	61.78	71.29	0.43
	Hopkins	45.200	47.472	2.272	14,700	4	Divided	U	105	143.83	0	7	40	47	0.49	0.00	14.36	82.03	96.39	0.67
	Hopkins	47.472	48.990	1.518	14,700	4	Divided	R	60	96.49	0	1	13	14	0.33	0.00	3.07	39.90	42.97	0.45
	Hopkins	48.990	54.070	5.080	20,700	4	Divided	R	60	76.43	2	16	45	63	1.54	1.30	10.42	29.31	41.03	0.54
	Hopkins	54.070	55.003	0.933	17,500	4	Divided	R	60	102.97	0	4	7	11	0.24	0.00	16.78	29.36	46.14	0.45
	Webster	55.003	62.637	7.634	12,900	4	Divided	R	60	76.99	1	24	66	91	1.44	0.70	16.69	45.90	63.29	0.82
	Webster	62.637	65.305	2.668	12,400	4	Divided	R	60	89.75	0	11	25	36	0.48	0.00	22.77	51.76	74.53	0.83
	Henderson	65.305	68.363	3.058	14,200	4	Divided	R	60	85.85	0	7	18	25	0.63	0.00	11.04	28.39	39.43	0.46
	Henderson	68.363	76.258	7.895	16,400	4	Divided	R	60	74.78	0	20	69	89	1.89	0.00	10.58	36.50	47.08	0.63

Source: Collision Report Analysis for Safer Highways (CRASH) database, and the Kentucky Transportation Center's Analysis of Traffic Accident Data in Kentucky (1995-1999)

Legend

Abbreviations shown in the above table are defined as follows: MP – Milepoint; ADT - Average Daily Traffic (measured in vehicles per day); PDO - Property Damage Only Crash; HMVM - Hundred Million Vehicle Miles (vehicle miles per year divided by 100,000,000 for manageability)

Crash Analysis Methodology and Criteria

The methodology used in this crash analysis can be referenced in the Kentucky Transportation Center's Analysis of Traffic Accident Data in Kentucky (1995-1999). This guide provides formulas, factors, and other detailed information that can be used to calculate crash (or accident) rates for all roadway facilities within Kentucky. Included in this information is the critical crash rate, which is defined as the maximum number of crashes expected to occur on a road given the average statewide crash rates, type of roadway, length of section, and average daily traffic (ADT) volume. In addition, the guide provides formulas to calculate the actual annual crash rate. This rate is based upon the actual number of crashes along a segment, the type of roadway, the length of section, and the ADT volume for the segment that is being analyzed.

To determine whether a segment of roadway is a high crash segment, the critical crash rate is compared to the actual annual crash rate. The ratio of these two rates produces a critical rate factor, or measure of crash frequency, for each segment or spot. If a segment has a critical rate factor greater than 1.00, it indicates that the segment is a high crash segment and that crashes at this location may not be occurring randomly. Also, if a critical rate factor ranges from 0.90 to 0.99, the segment is considered to be a potentially high crash segment.

Each Parkway was broken into segments to be analyzed for high crash locations. A segment, in this case, is any length of roadway within the same county, having the same ADT, number of lanes, median type (divided/undivided), and functional classification (rural/urban). Analysis segments were also kept below 10 miles in length. These criteria are used to define segments because they are the inputs necessary for calculating the Critical Rate Factor, therefore need to be constant along any segment analyzed.

4. Analysis as a Parkway Facility

The crash data identified for the Parkways was analyzed in two ways as part of this study. The actual annual crash rates calculated for the Parkways were compared to the critical crash rates identified for both Parkway and Interstate facilities. Interstate facilities have lower critical crash rates compared to Parkways, which indicates that Interstates typically have fewer crashes. As a result, the same number of crashes which result in a high crash segment along an Interstate may not result in a high crash segment along a geometrically similar Parkway facility.

The following sections discuss the crash rates and resulting high crash segments when the Parkways are analyzed as Parkways. Part 5 of this discussion below considers the crash rates and resulting high crash segments when the Parkways are analyzed as Interstates.

Crash Rates

The Wendell H. Ford Western Kentucky Parkway was divided into eight (8) segments, for which the crash history was statistically evaluated. Of the eight segments, the calculated crash rate ranged from 38.55 crashes per one-hundred million vehicle miles (acc/hmvm) to 127.35 acc/hmvm. The statewide average crash rate for all parkways in rural areas is 60 acc/hmvm and 105 acc/hmvm in urban areas. The data in **Table 2** indicates that there is one high crash segment along the Ford Parkway near the US 62 interchange at Eddyville in Lyon County (MP 3.702 to MP 5.610) where the actual crash rate exceeds the statewide average for all parkways. Another segment between MP 0.000 and MP 3.702, just east of the I-24 interchange in Lyon County, nearly exceeds the statewide average for parkways and should be considered a potential high crash segment.

The Edward T. Breathitt Parkway was divided into thirteen segments for analysis. The calculated crash rate along these segments ranged from 39.43 acc/hmvm to 222.16 acc/hmvm. **Table 2** indicates that there is one (1) high crash segment where the actual crash rate exceeds the statewide average for Parkways. The high crash segment is in Hopkins County between MP 41.002 and MP 42.437, near the KY 70/85 exit at Madisonville. There is also one potential high crash segment in Hopkins County between MP 42.437 and 44.337, near the US 41A exit at Madisonville.

5. Analysis as an Interstate Facility

Crash analysis usually involves the comparison of a highway with roads of a similar classification and geometrics. However, one of the purposes of this study is to examine the degree to which the Ford and Breathitt Parkways are suitable for designation as an interstate highway. Interstate facilities have lower critical crash rates compared to parkways, indicating that interstates typically have fewer crashes per vehicle-mile of travel, as shown in the following table.

Facility	Crash Rates (Crashes per 100 MVM)	
	Rural	Urban
Parkway	60	105
Interstate	52	96

Source: Analysis of Traffic Accident Data in Kentucky (1995-1999), Kentucky Transportation Center

Therefore, it is helpful to perform an analysis that compares crash data on the two Parkways with data on Kentucky interstate highways.

Crash Rates

As shown in **Table 3**, when compared to Kentucky interstate highways, one additional high accident segment is identified along the Ford Parkway. This segment is located just east of the I-24 interchange in Lyon County (between MP 0.000 and MP 3.702). **Figure 3** shows the crash data by severity and location, along with the identified high crash segments based on both the Parkway and Interstate analyses. Highlighted in red are the identified portions of both the Ford and Breathitt Parkways that have historical crash rates that are higher than the critical crash rates for all parkways in Kentucky. These sections are considered to be high crash segments. Similarly, highlighted in yellow, segments where crash rates are close to the critical crash rates for parkways are identified as potentially high crash segments.

Table 3. Crash Analysis as an Interstate Facility

Ford Parkway	County	Begin MP	End MP	Length (Miles)	ADT	Number of Lanes	Divided Undivided	Rural Urban	Avg. Crash Rate	Critical Crash Rate	Crashes				HMVM	Rates per HMVM				Critical Rate Factor
											Fatal	Injury	PDO	Total		Fatal	Injury	PDO	Total	
	Lyon	0.000	3.702	3.702	9,350	4	Divided	R	52	79.12	0	10	32	42	0.51	0.00	19.79	63.32	83.11	1.05
	Lyon	3.702	5.610	1.908	9,020	4	Divided	R	52	91.05	0	9	23	32	0.25	0.00	35.82	91.54	127.35	1.40
	Caldwell	5.610	11.109	5.499	9,020	4	Divided	R	52	74.52	1	12	27	40	0.72	1.38	16.57	37.28	55.24	0.74
	Caldwell	11.109	11.700	0.591	9,020	4	Divided	U	96	192.89	0	0	3	3	0.08	0.00	0.00	38.55	38.55	0.20
	Caldwell	11.700	13.116	1.416	10,400	4	Divided	R	52	94.39	0	1	11	12	0.22	0.00	4.65	51.16	55.81	0.59
	Caldwell	13.116	21.764	8.648	9,440	4	Divided	R	52	69.43	1	14	49	64	1.19	0.84	11.75	41.11	53.70	0.77
	Hopkins	21.764	24.435	2.671	9,440	4	Divided	R	52	83.97	2	6	14	22	0.37	5.43	16.30	38.03	59.76	0.71
	Hopkins	24.435	31.581	7.146	10,400	4	Divided	R	52	70.29	0	27	48	75	1.09	0.00	24.88	44.24	69.12	0.98
	Hopkins	31.581	38.332	6.751	10,400	4	Divided	R	52	70.83	1	20	43	64	1.03	0.98	19.51	41.95	62.43	0.88
Breathitt Parkway	**County**	**Begin MP**	**End MP**	**Length (Miles)**	**ADT**	**Number of Lanes**	**Divided Undivided**	**Rural Urban**	**Avg. Crash Rate**	**Critical Crash Rate**	**Crashes**				**HMVM**	**Rates per HMVM**				**Critical Rate Factor**
											Fatal	**Injury**	**PDO**	**Total**		**Fatal**	**Injury**	**PDO**	**Total**	
	Hopkins	34.271	37.070	2.799	22,500	4	Divided	R	52	71.92	1	15	46	62	0.92	1.09	16.31	50.03	67.43	0.94
	Hopkins	37.070	41.002	3.932	21,700	4	Divided	R	52	69.04	0	13	61	74	1.25	0.00	10.44	48.97	59.40	0.86
	Hopkins	41.002	42.437	1.435	21,700	4	Divided	U	96	134.53	1	18	82	101	0.45	2.20	39.59	180.36	222.16	1.65
	Hopkins	42.437	44.337	1.900	27,000	4	Divided	U	96	125.83	0	23	70	93	0.75	0.00	30.71	93.46	124.17	0.99
	Hopkins	44.337	45.200	0.863	16,700	4	Divided	U	96	153.40	0	2	13	15	0.21	0.00	9.50	61.78	71.29	0.46
	Hopkins	45.200	47.472	2.272	14,700	4	Divided	U	96	133.17	0	7	40	47	0.49	0.00	14.36	82.03	96.39	0.72
	Hopkins	47.472	48.990	1.518	14,700	4	Divided	R	52	86.08	0	1	13	14	0.33	0.00	3.07	39.90	42.97	0.50
	Hopkins	48.990	54.070	5.080	20,700	4	Divided	R	52	67.32	2	16	45	63	1.54	1.30	10.42	29.31	41.03	0.61
	Hopkins	54.070	55.003	0.933	17,500	4	Divided	R	52	92.14	0	4	7	11	0.24	0.00	16.78	29.36	46.14	0.50
	Webster	55.003	62.637	7.634	12,900	4	Divided	R	52	67.84	1	24	66	91	1.44	0.70	16.69	45.90	63.29	0.93
	Webster	62.637	65.305	2.668	12,400	4	Divided	R	52	79.76	0	11	25	36	0.48	0.00	22.77	51.76	74.53	0.93
	Henderson	65.305	68.363	3.058	14,200	4	Divided	R	52	76.12	0	7	18	25	0.63	0.00	11.04	28.39	39.43	0.52
	Henderson	68.363	76.258	7.895	16,400	4	Divided	R	52	65.78	0	20	69	89	1.89	0.00	10.58	36.50	47.08	0.72

Source: Source: Collision Report Analysis for Safer Highways (CRASH) database, and the Kentucky Transportation Center's Analysis of Traffic Accident Data in Kentucky (1995-1999)
Note: It should be noted that critical rate factors for this analysis were calculated using the assumption that the Parkways were part of the I-69 Corridor. Interstate facilities have lower critical crash rates compared to parkways, which indicates that interstates typically have fewer crashes. As a result, the same number of crashes along a parkway may not produce a high crash segment when compared to a geometrically similar interstate facility that is considered a high crash segment.

Legend

Abbreviations shown in the above table are defined as follows: MP – Milepoint; ADT - Average Daily Traffic (measured in vehicles per day); PDO - Property Damage Only Crash; HMVM - Hundred Million Vehicle Miles (vehicle miles per year divided by 100,000,000 for manageability)

Crash Analysis Methodology and Criteria

The methodology used in this crash analysis can be referenced in the Kentucky Transportation Center's Analysis of Traffic Accident Data in Kentucky (1995-1999). This guide provides formulas, factors, and other detailed information that can be used to calculate crash (or accident) rates for all roadway facilities within Kentucky. Included in this information is the critical crash rate, which is defined as the maximum number of crashes expected to occur on a road given the average statewide crash rates, type of roadway, length of section, and average daily traffic (ADT) volume. In addition, the guide provides formulas to calculate the actual annual crash rate. This rate is based upon the actual number of crashes along a segment, the type of roadway, the length of section, and the ADT volume for the segment that is being analyzed.

To determine whether a segment of roadway is a high crash segment, the critical crash rate is compared to the actual annual crash rate. The ratio of these two rates produces a critical rate factor, or measure of crash frequency, for each segment or spot. If a segment has a critical rate factor greater than 1.00, it indicates that the segment is a high crash segment and that crashes at this location may not be occurring randomly. Also, if a critical rate factor ranges from 0.90 to 0.99, the segment is considered to be a potentially high crash segment.

Each Parkway was broken into segments to be analyzed for high crash locations. A segment, in this case, is any length of roadway within the same county, having the same ADT, number of lanes, median type (divided/undivided), and functional classification (rural/urban). Analysis segments were also kept below 10 miles in length. These criteria are used to define segments because they are the inputs necessary for calculating the Critical Rate Factor, therefore need to be constant along any segment analyzed.

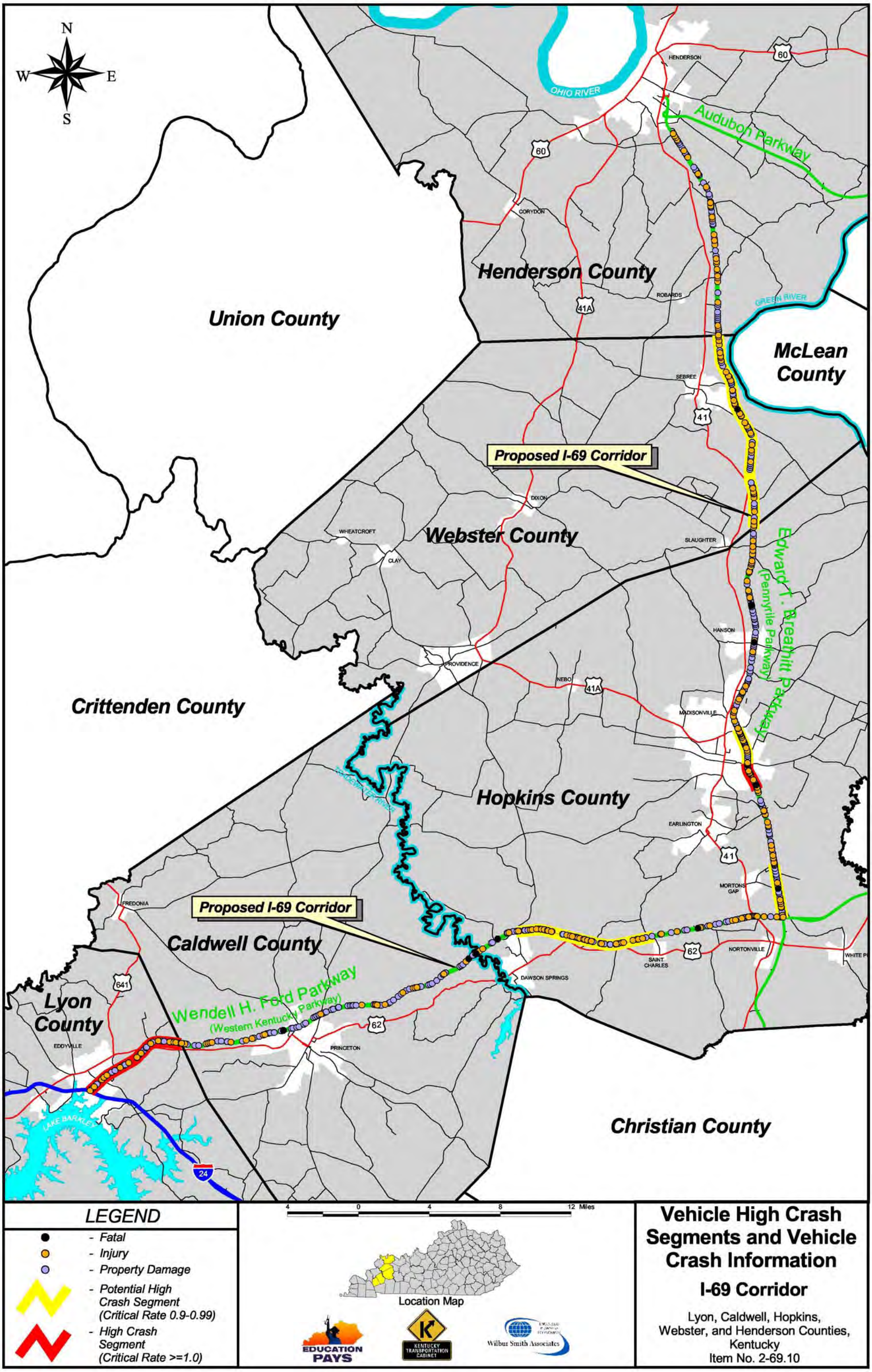


Figure 3. Crashes by Location and Severity

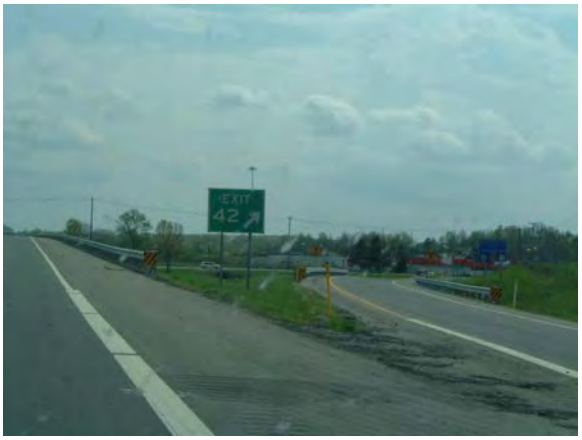
6. Crash Causation Factors

The determination of crash causes can help to evaluate potential problems represented by high crash areas and the suitability of the Parkways for interstate travel. For the high and potentially high crash segments along the Ford and Breathitt Parkways shown in **Figure 3**, the causation factors have been summarized from the 1998-2001 crash data. The major crash cause categories are listed for each segment in **Table 4** and are summarized for the high crash segments below:

<u>High Crash Segments</u>

Along the Ford Parkway in Lyon County, between MP 3.702 and MP 5.610, crash causation factors included the following:

- Collisions with fixed objects accounted for 44% of crashes (14 of 32) during the analysis period. This percentage is higher than the 34% of crashes (121 of 354) along the study section of the Ford Parkway that were the result of collisions with fixed objects.
- Collisions with an animal made up 28% of all crashes (9 of 32), which is comparable to the 27% of all crashes of the same type (94 of 354) along the study section of the Ford Parkway.



Exit 42, along the Breathitt Parkway, is the location of many rear-end crashes.

Along the Breathitt Parkway in Hopkins County, between MP 41.002 and 42.437, crash causation factors included the following:

- 69% of crashes (70 of 101) were the result of rear-end collisions. The majority of the rear-end crashes (67 of 70) in this section occurred along the Parkway near Exit 42, the interchange with KY 70. The crash data indicates that 54% of these were coded as ‘rear-end collision on a ramp’ and 46% were coded as ‘rear-end collision in traffic lanes’. The ramp at Exit 42 does not meet entrance radius or taper guidelines for interstates as shown in Table 17 (Chapter 7). Only 21% of crashes (154 of 721) along the study section of the Breathitt Parkway were the result of rear-end collisions.

Along the Ford Parkway in Lyon County, between MP 0.000 and MP 3.702, crash causation factors included:

- 38% of crashes (16 of 42) were the result of collisions with an animal. This percentage is higher than the 27% of crashes that resulted from collisions with animals along the entire study section of the Ford Parkway.
- Collisions with a fixed object made up 36% of crashes (15 of 42), which is slightly more than the 34% of crashes (121 of 354) of the same type along the study section of the Ford Parkway.

Table 4. Crash Types for High and Potentially High Crash Segments

High Crash Segments

Ford Parkway
MP 0.000 - MP 3.702 (Lyon County)

Crash Type	Crashes in Segment	% in Segment	Crashes on Parkway	% on Parkway
Collision With Animal	16	38%	94	27%
Collision With Fixed Object	15	36%	121	34%
Ran Off Roadway	5	12%	49	14%
All Other Types	6	14%	90	25%

Ford Parkway
MP 3.702 - MP 5.610 (Lyon County)

Crash Type	Crashes in Segment	% in Segment	Crashes on Parkway	% on Parkway
Collision With Animal	9	28%	94	27%
Collision With Fixed Object	14	44%	121	34%
Ran Off Roadway	3	9%	49	14%
All Other Types	6	19%	90	25%

Breathitt Parkway
MP 41.002 - MP 42.437 (Hopkins County)

Crash Type	Crashes in Segment	% in Segment	Crashes on Parkway	% on Parkway
Collision With Animal	6	6%	156	22%
Collision With Fixed Object	10	10%	134	19%
Rear-end	70	69%	154	21%
All Other Types	15	15%	277	38%

Segments with % of crashes higher than average for respective Parkway

continued on next page

Table 4. Crash Types for High and Potentially High Crash Segments (cont.)

Potentially High Crash Segments

Ford Parkway
MP 24.435 - MP 31.581 (Hopkins County)

Crash Type	Crashes in Segment	% in Segment	Crashes on Parkway	% on Parkway
Collision With Animal	17	23%	94	27%
Collision With Fixed Object	30	40%	121	34%
Ran Off Roadway	14	19%	49	14%
All Other Types	14	19%	90	25%

Breathitt Parkway
MP 34.371 - MP 37.070 (Hopkins County)

Crash Type	Crashes in Segment	% in Segment	Crashes on Parkway	% on Parkway
Collision With Animal	12	19%	156	22%
Collision With Fixed Object	16	26%	134	19%
Rear End In Traffic Lanes Both Vehicles Moving	7	11%	154	21%
All Other Types	27	44%	277	38%

Breathitt Parkway
MP 42.437 - MP 44.337 (Hopkins County)

Crash Type	Crashes in Segment	% in Segment	Crashes on Parkway	% on Parkway
Collision With Animal	15	16%	156	22%
Collision With Fixed Object	10	11%	134	19%
Rear End	37	40%	154	21%
All Other Types	31	33%	277	38%

Breathitt Parkway
MP 55.003 - MP 62.637 (Webster County)

Crash Type	Crashes in Segment	% in Segment	Crashes on Parkway	% on Parkway
Collision With Animal	21	23%	156	22%
Collision With Fixed Object	23	25%	134	19%
Ran Off Roadway	26	29%	107	15%
All Other Types	21	23%	324	45%

Breathitt Parkway
MP 62.637 - MP 65.305 (Webster County)

Crash Type	Crashes in Segment	% in Segment	Crashes on Parkway	% on Parkway
Collision With Animal	7	19%	156	22%
Collision With Fixed Object	11	31%	134	19%
Ran Off Roadway	4	11%	107	15%
All Other Types	14	39%	324	45%

Segments with % of crashes higher than average for respective Parkway

7. Other Crash Considerations

Consideration of other crash types and locations along the Parkways was undertaken to identify potential problem areas. These include cross-over or head-on collisions as well as collisions near interchanges along the Parkways.

Cross-Over Crashes

Cross-over or head-on crashes along the Parkways could indicate potential problems with median width, directional separation or entrance/exit ramp signage. For the years considered, there were six (6) crashes coded as 'median cross-over' or 'head-on collisions.'

Crashes occurring along the Ford Parkway included the following locations:

- Two head-on crashes in Caldwell County near milepoint 16.0;
- One head-on crash at milepoint 22.0 in Hopkins County, near the Tradewater River bridge (B00138); and
- Two head-on crashes in Hopkins County near milepoint 25.0.

Crashes occurring along the Breathitt Parkway included the following:

- One median cross-over crash in Webster County at milepoint 63.3.

Head-on and cross-over crashes make up about 0.6% of the total crashes along the Parkways for the years studied. Statewide, cross-over or head-on crashes accounted for about 0.5% of the crashes along Parkways and Interstates. This indicates that head-on and cross-over crashes are generally not more prevalent along the Parkways under study than along similar routes statewide.

Crashes at Interchanges

Crashes at interchanges along the study section of the Parkways were also considered as part of this analysis. Crashes occurring within a 0.1-mile section on either side of an interchange were summarized by crash type. Along the Parkways, the major interchange crash types are summarized as follows:

- 31% (59 of 188) were coded as ramp related crashes, including rear-end and other multiple-vehicle collisions;
- 21% (39 of 188) were identified as rear-end crashes, including crashes in the traffic lanes, with one stopped vehicle and with both vehicles moving; and
- 21% (39 of 188) were collisions with a fixed object.

Three (3) of the interchanges along the Parkways fall within high crash segments identified previously in **Sections 4** and **5** of this Chapter. Interchanges along the Ford Parkway include:

- Exit 1 in Lyon County, at the interchange with I-24; and
- Exit 4 in Lyon County, at the interchange with US 62.

Along the Breathitt Parkway, there is one interchange that falls within a high accident segment:

- Exit 42 in Hopkins County, at the interchange with KY 70/85 in the urban area of Madisonville.

Additional comments related to interchange crashes are included in **Chapter VI, Section E**.

8. Summary of Findings of Crash Analysis

Review of the crash data for the four years under study revealed the following:

- The number of collisions with fixed objects may indicate that there are locations where objects are too close to the roadway and horizontal clearance issues could be addressed.
- The number of collisions with an animal may mean there are locations where wildlife crossings could be addressed with fencing, deer reflectors or other measures.
- Due to the number of crashes caused by rear-end collisions, problems with the ramp design and/or operational controls may exist at Exit 42 in Hopkins County (i.e., at the KY 70 interchange in Madisonville). Therefore, reconstruction of this ramp may be needed to improve safety at this location.
- Head-on and cross-over crashes do not seem to be more prevalent along the Parkways under study than along similar routes statewide.
- The number of ramp and rear-end crashes at interchanges may indicate the need for entrance and exit improvements along both Parkways.

B. Traffic Volumes and Operational Level of Service

An analysis of traffic congestion and level of service was performed for this study to identify locations where traffic problems could be an issue along the Ford and Breathitt Parkways. In addition, future traffic characteristics of the Parkways with and without I-69 were considered as part of this analysis.

For this project, both existing (Year 2002) and future (Year 2030) average daily traffic (ADT) volumes have been determined and are discussed further in the following subsections.

1. Year 2002 Traffic Volumes

Existing traffic volumes (Year 2002) for segments of the Ford and Breathitt Parkways were summarized based on information provided in the KYTC HIS database. Existing truck percentages were determined for the study area routes using several data sources, including the HIS database and Year 2003 classification counts at Parkway count stations. The ADT volumes and the corresponding truck percentages for the Year 2002 are shown in **Table 5** and **Figure 4**.

The existing traffic volumes along the Ford Parkway range from 9,000 vpd in Lyon County to 10,900 vpd in Hopkins County. For the Breathitt Parkway, 2002 traffic volumes range from 10,500 vpd in Hopkins County near the Ford Parkway to 26,400 vpd in Hopkins County within the urban area of Madisonville. Existing truck percentages range from 25.0% to 31.3% along the Ford Parkway, and from 22.9% to 32.9% along the Breathitt Parkway.

Directional design hourly volumes (DDHV) have also been considered as part of this study and are discussed further in reference to outside shoulder width standards in **Chapter IV**. A summary of the DDHV data along the Parkways was compiled from Year 2003 classification counts (see **Appendix E**) performed by the KYTC in four of the five study counties, as shown below:

Directional Design Hourly Volumes

	Peak Hour Vehicles	% Trucks at Peak Hour	Peak Hour Vehicles	% Trucks at Peak Hour
Ford Parkway				
	Eastbound		Westbound	
Caldwell County	358	23.5%	340	25.9%
Breathitt Parkway				
	Northbound		Southbound	
Hopkins County	692	18.4%	570	20.4%
Henderson County	861	11.6%	819	10.5%
Webster County	439	24.4%	333	14.7%

Source: Year 2003 KYTC classification counts

Table 5. Existing Traffic Characteristics

Ford Parkway	County	Begin MP	End MP	Length (miles)	Rural/ Urban	% Trucks	2002 ADT	2002 LOS
	Lyon	0.000	3.702	3.702	Rural	30.3 [1]	9,870	A
	Lyon	3.702	5.610	1.908	Rural	30.3 [1]	9,000	A
	Caldwell	5.610	11.109	5.499	Rural	30.1 [2]	9,000	A
	Caldwell	11.109	11.700	0.591	Urban	30.1 [2]	9,000	A
	Caldwell	11.700	13.116	1.416	Rural	25.0 [2]	10,900	A
	Caldwell	13.116	21.764	8.648	Rural	29.9 [2]	9,440	A
	Hopkins	21.764	24.435	2.671	Rural	27.2 [1]	9,440	A
	Hopkins	24.435	38.332	13.897	Rural	31.3 [2]	10,900	A
Breathitt Parkway	**County**	**Begin MP**	**End MP**	**Length (miles)**	**Rural/ Urban**	**% Trucks**	**2002 ADT**	**2002 LOS**
	Hopkins	28.095	29.568	1.473	Rural	28.1 [1]	10,500	A
	Hopkins	29.568	32.861	3.293	Rural	30.0 [2]	11,300	A
	Hopkins	32.861	34.271	1.410	Rural	24.9 [2]	16,400	A
	Hopkins	34.271	37.070	2.799	Rural	23.8 [2]	19,200	B
	Hopkins	37.070	41.002	3.932	Rural	23.4 [2]	19,300	B
	Hopkins	41.002	42.437	1.435	Urban	23.4 [2]	19,300	B
	Hopkins	42.437	44.337	1.900	Urban	22.9 [2]	26,400	B
	Hopkins	44.337	45.200	0.863	Urban	22.9 [2]	20,600	B
	Hopkins	45.200	47.472	2.272	Urban	24.2 [2]	14,700	A
	Hopkins	47.472	48.990	1.518	Rural	24.2 [2]	14,700	A
	Hopkins	48.990	54.070	5.080	Rural	27.9 [2]	17,800	B
	Hopkins	54.070	55.003	0.933	Rural	27.9 [2]	15,300	A
	Webster	55.003	62.637	7.634	Rural	24.1 [2]	15,300	A
	Webster	62.637	65.305	2.668	Rural	32.9 [2]	13,600	A
	Henderson	65.305	68.363	3.058	Rural	24.5 [2]	13,600	A
	Henderson	68.363	76.258	7.895	Rural	28.2 [2]	15,400	A

[1] Truck percentages were taken from KYTC's HIS database.
[2] Truck percentages were taken from KYTC 2003 classification counts.

Source: Kentucky Transportation Cabinet Highway Information System, 2002

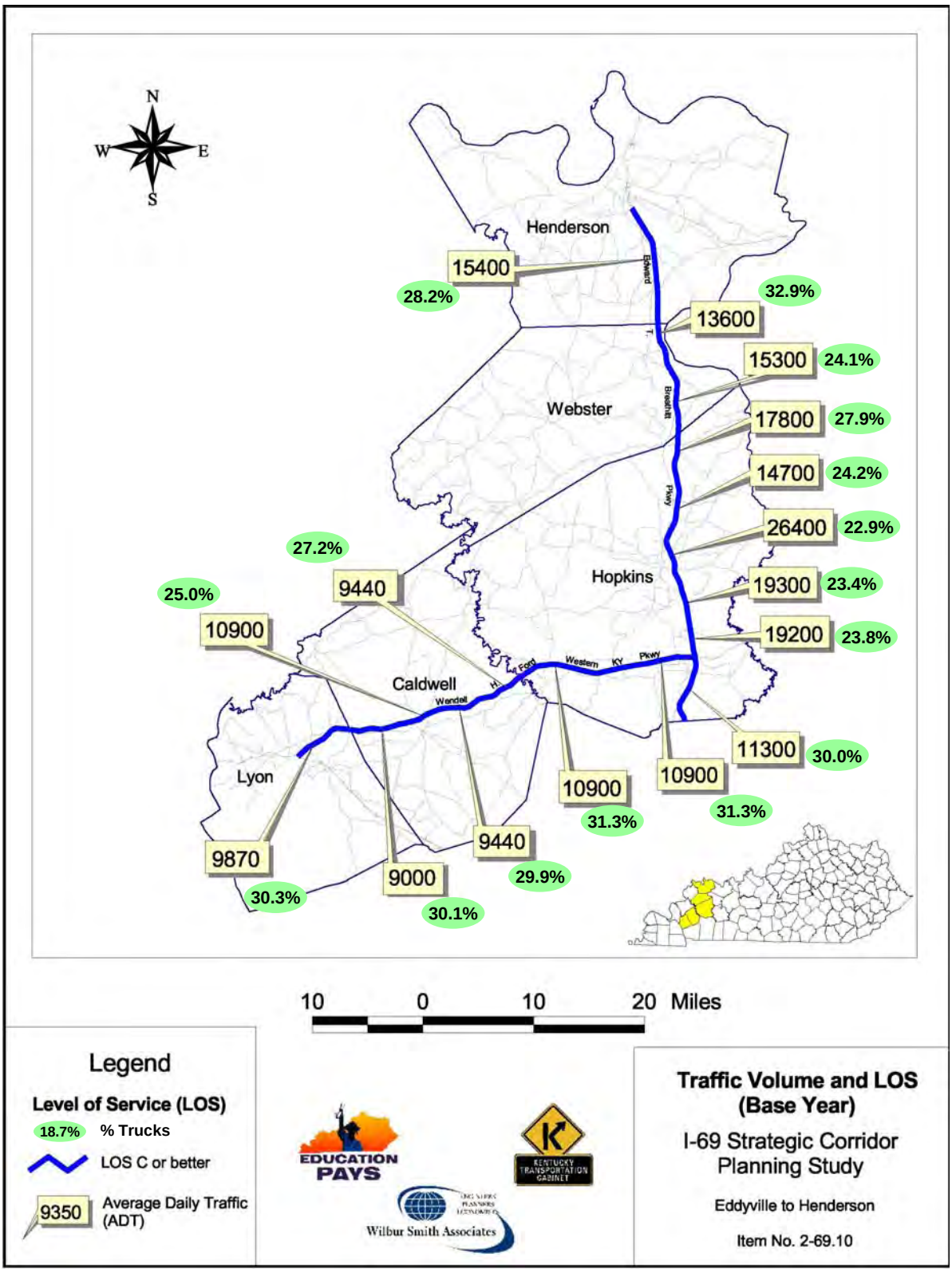


Figure 4. Year 2002 Traffic Volumes, Percent Trucks, and Level of Service

2. Year 2030 Traffic Volumes (without I-69)

Growth rates along the Ford and Breathitt Parkways were calculated to predict the growth on these roads in the Year 2030. These rates were based on the Kentucky Statewide Traffic Model (KYSTM), which is a mathematical model used to predict future traffic growth and traffic characteristics within Kentucky. The KYSTM has been used for several years for various tasks related to planning-level studies.

The future (2030) traffic volumes without I-69 are shown in **Table 6** and **Figure 5**. Year 2002 traffic volumes are also shown in the table for comparison purposes. As shown, average annual growth rates along the Parkways range from 1.7% to 2.1%. These rates result in traffic volumes ranging from 15,100 vpd to 18,100 vpd along the Ford Parkway and from 17,200 vpd to 43,800 vpd along the Breathitt Parkway.

Table 6. Future (2030) Traffic Volumes without I-69

Ford Parkway										
County	**Begin MP**	**End MP**	**Length (miles)**	**Rural/ Urban**	**% Trucks**	**2002 ADT**	**2002 LOS**	**Annual Growth Rate[1]**	**2030 ADT (w/out I-69/ I-66)**	**2030 LOS (w/out I-69)**
Lyon	0.000	3.702	3.702	Rural	30.3	9,870	A	2.0%	17,300	A
Lyon	3.702	5.610	1.908	Rural	30.3	9,000	A	2.1%	16,000	A
Caldwell	5.610	11.109	5.499	Rural	30.1	9,000	A	2.0%	15,600	A
Caldwell	11.109	11.700	0.591	Urban	30.1	9,000	A	2.0%	15,700	A
Caldwell	11.700	13.116	1.416	Rural	25.0	10,900	A	1.8%	18,100	B
Caldwell	13.116	21.764	8.648	Rural	29.9	9,440	A	1.8%	15,600	A
Hopkins	21.764	24.435	2.671	Rural	27.2	9,440	A	1.7%	15,100	A
Hopkins	24.435	38.332	13.897	Rural	31.3	10,900	A	1.7%	17,500	B
Breathitt Parkway										
County	**Begin MP**	**End MP**	**Length (miles)**	**Rural/ Urban**	**% Trucks**	**2002 ADT**	**2002 LOS**	**Annual Growth Rate[1]**	**2030 ADT (w/out I-69/ I-66)**	**2030 LOS (w/out I-69)**
Hopkins	28.095	29.568	1.473	Rural	28.1	10,500	A	1.8%	17,200	A
Hopkins	29.568	32.861	3.293	Rural	30	11,300	A	1.8%	18,500	B
Hopkins	32.861	34.271	1.410	Rural	24.9	16,400	A	1.8%	27,000	B
Hopkins	34.271	37.070	2.799	Rural	23.8	19,200	B	1.8%	31,600	C
Hopkins	37.070	41.002	3.932	Rural	23.4	19,300	B	1.8%	31,800	C
Hopkins	41.002	42.437	1.435	Urban	23.4	19,300	B	1.8%	31,900	C
Hopkins	42.437	44.337	1.900	Urban	22.9	26,400	B	1.8%	43,800	D
Hopkins	44.337	45.200	0.863	Urban	22.9	20,600	B	1.8%	34,300	C
Hopkins	45.200	47.472	2.272	Urban	24.2	14,700	A	1.8%	24,200	B
Hopkins	47.472	48.990	1.518	Rural	24.2	14,700	A	1.8%	24,200	B
Hopkins	48.990	54.070	5.080	Rural	27.9	17,800	B	1.8%	29,300	C
Hopkins	54.070	55.003	0.933	Rural	27.9	15,300	A	1.8%	25,200	B
Webster	55.003	62.637	7.634	Rural	24.1	15,300	A	1.8%	25,200	B
Webster	62.637	65.305	2.668	Rural	32.9	13,600	A	1.8%	22,400	B
Henderson	65.305	68.363	3.058	Rural	24.5	13,600	A	1.8%	22,400	B
Henderson	68.363	76.258	7.895	Rural	28.2	15,400	A	1.7%	24,700	B

[1] *Annual growth rates are based on the Kentucky Statewide Traffic Model (KYSTM) and historical travel data provided by the KYTC.*

Source: Kentucky Transportation Cabinet Highway Information System, 2002

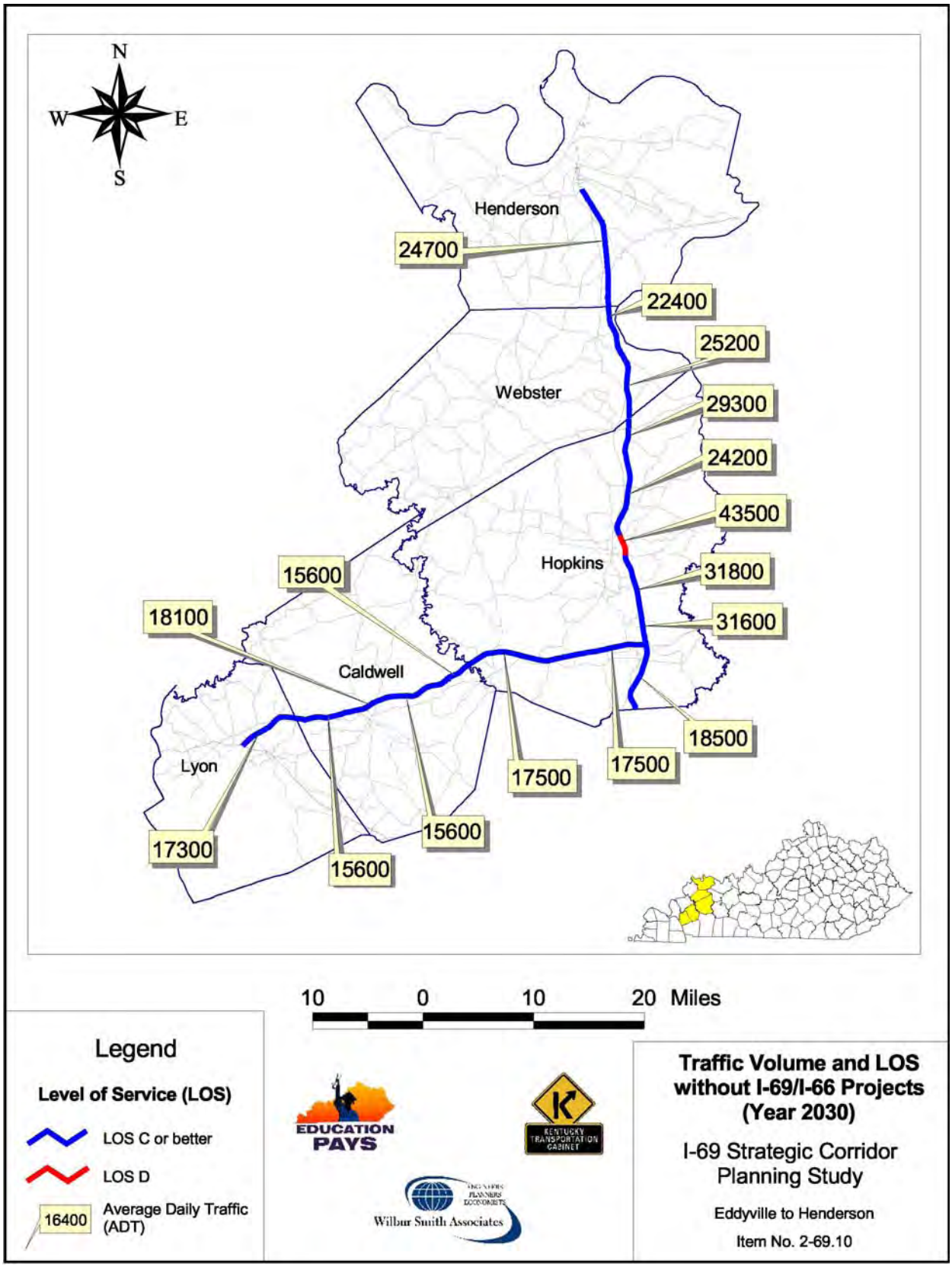


Figure 5. Future (2030) Traffic Volumes without I-69

3. Year 2030 Traffic Volumes (with I-69)

The KYSTM was also utilized to predict traffic volumes along the Ford and Breathitt Parkways assuming they are part of the I-69 Corridor. The section of the Ford Parkway considered in this study is also being considered as part of the I-66 Corridor, a proposed east-west interstate that would span across southern Kentucky. As a result of the inclusion of both the I-66 and I-69 Corridors, traffic volumes along the Ford Parkway are expected to increase more than volumes along the Breathitt Parkway.

The future (2030) traffic volumes with I-69 are shown in **Table 7** and **Figure 6**. As shown, growth rates range from 3.2% to 3.7% along the Ford Parkway, while rates range from 2.2% to 2.3% along the Breathitt Parkway. These rates result in traffic volumes ranging from 23,100 vpd to 30,500 vpd along the Ford Parkway and from 19,100 vpd to 50,500 vpd along the Breathitt Parkway.

Along the Breathitt Parkway, the future traffic volumes estimated as part of this study reflect an overall growth rate between 82% and 91% by the year 2030 (28 years of growth). These growth rates are consistent with those estimated in previous studies of Corridor 18. The *Corridor 18 Special Environmental Study* (2000) indicates that vehicular travel for the period 1995-2020 is expected to show an overall increase of 69% (25 years of growth).

Along the Ford Parkway, the future traffic volumes estimated as part of this study reflect an overall growth rate between 145% and 180% by the year 2030. Traffic volume growth along the Ford Parkway is expected to be more aggressive due to the addition of traffic from the I-66 corridor as well as I-69.

Table 7. Future (2030) Traffic Volumes with I-69

Ford Parkway										
County	**Begin MP**	**End MP**	**Length (miles)**	**Rural/ Urban**	**% Trucks**	**2002 ADT**	**2002 LOS**	**Annual Growth Rate[1]**	**2030 ADT (w/I-69)**	**2030 LOS (w/I-69)**
Lyon	0.000	3.702	3.702	Rural	30.3	9,870	A	3.7%	27,000	B
Lyon	3.702	5.610	1.908	Rural	30.3	9,000	A	3.7%	25,200	B
Caldwell	5.610	11.109	5.499	Rural	30.1	9,000	A	3.6%	24,100	B
Caldwell	11.109	11.700	0.591	Urban	30.1	9,000	A	3.6%	24,100	B
Caldwell	11.700	13.116	1.416	Rural	25.0	10,900	A	3.3%	27,000	B
Caldwell	13.116	21.764	8.648	Rural	29.9	9,440	A	3.2%	23,100	B
Hopkins	21.764	24.435	2.671	Rural	27.2	9,440	A	3.7%	26,400	B
Hopkins	24.435	38.332	13.897	Rural	31.3	10,900	A	3.7%	30,500	C
Breathitt Parkway										
County	**Begin MP**	**End MP**	**Length (miles)**	**Rural/ Urban**	**% Trucks**	**2002 ADT**	**2002 LOS**	**Annual Growth Rate[1]**	**2030 ADT (w/I-69)**	**2030 LOS (w/I-69)**
Hopkins	28.095	29.568	1.473	Rural	28.1	10,500	A	2.2%	19,100	B
Hopkins	29.568	32.861	3.293	Rural	30.0	11,300	A	2.2%	20,600	B
Hopkins	32.861	34.271	1.410	Rural	24.9	16,400	A	2.3%	31,300	C
Hopkins	34.271	37.070	2.799	Rural	23.8	19,200	B	2.3%	36,700	C
Hopkins	37.070	41.002	3.932	Rural	23.4	19,300	B	2.3%	36,900	C
Hopkins	41.002	42.437	1.435	Urban	23.4	19,300	B	2.3%	36,900	C
Hopkins	42.437	44.337	1.900	Urban	22.9	26,400	B	2.3%	50,500	D
Hopkins	44.337	45.200	0.863	Urban	22.9	20,600	B	2.3%	39,400	C
Hopkins	45.200	47.472	2.272	Urban	24.2	14,700	A	2.3%	28,100	C
Hopkins	47.472	48.990	1.518	Rural	24.2	14,700	A	2.3%	28,100	B
Hopkins	48.990	54.070	5.080	Rural	27.9	17,800	B	2.3%	34,000	C
Hopkins	54.070	55.003	0.933	Rural	27.9	15,300	A	2.3%	29,200	C
Webster	55.003	62.637	7.634	Rural	24.1	15,300	A	2.3%	29,200	C
Webster	62.637	65.305	2.668	Rural	32.9	13,600	A	2.3%	26,000	B
Henderson	65.305	68.363	3.058	Rural	24.5	13,600	A	2.2%	25,100	B
Henderson	68.363	76.258	7.895	Rural	28.2	15,400	A	2.2%	28,400	C

[1] *Annual growth rates are based on the Kentucky Statewide Traffic Model (KYSTM) and historical travel data provided by the KYTC.*

Source: Kentucky Transportation Cabinet Highway Information System, 2002

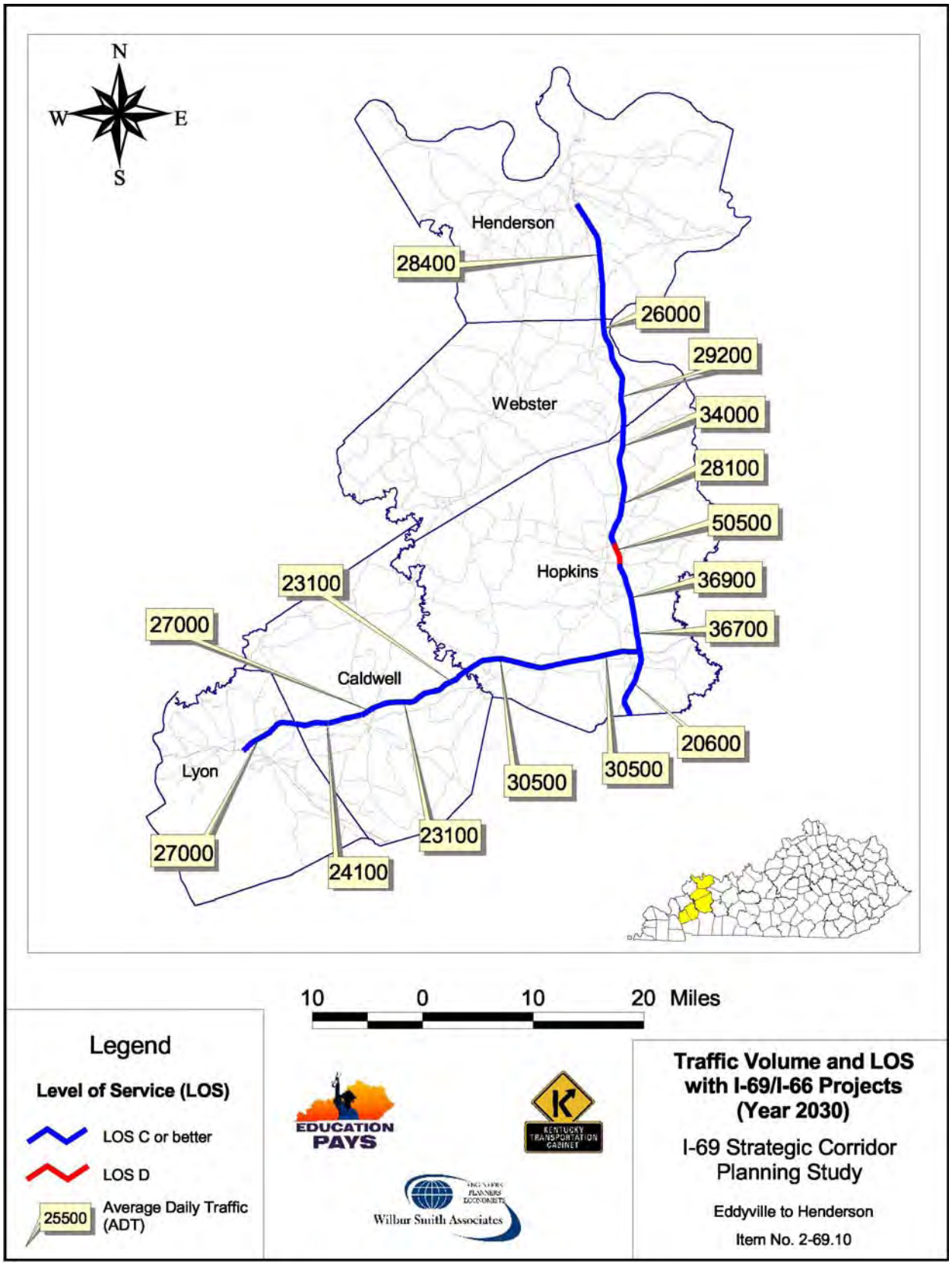


Figure 6. Future (2030) Traffic Volumes With I-69

4. Level of Service (LOS)

Level of service is a qualitative measure defined in the *2000 Highway Capacity Manual*, published by the Transportation Research Board (TRB), and used to describe traffic conditions. Individual levels of service characterize these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six (6) levels of service are defined and have been given letter designations ranging from A to F, with LOS A representing the best service (i.e., free flow conditions) and LOS F representing the worst service (i.e., severe congestion and gridlock).

According to the American Association of State Highway and Transportation Officials (AASHTO) guidelines, it is preferred to design for a LOS B in rural areas and a LOS C in urban areas. However, a minimum of LOS D in urban areas and LOS C in rural areas is considered acceptable. The TRB's Highway Capacity Software (HCS) was used to estimate level of service for the study area roadways.

Table 5 and **Figure 4** show the calculated current year (2002) level of service conditions for the Ford and Breathitt Parkways. As shown, all Parkway segments operate at LOS C or better in the Year 2002 and should therefore be considered acceptable at present.

LOS was also calculated for the forecasted traffic volumes both with and without I-69, as shown in **Tables 6-7** and **Figures 5-6**. Future year (Year 2030) levels of service are expected to operate at acceptable conditions throughout the study area, since only one segment along either Parkway is expected to fall below LOS C. This segment, expected to operate at LOS D, is found in Hopkins County in the urban area of Madisonville and can, therefore, be considered an acceptable LOS.

The procedures used to measure LOS along the Parkways differ from the procedures used to determine LOS at interchanges. As a result, traffic congestion that may exist at an interchange may not be reflected in the LOS conditions described above.

IV. MAINLINE GEOMETRY/TYPICAL SECTION

The Federal Highway Administration has adopted design guidelines for streets and highways based upon *A Policy of Geometric Design of Highways and Streets, 4th Edition, 2001*, as published by the American Association of State Highway and Transportation Officials (AASHTO). This policy manual is commonly referred to as the AASHTO Green Book. Further direction related to design of highways is outlined in AASHTO's 2002 *Roadside Design Guide*. In addition, the Standing Committee on Highways, AASHTO Highway Subcommittee on Design, and Task Force on Geometric Design have developed a draft *Policy on Design Standards, Interstate System* dated August 2003 that is presently going through the approval process. This draft policy was also considered as part of this evaluation.

The AASHTO guidelines afford different levels of highway design options that have been established based upon years of proven practice and research. The AASHTO Green Book provides guidance for the design of highways by offering recommended values or ranges of values for various critical dimensions and features associated with streets and highways. The use of *minimum* standards simply implies that the lower value should be the prudent guide.

For the Ford and Breathitt Parkways to be designated as I-69, design modifications may be needed to meet the higher level of guidelines for interstate highways. To make this determination, the design information on the Parkways, based on the Kentucky Transportation Cabinet's Highway Information System (HIS) inventory data and on *As-Built Plans* for the two Parkways, has been compared to the AASHTO guidelines for interstate highway facilities. A summary of the available design information is provided in **Appendix F – Highway Information System Summary of Parkway Data**.

This chapter provides a comparison of existing parkway conditions and the AASHTO guidelines for several key design areas. Mainline geometric issues for the existing corridor are discussed in this chapter, including design speed, median widths, clear zones, horizontal and vertical alignments, superelevation rates, and sight distances. Ramp configurations, taper lengths, and lateral and vertical bridge clearances are discussed in the following chapters.

Although this chapter makes comparisons between the features of the existing Parkways and AASHTO highway design guidelines, the AASHTO guidelines also encourage using design flexibility and context sensitive design principles to best meet the project-specific situation. Due consideration of this issue is important in the final conclusions and recommendations, as presented in **Chapter IX**.

A. Design Speed

Design speed is a selected speed that, once established, serves to influence many of the other design parameters for a particular transportation facility. Other influencing factors include topography, expected operating speed, land use, and the function of the

highway. The design speed is typically established for a roadway to satisfy the level of public expectation for safety and level of service.

AASHTO guidelines recommend a minimum mainline design speed of 70 MPH for rural freeway-type sections and a minimum of 50 MPH for urban freeway sections. Based on a review of the as-built plans for the Ford and Breathitt Parkways, the design speed specified on the plans for both of the Parkways is 70 miles per hour (MPH) for the entire length. However, there have been changes made to the AASHTO guidelines since the Parkways were built, so it was necessary to evaluate geometric, structural, and operational considerations based on current guidelines, as presented in this chapter, **Chapter IV**, and in **Chapters V and VI** of this report.

AASHTO design speeds for entrance and exit ramps are 35 MPH for semi-directional ramps in rural areas, 25 MPH for semi-directional ramps in urban areas, and 25 MPH for loop ramp configurations in both rural and urban areas. An evaluation of "Interchanges and Ramps" is provided in **Chapter VI**.

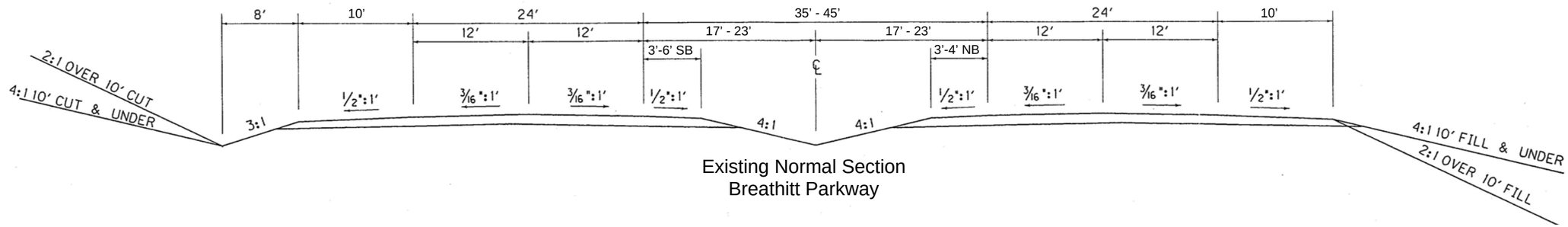
B. Typical Roadway Sections

Existing typical roadway cross-sections along the Ford and Breathitt Parkways are shown in **Figure 7**. These are generally representative of existing conditions along the Parkways, based on a review of as-built plans; however, any spot improvements, roadway improvements, or maintenance activities over the life of the Parkways may have resulted in changes to highway inventory data or as-built design conditions. Therefore, despite the comprehensiveness or quality of information shown in the HIS database and the as-built plans, variations from the data presented in this report may exist in some areas from actual conditions along either Parkway, since minimum field checks were conducted as part of this study.

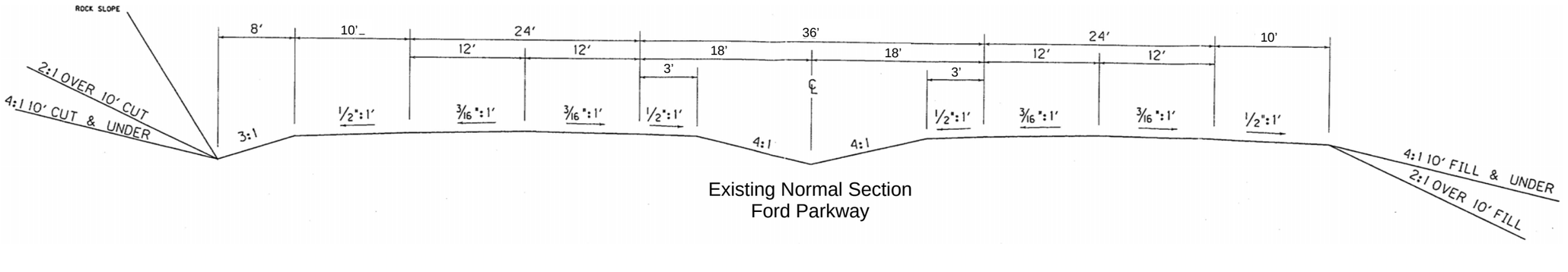
Following is a summary of existing typical highway cross-section design elements and a comparison of these elements with current AASHTO freeway design guidelines.

1. Lane Widths

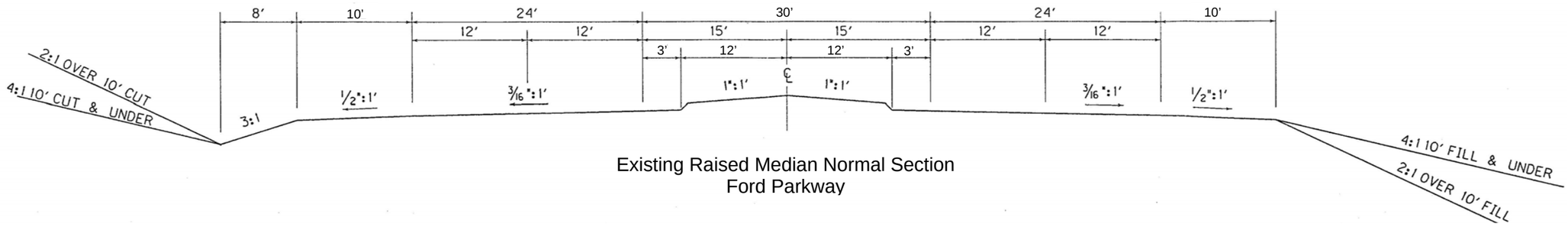
The minimum AASHTO guideline for the width of freeway traffic lanes is 12 feet. The freeway traffic lanes along the mainline sections of the Ford and Breathitt Parkways have been designed and constructed with a lane width of 12 feet. Therefore, the lane width on the Parkways meets the minimum AASHTO guidelines for freeway design.



Existing Normal Section
Breathitt Parkway



Existing Normal Section
Ford Parkway



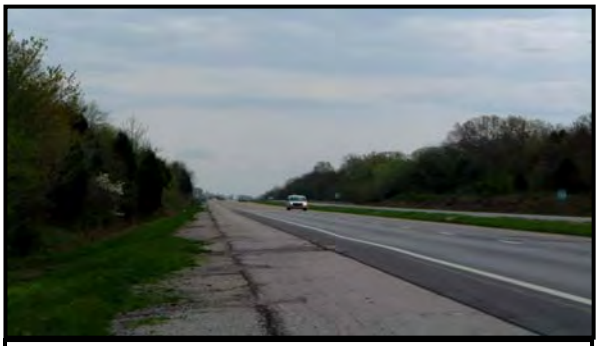
Existing Raised Median Normal Section
Ford Parkway

Note: Typical Sections are based upon As-Built Plans provided by the Kentucky Transportation Cabinet.

Figure 7. Existing Typical Section for Ford and Breathitt Parkways

2. Shoulder Widths

The minimum AASHTO guidelines for freeway shoulders recommend paved shoulders on both the left and right side of each direction of travel. This includes a usable paved shoulder of 10' provided on the outside or right shoulder, or 12' where the Directional Design Hourly Volume (DDHV) for truck traffic exceeds 250 vehicles per hour (vph).



Both lane widths and outside shoulder widths along the two Parkways generally meet Interstate design guidelines.

The existing outside or right shoulder widths on the as-built plans show an outside shoulder width of 10 feet along both the Ford and Breathitt Parkways. This was confirmed by a review of the HIS data. The existing truck volumes along this corridor are well below the DDHV of 250 vehicles per hour (see discussion in **Chapter III**). Thus, it is anticipated that all of the existing outside shoulders meet interstate highway criteria for shoulder width. One consideration is using the shoulder as the traveled way during maintenance and construction activities. To function as a drivable shoulder, depth should be considered. Based on the as-built plans, the depth of the original shoulder was the same as the travel lanes but as the picture above highlights, in some locations subsequent overlays did not include overlaying the entire pavement section. Additional information provided by the KYTC shows a shoulder depth of 2" of asphalt on stone along the Ford Parkway and approximately 9" of asphalt on stone along the Breathitt Parkway.

The AASHTO guidelines also specify that the inside or left shoulder width should be a minimum of 4' of paved shoulder. On freeways with more than two lanes in each direction, the left shoulder should be 10' (and preferably 12' if the DDHV for truck traffic exceeds 250 vph). The additional width allows for (a) a storage area for disabled vehicles that were unable to maneuver to the right shoulder, (b) drainage control, and/or (c) a storage area for snow removal, if needed.

According to the typical sections from the as-built plans and a review of the HIS data, all of the inside shoulder widths on the Breathitt Parkway are at least 3 feet with a few sections of 4 and 6 feet. Also, all of the inside shoulder widths on the Ford Parkway are 3 feet. Therefore, the Parkways do not fully conform to AASHTO design guidelines for the inside shoulder width on freeways.

A more detailed summary of the inside and outside shoulder widths is presented in **Table 8** and graphically depicted in **Figure 8**.

Table 8 - Summary of Inside and Outside Shoulder Widths along Parkways

BREATHITT PARKWAY	COUNTY	BEGIN MP	END MP	LENGTH (miles)	SHOULDER WIDTH (ft)	AASHTO Minimum
Outside Shoulders	Hopkins	34.271	55.003	20.732	10	10 ft. (if truck DDHV <=250 vph)
	Webster	55.003	65.305	10.302	10	
	Henderson	65.305	76.258	10.953	10	
Inside Shoulders	Hopkins	34.271	39.550	5.279	4	4 ft.
	Hopkins	39.550	42.437	2.887	3 NB/4 SB	
	Hopkins	42.437	44.713	2.276	3	
	Hopkins	44.713	45.460	0.747	3 NB/6 SB	
	Hopkins	45.460	46.200	0.740	3	
	Hopkins	46.200	55.003	8.803	3	
	Webster	55.003	65.305	10.302	3	
	Henderson	65.305	76.258	10.953	3	
FORD PARKWAY	**COUNTY**	**BEGIN MP**	**END MP**	**LENGTH (miles)**	**SHOULDER WIDTH (ft)**	**AASHTO Minimum**
Outside Shoulders	Lyon	0.000	5.610	5.610	10	10 ft. (if truck DDHV <=250 vph)
	Caldwell	5.610	21.764	16.154	10	
	Hopkins	21.764	38.332	16.568	10	
Inside Shoulders	Lyon	0.000	5.610	5.610	3	4 ft.
	Caldwell	5.610	21.764	16.154	3	
	Hopkins	21.764	38.332	16.568	3	

Source: Kentucky Transportation Cabinet Highway Information System, 2002

3. Medians

Medians are separations between opposing traffic flow that add to vehicular safety and driver comfort. AASHTO design guidelines recommend median widths for both rural and urban sections to best accomplish these purposes. Medians are measured from the edge of the travelway (yellow line) in one direction to the edge of the travelway in the other direction. Therefore the median includes the inside shoulders and any grass or paved area between.

Median widths along the parkways range from 30 to 45 feet.

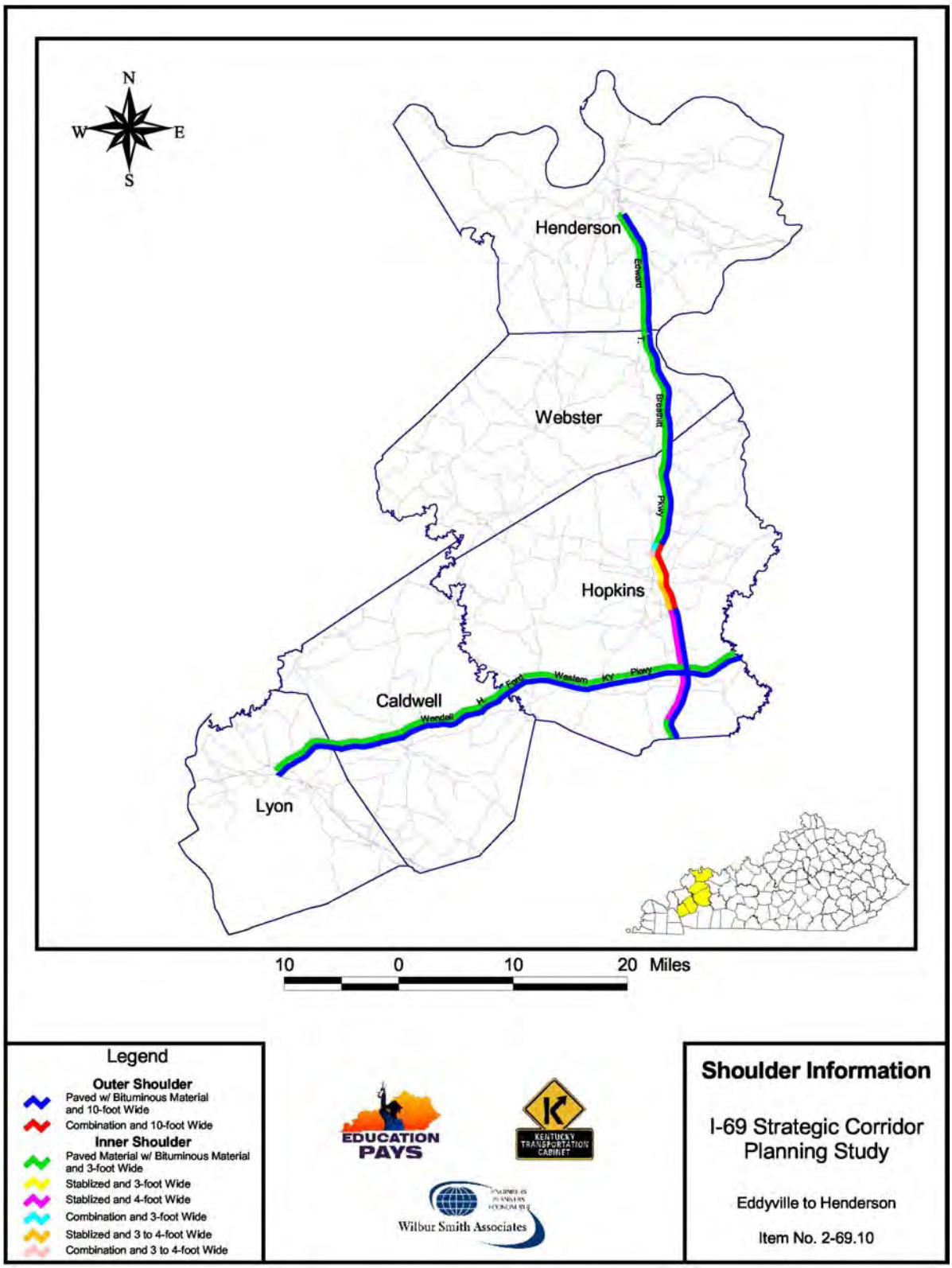
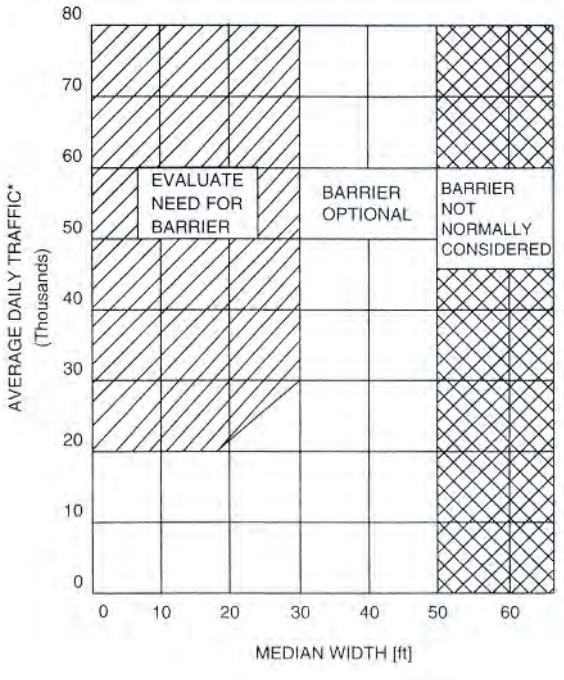


Figure 8. Illustration of Inside and Outside Shoulder Widths along Parkways

According to KYTC records, there are 80.319 miles of freeway in the I-69 study corridor on the Ford and Breathitt Parkways, which includes 7.061 (8.8%) miles of urban freeway and 73.258 (91.2%) miles of rural freeway. Of the 7.061 miles of urban freeway, 0.591 miles is in Caldwell County, and 6.47 miles is in Hopkins County. Of the 73.258 miles of rural freeway 5.610 miles is in Lyon County, 15.563 miles in Caldwell County, 30.830 miles in Hopkins County, 10.302 miles in Webster County, and 10.953 miles in Henderson County.

A review of the as-built typical sections and the HIS data for the existing Breathitt Parkway indicates that the median width varies from 35’ to 45'. Along the Ford Parkway, there is a median of 30' in Hopkins County as well as in part of Caldwell County. In the remainder of Caldwell County and in Lyon County, there is a 36’ median.

The AASHTO Green Book recommends a minimum median width for rural freeway of 50’. This allows for 6’ inside shoulders and a 38’ depressed median with 6:1 back slopes. The median ditch would be approximately 3' in depth to handle roadway drainage. The recommended minimum median width for urban freeways is dependent upon the number of freeway lanes and the number of large trucks. Where an urban freeway is four-lane, a minimum median width of 10' is recommended, which allows for 4' inside shoulders and a 2' concrete median barrier. Where the urban freeway is more than two lanes in each direction, the minimum median width should be 22' (and preferably 26' if the number of heavy trucks exceeds 250 vph). Another consideration for minimum acceptable median widths is the draft AASHTO *Policy on Design Standards, Interstate System*. The draft document recommends that medians in rural areas be at least 36’ wide while consulting AASHTO’s *Roadside Design Guide* to determine the warrants, based on consideration of average daily traffic, median width and crash history, for barrier installation in the median. The AASHTO *Roadside Design Guide* discusses the criteria for the installation of a median barrier in Chapter 6. The chart to the left (Figure 6.1 in the *Roadside Design Guide*) highlights the suggested guidelines for the installation of median barrier on high-speed roadways. The *Roadside Design Guide* also has a detailed discussion on curbs and their application. The recommended practice is not to use curbs on high-speed facilities.



Suggested guidelines for median barriers on high-speed roadways. Figure 6.1 from AASHTO’s Roadside Design Guide

The median types and dimensions are presented in **Table 9** and graphically depicted in **Figure 9.**

Table 9 - Summary of Median Types and Widths along Parkways

BREATHITT PARKWAY	COUNTY	BEGIN MP	END MP	LENGTH (miles)	MEDIAN TYPE	MEDIAN WIDTH (ft)	Minimum Median Width
Rural	Hopkins	34.271	39.550	5.279	Depressed	36	36 ft (depressed) 10 ft. (barrier)
Rural	Hopkins	39.550	41.002	1.452	Depressed	35	
Urban	Hopkins	41.002	42.437	1.435	Depressed	35	
Urban	Hopkins	42.437	44.713	2.276	Depressed	36	
Urban	Hopkins	44.713	45.460	0.747	Depressed	45	
Urban	Hopkins	45.460	47.472	2.012	Depressed	42	
Rural	Hopkins	47.472	53.278	5.806	Depressed	42	
Rural	Hopkins	53.278	55.003	1.725	Depressed	36	
Rural	Webster	55.003	65.305	10.302	Depressed	36	
Rural	Henderson	65.305	76.258	10.953	Depressed	36	
FORD PARKWAY	**COUNTY**	**BEGIN MP**	**END MP**	**LENGTH (miles)**	**MEDIAN TYPE**	**MEDIAN WIDTH (ft)**	**Minimum Median Width**
Rural	Lyon	0.000	5.610	5.610	Depressed	36	36 ft. (depressed) 10 ft. (barrier)
Rural	Caldwell	5.610	9.880	4.270	Depressed	36	
Rural	Caldwell	9.880	21.764	11.884	Depressed	30	
Rural	Hopkins	21.764	25.000*	3.236	Depressed	30	
Rural	Hopkins	25.000*	38.332	13.332	Raised Mountable	30	

Source: Kentucky Transportation Cabinet Highway Information System, 2002
** Approximate Location*

A review of vehicle crashes along the Parkways indicates that there is not a history of cross-over accidents (see discussion in **Chapter III**). 2002 Average Daily Traffic (ADT) along the Parkways ranges from 9,000 to 26,400 vehicles per day with a 2030 projected ADT of between 19,100 to 50,500 vehicles per day.

Based on this analysis, the median along the Breathitt Parkway is in substantial compliance with the accepted practice with the exception of the roadway segment between milepoints 39.55 and 42.437 in Hopkins County. Additionally, the median along the Ford Parkway is in substantial compliance with accepted practice in Lyon County and for the first 4.27 miles in Caldwell County. The remainder of the Ford Parkway in Caldwell and Hopkins County are not in compliance with the accepted practice in terms of width of the median.

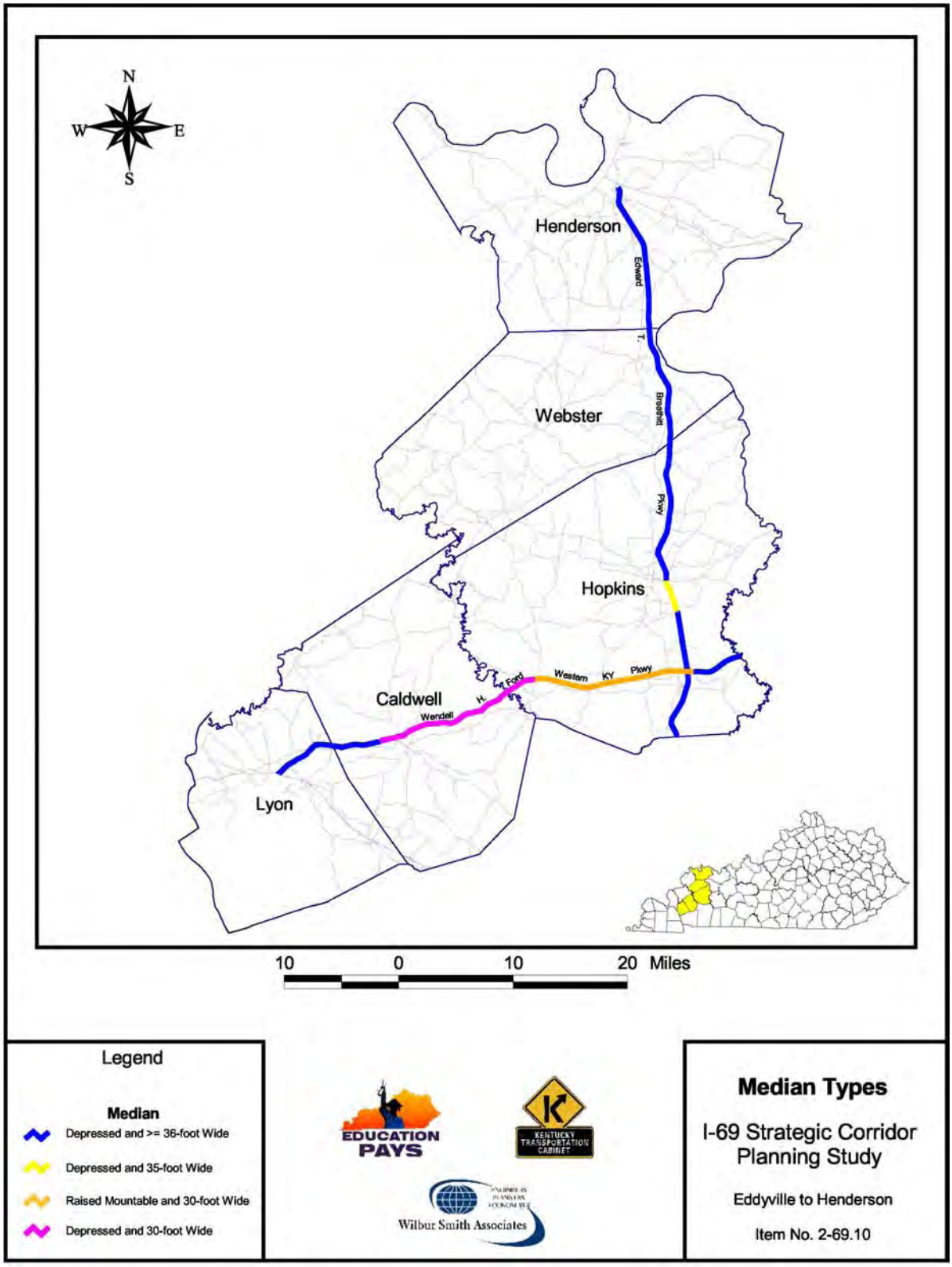


Figure 9. Illustration of Median Types and Widths along Parkways

4. Clear Zones

The clear zone is defined as the unobstructed area outside the edge of the travel lane that is used for vehicle recovery, including any available shoulders or parallel auxiliary lanes. Issues with clear zones involve design speed, magnitude of traffic volumes, steepness of fill/cut slopes, ditch slopes, and distances to fixed objects such as bridge piers, sign supports, culvert headwalls, and naturally occurring objects such as trees, rock outcrops, and drainage channels.

For design speeds of 70 mph and average daily traffic greater than 6,000 vehicles per day, the AASHTO *Roadside Design Guide* recommends a clear zone width ranging from 30 to 46 feet in fill sections. This applies to fill slopes ranging from 1V:4H or flatter. For slopes steeper than 1V:4H, it may be unreasonable to expect a driver to recover control of the vehicle within the desirable clear zone. Therefore, additional safety measures may be required, such as extending the clear zone or installing barriers. For cut slopes, the recommended clear zone width varies from 22 feet to 30 feet. This applies to cut slopes that vary from 1V:3H to 1V:6H.

Clear zones and guardrail placement may require upgrades at many locations along the parkways.

According to the as-built plans, the fill and cut slopes vary from 1V:2H to 1V:4H depending on the height of fill or depth of cut required. However, it is not possible to evaluate the applicability of current design guidelines and availability of acceptable clear zones with the information currently available.

5. Guardrail Placement and Condition

The primary purpose of guardrail or barrier rail installations is to provide an energy absorption device that will contain or redirect an errant vehicle before it has the potential to leave the roadway and strike a fixed object or a topographic feature that may be considered a greater hazard than the device itself. Similar to the evaluation of clear zones, the effective evaluation of guardrail placement and guardrail end treatments requires a detailed review of the highway cross-sections and extensive field review of existing topographic features and field conditions. Therefore, sufficient information does not exist on the as-built plans to evaluate the placement of guardrail or the status of guardrail end treatments along the I-69 corridor.

At the request of the KYTC, additional information was provided by the KYTC Highway District 1 office. They confirmed that guardrail along the Ford Parkway within District 1 had been upgraded to meet guardrail policy except from US 62 to the Caldwell County

line. This section would need to be inventoried including the ramps on the east side of US 62. In particular, guardrail post spacing would need to be verified. Existing 12'-6" installations are allowed to remain on the Parkways, but would need to be replaced if designated as an Interstate. In addition, turned down end treatments and obsolete flared end treatments would need to be replaced if a reconstruction or rehabilitation project were to be conducted. No additional information was available from the KYTC Highway District 2 office, and those sections would also need to be inventoried.

C. Horizontal Alignment

The following sections outline primary assumptions and considerations for the analysis of horizontal alignment factors, analytical findings, and summary conclusions.

1. Superelevation Rate

Superelevation is the physical tilting of the pavement surface through a curve so the vehicle will not slide off the roadway at the selected design speed under normal operating conditions. Under adverse conditions, such as rain and snow, motorists are expected to reduce operating speeds to correspond to the driving conditions. The superelevation cannot be so steep that a stalled or stopped vehicle under icing conditions would slide down the slope.

Because of the geographic location of the proposed I-69 corridor, it may be subject to snow and ice conditions. With the possibility of snow and ice conditions, superelevation rates ranging from 6% to 8% are recommended as maximum design parameters. This maximum rate applies to the mainline roadway features and directional and loop ramps.

According to the as-built plans, the maximum superelevation rate for the mainline of the Ford and Breathitt Parkways is 8 percent. Therefore, the superelevation rate on the existing parkways is acceptable and in general compliance with the AASHTO design guidelines.

2. Degree of Horizontal Curvature

Given the 70 MPH design speed of the existing parkways, a maximum degree of horizontal curvature of 3°-00' was used, which equates to a maximum horizontal curve radius of approximately 1,910 feet. At the time the Ford and Breathitt Parkways were constructed, the limiting value of curvature of the roadway features, based on a given maximum superelevation, was reported as degree of curvature. However, the newly adopted AASHTO guidelines depict the limiting value of curvature as

The parkways generally meet interstate requirements for the basic design elements of horizontal and vertical alignment.

the value of the radius of the curve itself. Accordingly, the minimum radius for a 70 MPH mainline design speed with a maximum superelevation of 8% is approximately 1,820' (3º-00'). The corresponding radius for 50 MPH mainline design speed for urban areas is 750' (5°-00').

Appendix F provides a summary of all the horizontal curves on both the Ford and Breathitt Parkways. The smallest radius of curve is on the Ford Parkway at two locations with a radius of 2,864.93' (milepost 6.416 and 8.421) which is well above the minimum for a rural freeway. Based on this information, the horizontal curvature for the Parkways is acceptable and in general compliance with current AASHTO design guidelines.

D. Vertical Alignment

Roadways are not typically constructed on flat terrain where there is no need to introduce uphill or downhill grades. Because of changes in the terrain, it has been necessary to construct sections of the parkways with varying degrees of uphill and downhill grades. One of the most important design features of variable grades is the need to provide smooth transitions across hills (referred to as "Crest Vertical Curves") and through valleys (referred to as "Sag Vertical Curves"). These transitions need to be of sufficient length to provide adequate stopping sight distance due to objects in the roadway or to avoid stalled or stopped vehicles. However, the lengths do not need to be so flat as to impede the flow of water from the roadway surface. The design parameters that control the length of the crest and sag vertical curves are dependent on the selected design speed, the assumed vehicle light beam distance, and the percent grade of the approach and departing roadways of the crest or sag vertical curve.

AASHTO guidelines designate a maximum grade based on the type of terrain and design speed. For a rural section with rolling terrain (defined as most of the parkways), the maximum grade is 4%. In the urban sections, the maximum grade is 5%. The as-built plans show that no sections have higher than a 4% grade; however, three sections along the Ford Parkway are at the maximum grade of 4%.

The controlling factors for the design of vertical curves are the design speed, the grades and stopping sight distance. For the review of the existing conditions along the parkways, using the minimum stopping sight distance (730' rural, 425' urban), the existing grades and the design speeds, the minimum length of vertical curve was calculated. This was then compared to the actual length of vertical curve. This information is shown in **Appendix F**. Along the Ford Parkway, the actual length of vertical curve is less than the calculated minimum at three (3) locations:

- Milepoint 11.714 in Caldwell County (actual 400', calculated minimum 496')
- Milepoint 32.733 in Hopkins County (actual 1,200', calculated minimum 1206')
- Milepoint 37.357 in Hopkins County (actual 600', calculated minimum 631')

Along the Breathitt Parkway there are only two (2) locations where the actual vertical curve is less than the calculated minimum:

- Milepoint 54.122 in Hopkins County (600' actual, calculated minimum 613')
- Milepoint 68.500 in Henderson County (500' actual, calculated minimum 562')

The differences between actual and calculated minimums at milepoint 32.733 on the Ford and milepoint 54.122 on the Breathitt are not great enough to consider possible mitigation. Further study of the other three (3) locations may be warranted to determine if mitigation is warranted.

Milepoint 32.733 in Hopkins County along the Ford Parkway was one of five locations identified where the vertical curve is less than the calculated minimum.

V. BRIDGES AND OVERPASSES

The KYTC Highway Information Systems (HIS) database lists eighty-three bridge structures along the Ford and Breathitt Parkways in the study area. Data on these structures is included in **Appendix F – Highway Information System Summary of Parkway Data.** Of the 83 structures, 50 are mainline bridges (i.e., bridges carrying "through traffic" lanes) and the remaining are overpasses, culverts, or bridges that accommodate other uses (i.e., bridges carrying ramps or auxiliary lanes). **Table 10** summarizes the number and type of each structure.

Table 10 – Summary of Structure Types

Type	Number of Structures	
	Breathitt Parkway	Ford Parkway
Mainline Bridges	28	22
Overpasses	14	9
Culverts	4	6
Total	46	37

The mainline bridges along the two Parkways and the overpass bridges passing above the Parkways present potential concerns related to lateral (i.e. horizontal) and vertical clearance widths, respectively. Furthermore, the functional and structural condition of these bridges is an added issue that is relevant where consideration is being given to adding additional traffic (particularly truck traffic) to these structures or to determining if they should be widened, rehabilitated, or replaced. The lateral and vertical clearance issues, along with the condition and safety appurtenances associated with bridges along the Ford and Breathitt Parkways, are discussed below.

A. Lateral Clearances of Bridges

Simply stated, lateral clearance problems involve bridge widths that are too narrow to meet current design guidelines. Limited lateral (or horizontal) clearance on bridges is a common problem on many highway facilities, including most interstate highways throughout the United States.

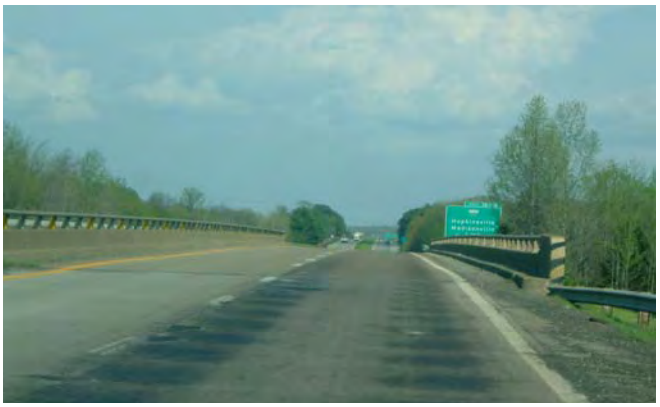
Current AASHTO freeway design guidelines recommend that the approach roadway width (driving lanes plus shoulders) be carried across the bridge plus a 2'-00" offset for approach guardrail. However, it is acceptable to omit the 2'-00" offset on the right and left bridge approaches and use a 20:1 transition rate from the approach rail to the bridge rail. In each direction of travel on a four-lane freeway, this equates to a minimum lateral clearance of 38'-00" (2-12' lanes, 10' right and 4' left shoulder).

The AASHTO guidelines found in "*A Policy on Geometric Design of Highways and Streets, 4th Edition*" (American Association of State Highway Officials, 2001) also state the following on Page 510:

"The clear width on bridges carrying freeway traffic should be as wide as the approach roadway. On bridges longer than 200 feet, some economy in substructure costs may be gained by building a single structure rather than twin parallel structures. In such cases, the approach shoulder widths are provided and a median barrier is extended across the bridge."

In addition, the AASHTO guidelines state on Page 764:

"…For this reason, the clear width on bridges should preferably be as wide as the approach roadway in order to give drivers a sense of openness and continuity. On long bridges, particularly on long-span structures where cost per square meter is greater than the cost on short-span structures, widths that are less than ideal may be acceptable; however, economy alone should not be the governing factor in determining structure widths. The analysis of traffic characteristics, safety features, emergency contingencies, and benefit/cost ratios should be fully considered before the desirable structure width is compromised."



The lateral clearances (widths) of mainline bridges along the Parkways often do not meet AASHTO guidelines, which require bridge widths equal to the paved roadway plus shoulder widths.

The Draft AASHTO *Policy on Design Standards, Interstate System* says the following:

"Long bridges, defined as bridges having an overall length in excess of 200 feet, may have a lesser width. Such bridges shall be analyzed individually. On long bridges, offsets to parapet, rail or barrier shall be at least 4 feet measured from the edge of the nearest traffic lane on both the left and the right."

These citations suggest that for those "long" bridges (over 200' long), the lateral clearance criteria may be relaxed if conditions warrant.

In addition to the lateral clearance, the treatment of the curb on the bridges will need to be reviewed to insure the bridge railing/parapet meet the current guidelines.

Tables 11 and **12** summarize the length, width and horizontal clearance for each of the mainline bridges on the Ford and Breathitt Parkways. There are two measurements that are relevant to the width of the bridge, the width from the outside of the parapet to

the outside of the opposite parapet (width in **Tables 11 and 12**) and the width of roadway between the face of barrier or curbing (horizontal clearance in **Tables 11 and 12**).

On the Ford Parkway, of the 22 mainline bridges, 14 fail to meet the minimum horizontal clearance criteria. Of these, 12 are over 200 feet long.

Table 11 – Summary of Substandard Lateral Clearances Along the Ford Parkway

County	Bridge No.	MP	Features Intersected	Length	Width	Horizontal Clearance
FORD PARKWAY						
Lyon	B00049P	0.001	I-24 @ MP 41.603	275	30.0	26.0
Lyon	B00049	0.001	I-24 @ MP 41.603	272	38.0	34.0
Lyon	B00052	3.408	P&L RR-ELKHORN TAVERN RD	221	41.7	38.0
Lyon	B00052P	3.408	P&L RR-ELKHORN TAVERN RD	221	52.7	38.0
Lyon	B00030	3.702	US 62	226	39.8	38.3
Lyon	B00030P	3.703	US 62	226	39.8	38.0
Caldwell	B00029P	11.357	P&L RAILWAY	189	33.0	30.0
Caldwell	B00029	11.357	P&L RAILWAY	189	33.0	30.0
Caldwell	B00033P	21.752	TRADEWATER RIVER	207	33.0	30.0
Caldwell	B00033	21.752	TRADEWATER RIVER	207	33.0	30.0
Hopkins	B00138	22.003	TRADEWATER RIVER OVERFLOW	215	33.0	30.0
Hopkins	B00138P	22.003	TRADEWATER RIVER OVERFLOW	215	33.0	30.0
Hopkins	B00139P	24.887	P&L RAILWAY	131	38.0	38.0
Hopkins	B00139	24.887	P&L RAILWAY	131	38.0	38.0
Hopkins	B00140	28.346	KY 112 & COPPERAS CREEK	278	33.0	30.0
Hopkins	B00140P	28.346	KY 112 & COPPERAS CREEK	278	33.0	30.0
Hopkins	B00143	33.872	P&L RAILWAY SPUR & OAK RD	260	33.0	30.0
Hopkins	B00143P	33.872	P&L RAILWAY SPUR & OAK RD	260	33.0	30.0
Hopkins	B00144	36.900	CSX TRANSPORTATION	448	33.0	30.0
Hopkins	B00144P	36.900	CSX TRANSPORTATION	448	33.0	30.0
Hopkins	B00145	38.311	BREATHITT PARKWAY	226	47.2	44.3
Hopkins	B00145P	38.311	BREATHITT PARKWAY	226	45.0	42.1

Bridge over 200' long with horizontal clearance less than 38'

Bridge under 200' long with horizontal clearance less than 38'

On the Breathitt Parkway, of the 28 mainline bridges, 14 fail to meet the minimum horizontal clearance criteria. Of these, 8 are over 200 feet long.

Table 12 – Summary of Substandard Lateral Clearances Along the Breathitt Parkway

County	Bridge No.	MP	Features Intersected	Length	Width	Horizontal Clearance
BREATHITT PARKWAY						
Hopkins	B00095	37.054	P&L RR-FLAT CREEK-KY 813	318	36.0	30.0
Hopkins	B00095P	37.054	P&L RR-FLAT CREEK-KY 813	318	36.0	30.0
Hopkins	B00096P	39.774	KY 2171	265	36.0	30.0
Hopkins	B00096	39.774	KY 2171	265	37.0	34.0
Hopkins	B00100P	42.418	KENTUCKY 70	192	36.0	30.0
Hopkins	B00100	42.418	KENTUCKY 70	192	37.0	34.0
Hopkins	B00101P	43.438	CSX RAILROAD	159	36.0	30.0
Hopkins	B00101	43.438	CSX RAILROAD	159	37.0	34.0
Hopkins	B00020P	48.805	OTTER CREEK	144	40.0	38.0
Hopkins	B00020	48.805	OTTER CREEK	144	40.0	38.0
Hopkins	B00210	48.970	OTTER CREEK	132	28.3	26.2
Hopkins	B00211	48.971	OTTER CREEK	182	28.3	26.2
Hopkins	B00021	48.979	KY 260 @ HANSON	161	39.0	38.0
Hopkins	B00021P	48.979	KY 260 @ HANSON	161	39.0	38.0
Hopkins	B00012	54.070	KY 138	174	40.0	38.0
Hopkins	B00012P	54.070	KY 138	174	40.0	38.0
Webster	B00069P	56.523	KY 147	163	40.0	38.0
Webster	B00069	56.523	KY 147	163	40.0	38.0
Webster	B00071P	59.280	DEER CREEK	368	33.0	30.0
Webster	B00071	59.280	DEER CREEK	368	33.0	30.0
Webster	B00072	60.476	KY 370	166	40.0	38.0
Webster	B00072P	60.476	KY 370	166	40.0	38.0
Webster	B00074	63.887	GROVES CREEK	260	33.0	30.0
Webster	B00074P	63.888	GROVES CREEK	260	33.0	30.0
Henderson	B00062P	65.393	ACCESS RD-BIG RIVERS RR	183	41.0	38.0
Henderson	B00062	65.393	ACCESS RD-BIG RIVERS RR	183	41.0	38.0
Henderson	B00068	75.360	ELAM DITCH	141	40.0	38.0
Henderson	B00068P	75.360	ELAM DITCH	141	40.0	38.0

Bridge over 200' long with horizontal clearance less than 38'

Bridge under 200' long with horizontal clearance less than 38'

The locations of all bridges that fall short of the 38’00’’ minimum lateral clearance are shown on **Figures 10** through **13.** Please note that there is no map for Henderson County since there are no bridges in that county with widths below the minimum guidelines.

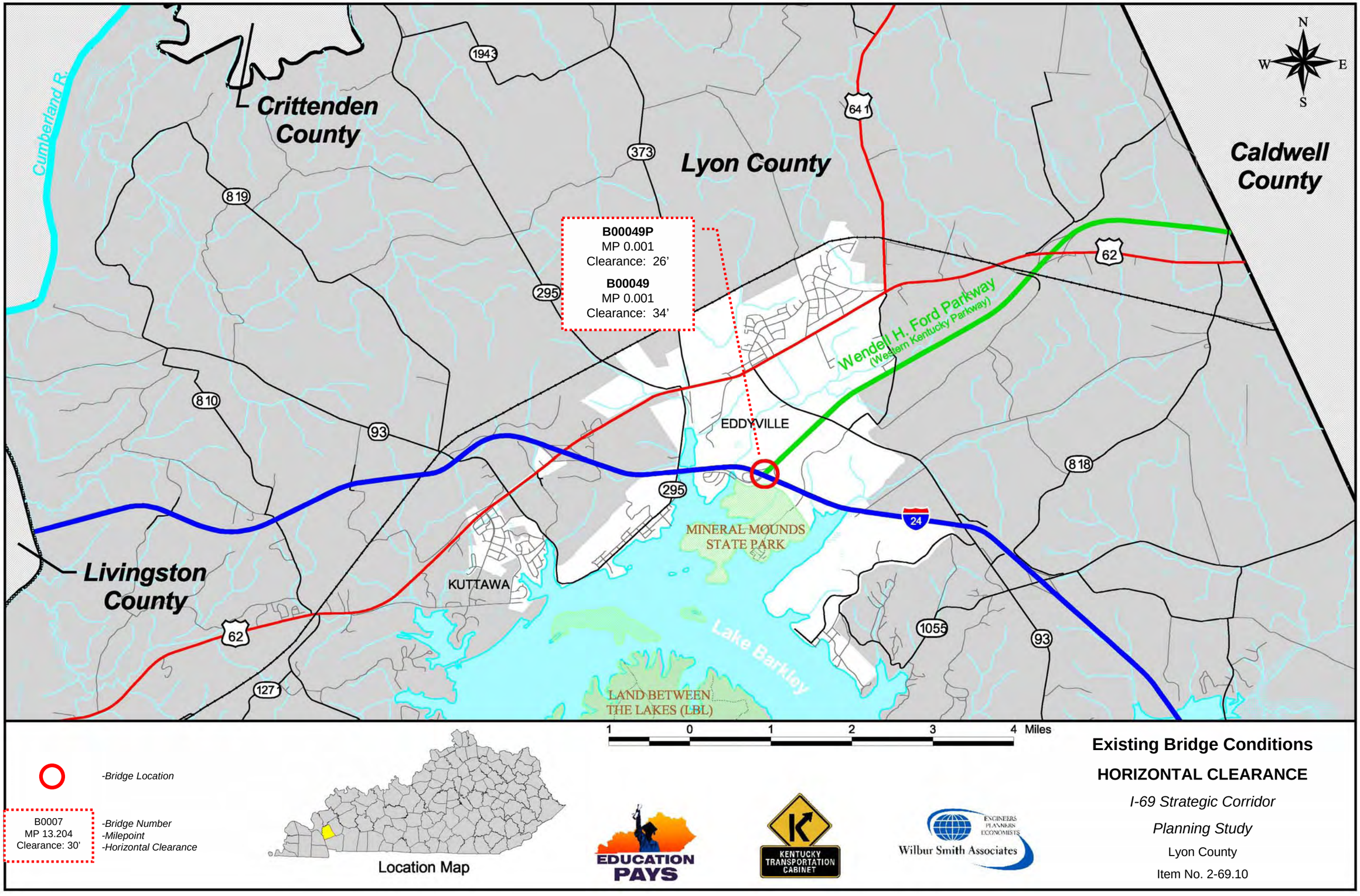


Figure 10. Substandard Horizontal Bridge Clearances for Lyon County

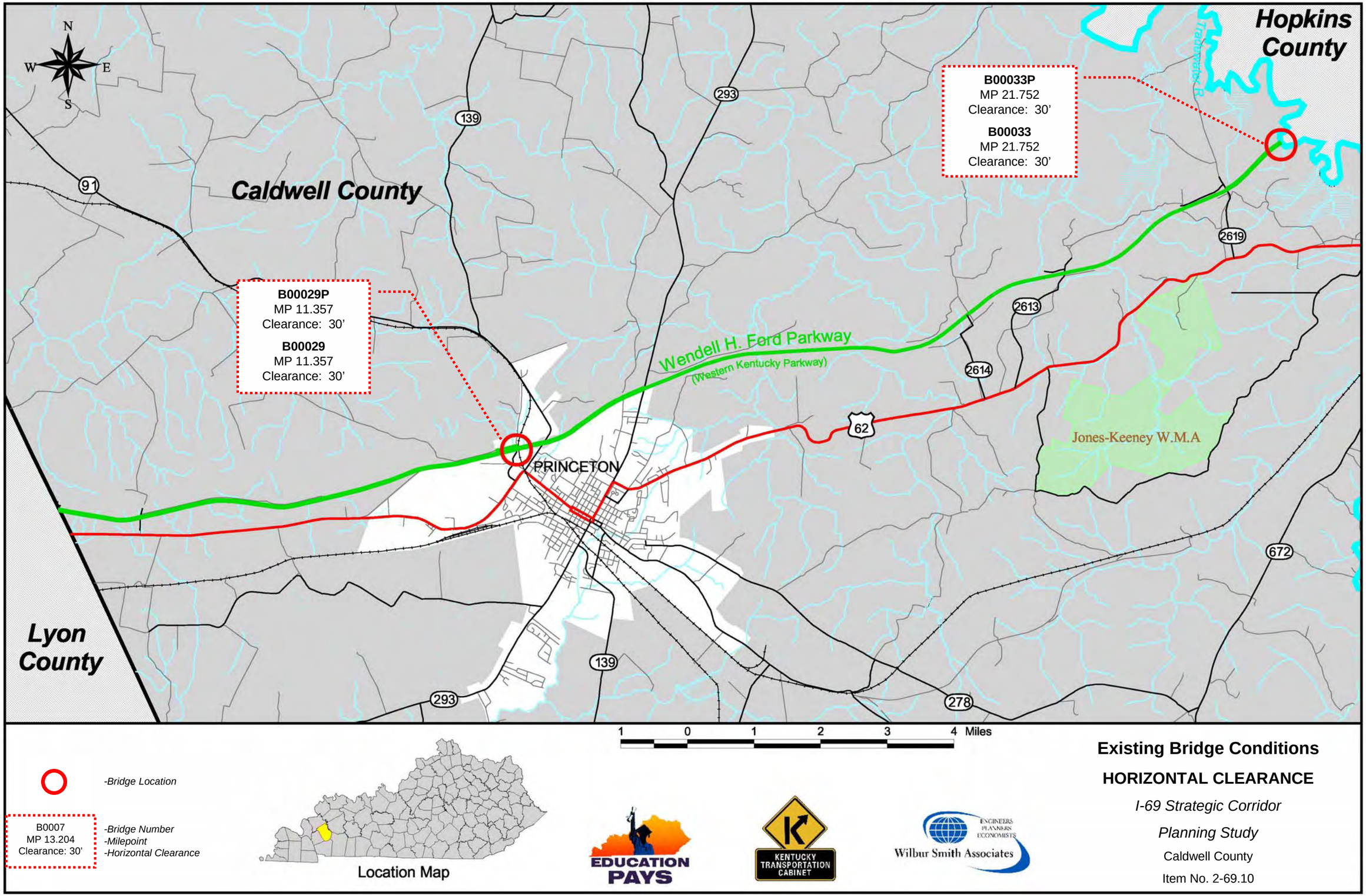


Figure 11. Substandard Horizontal Bridge Clearances for Caldwell County ***5-6***

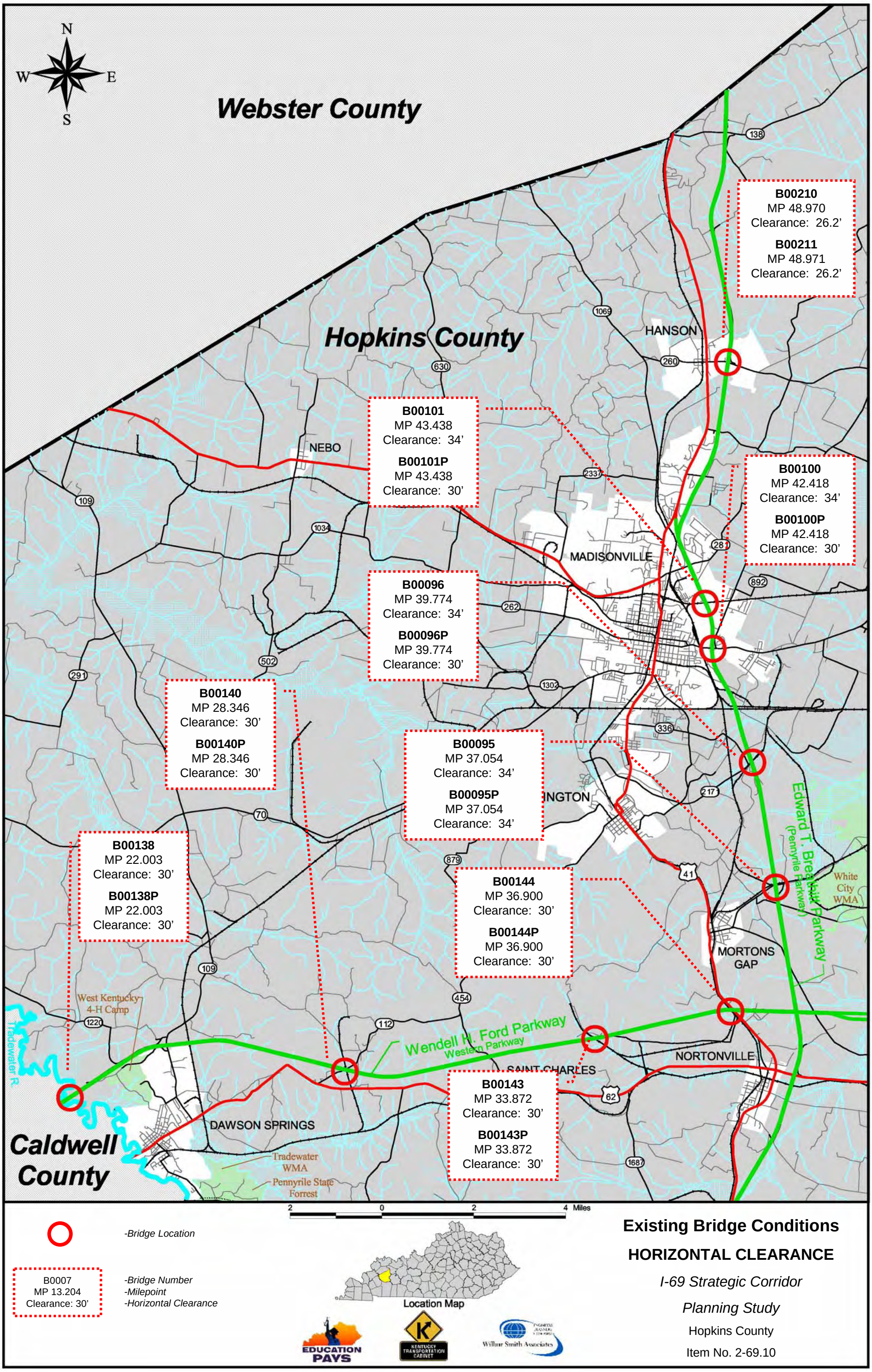


Figure 12. Substandard Horizontal Bridge Clearances for Hopkins County

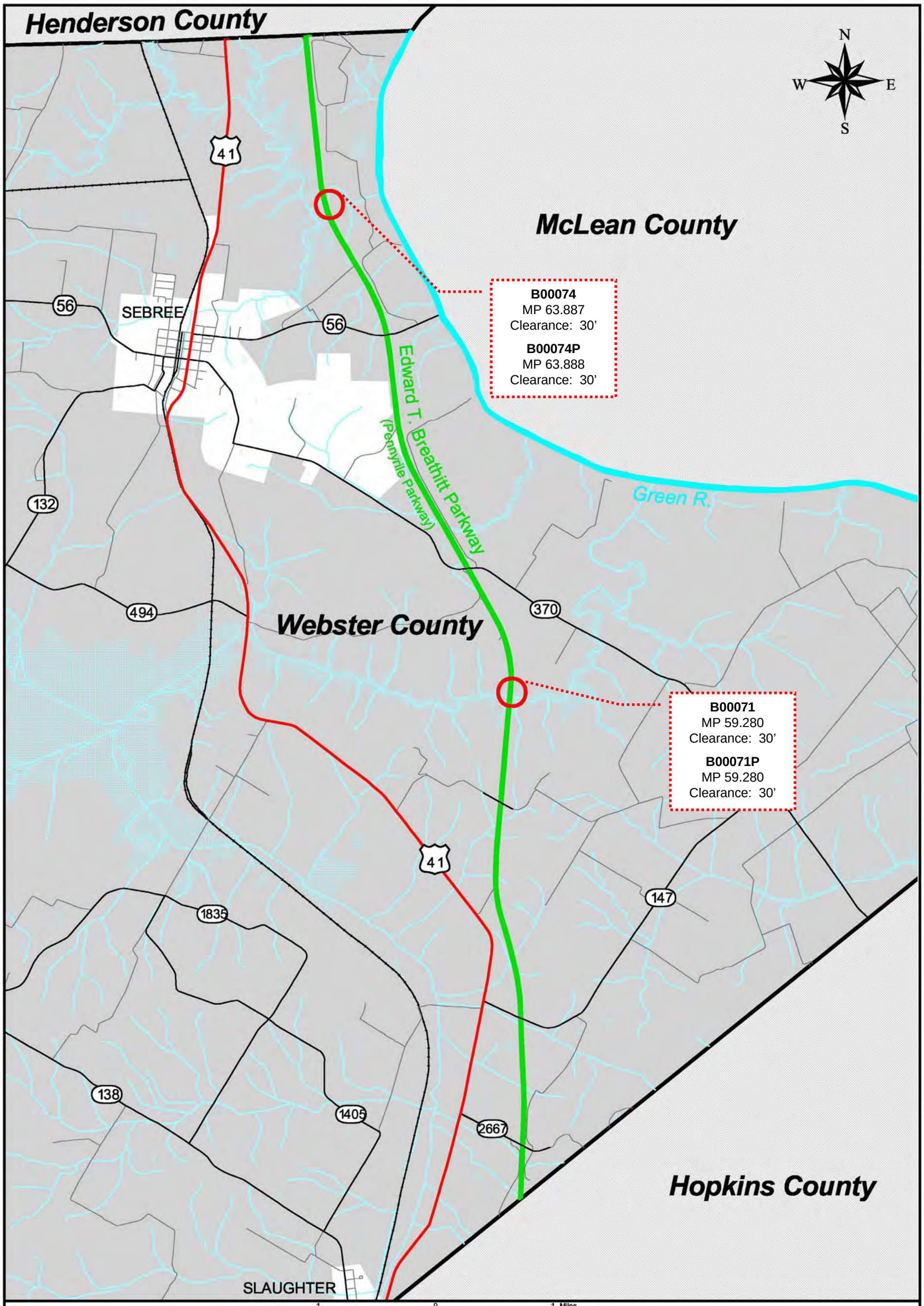
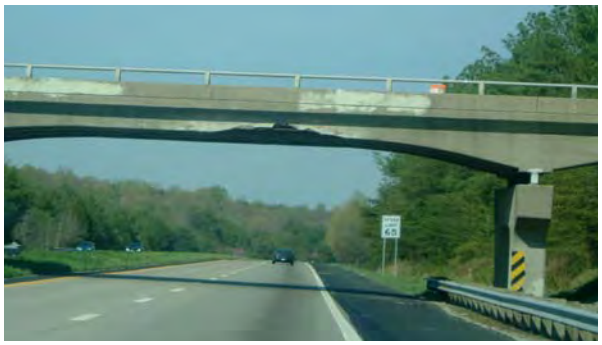


Figure 13. Substandard Horizontal Bridge Clearances for Webster County

B. Vertical Clearances of Overpasses

Vertical clearance, or the minimum height between the pavement and the bottom of bridge structures (overpasses) crossing over the Parkways, should be at least 16 feet across the entire roadway width, including auxiliary lanes and usable width of shoulder, in accordance with AASHTO guidelines. Additional allowances should be made for future staged paving or resurfacing. However, with the current practice of pavement recycling, the additional clearance may not be required if the existing pavement meets structural requirements for anticipated traffic loading.



The recommended vertical clearance (height) of bridges over the Parkways is 16 feet over each of the travel lanes and the outside shoulders.

Vertical clearances for those bridges that pass over the Parkways were collected from the KYTC Highway Information System (HIS) database. The clearances are recorded over the left edge of the passing lane, the centerline and the right edge of the driving lane. AASHTO guidelines also recommend that the clearance be recorded over the useable shoulder which, in the case of the Ford and Breathitt Parkways, would be the outside shoulders. Additional data collection would be required to obtain the clearance at the edge of the outside shoulder.

The clearances for the two Parkways are shown on **Tables 13** and **14**. As shown in **Table 13**, the Ford Parkway has four (4) bridges that have clearances less than 16', all located in Caldwell County. The lowest clearance is 14'09" on Bridge Number B00060 eastbound over KY 2614.

As shown in **Table 14**, there is only one bridge on the Breathitt Parkway that does not have a 16' clearance over the travel lanes: Bridge Number B00011 at KY 2665 has 15'10" clearance over the Parkway centerline and a 15' 07" clearance over the right edge of the driving lane in the southbound direction.

Bridges that do not meet current interstate design guidelines for vertical clearance are shown on **Figure 14.**

Table 13 – Summary of Substandard Vertical Clearances Along the Ford Parkway

MP	Bridge #	Dir.	Location	County	Left Edge Passing Lane Clearance	Centerline Clearance	Right Edge Driving Lane Clearance
WENDELL H. FORD PARKWAY							
0.085		EB	UNDER KY 93	Lyon	17’09”	17’09”	18’03”
0.085	B00050	WB	UNDER KY 93	Lyon	17’00”	16’08”	16’09”
5.577		EB	UNDER KY 2611	Lyon	17’07”	17’04”	17’04”
5.577	B00029	WB	UNDER KY 2611	Lyon	18’00”	17’10”	18’00”
11.700		EB	UNDER KY 91	Caldwell	16'07"	16'02"	15'09"
11.700	B00037	WB	UNDER KY 91	Caldwell	17'07"	18'07"	19'02"
13.120		EB	UNDER KY 293	Caldwell	15'06"	15'06"	15'06"
13.120	B00007	WB	UNDER KY 293	Caldwell	16'03"	16'07"	17'01"
17.308		EB	UNDER KY 2614 LEWISTOWN RD	Caldwell	14'09"	14'10"	15'00"
17.308	B00060	WB	UNDER KY 2614 LEWISTOWN RD	Caldwell	15'03"	15'06"	15'10"
18.610		EB	UNDER KY 2613 LONGBREAK-FLYYN FORK RD	Caldwell	22'01"	22'02"	22'04"
18.610	B00061	WB	UNDER KY 2613 LONGBREAK-FLYYN FORK RD	Caldwell	22'01"	22'02"	22'04"
20.880		EB	UNDER KY 2619 DAWSON SPRINGS-EVANS MILL RD	Caldwell	15'07"	15'03"	15'00"
20.880	B00048	WB	UNDER KY 2619 DAWSON SPRINGS-EVANS MILL RD	Caldwell	15'07"	15'10"	16'02"
24.440		EB	UNDER KY 109	Hopkins	16'01"	16'08"	16'09"
24.440	B00070	WB	UNDER KY 109	Hopkins	16'05"	16'10"	17'03"
31.580		EB	UNDER KY 454	Hopkins	17'08"	17'06"	17'01"
31.580	B00117	WB	UNDER KY 454	Hopkins	19'01"	19'09"	20'06"
	Bridge with Vertical Clearance less than the AASHTO recommended minimum of 16 feet.						

Table 14 – Summary of Substandard Vertical Clearances Along the Breathitt Parkway

MP	Bridge #	Dir.	Location	County	Left Edge Passing Lane Clearance	Centerline Clearance	Right Edge Driving Lane Clearance
EDWARD T. BREATHITT PARKWAY							
40.996		NB	UNDER ICRR	Hopkins	23'03"	23'00"	22'09"
40.996	B00102	SB	UNDER ICRR	Hopkins	23'07"	23'07"	24'00"
41.060		NB	UNDER L&N RR SPUR	Hopkins	16'06"	16'03"	16'02"
41.060	RR0602	SB	UNDER L&N RR SPUR	Hopkins	16'04"	16'06'	16'10"
45.206		NB	US 41 N.B. LANE	Hopkins	19'09"	20'07"	21'07"
45.206	B00016	SB	UNDER US 41 N.B. LANE	Hopkins	18'02"	17'03"	16'02"
46.435		NB	UNDER KY 2657 JOHN FOWLER RD	Hopkins	16'10"	16'08"	16'09"
46.435	B00018	SB	UNDER KY 2657 JOHN FOWLER RD	Hopkins	16'10"	16'08"	16'10"
47.472		NB	UNDER KY 862	Hopkins	17'02"	16'10"	16'10"
47.472	B00019	SB	UNDER KY 862	Hopkins	17'07"	17'07"	18'00"
51.941		NB	UNDER KY 2655 HERBERT BROWN RD	Hopkins	16'03"	16'07"	16'10"
51.941	B00011	SB	UNDER KY 2655 HERBERT BROWN RD	Hopkins	16'03"	15'10"	15'07"
55.449		NB	UNDER KY 2667	Webster	17'08"	17'08"	18'06"
55.449	B00068	SB	UNDER KY 2667	Webster	17'00"	16'05"	16'01"
58.396		NB	UNDER KY 2666	Webster	16'09"	16'03"	16'04"
58.396	B00070	SB	UNDER KY 2666	Webster	16'06"	16'05"	16'09"
62.637		NB	UNDER KY 56	Webster	17'01"	16'09"	16'06"
62.637	B00073	SB	UNDER KY 56	Webster	17'05"	17'07"	17'10"
66.835		NB	UNDER KY 2678	Henderson	18'03"	18'03"	18'10"
66.835	B00063	SB	UNDER KY 2678	Henderson	17'06"	17'00"	16'10"
68.363		NB	UNDER KY 416	Henderson	16'08"	16'08"	16'03"
68.363	B00064	SB	UNDER KY 416	Henderson	16'08"	16'08"	17'00"
69.674		NB	UNDER KY 2675	Henderson	16'08"	16'06"	16'07"
69.674	B00065	SB	UNDER KY 2675	Henderson	16'08"	16'05"	16'06"
72.346		NB	UNDER KY 136	Henderson	17'02"	16'09"	16'06"
72.346	B00066	SB	UNDER KY 136	Henderson	17'00"	17'02"	17'03"
73.256		NB	UNDER KY 2677	Henderson	16'08"	16'03"	16'02"
73.256	B00067	SB	UNDER KY 2677	Henderson	17'02"	17'01"	17'04"
	Bridge with Vertical Clearance less than the AASHTO recommended minimum of 16 feet.						

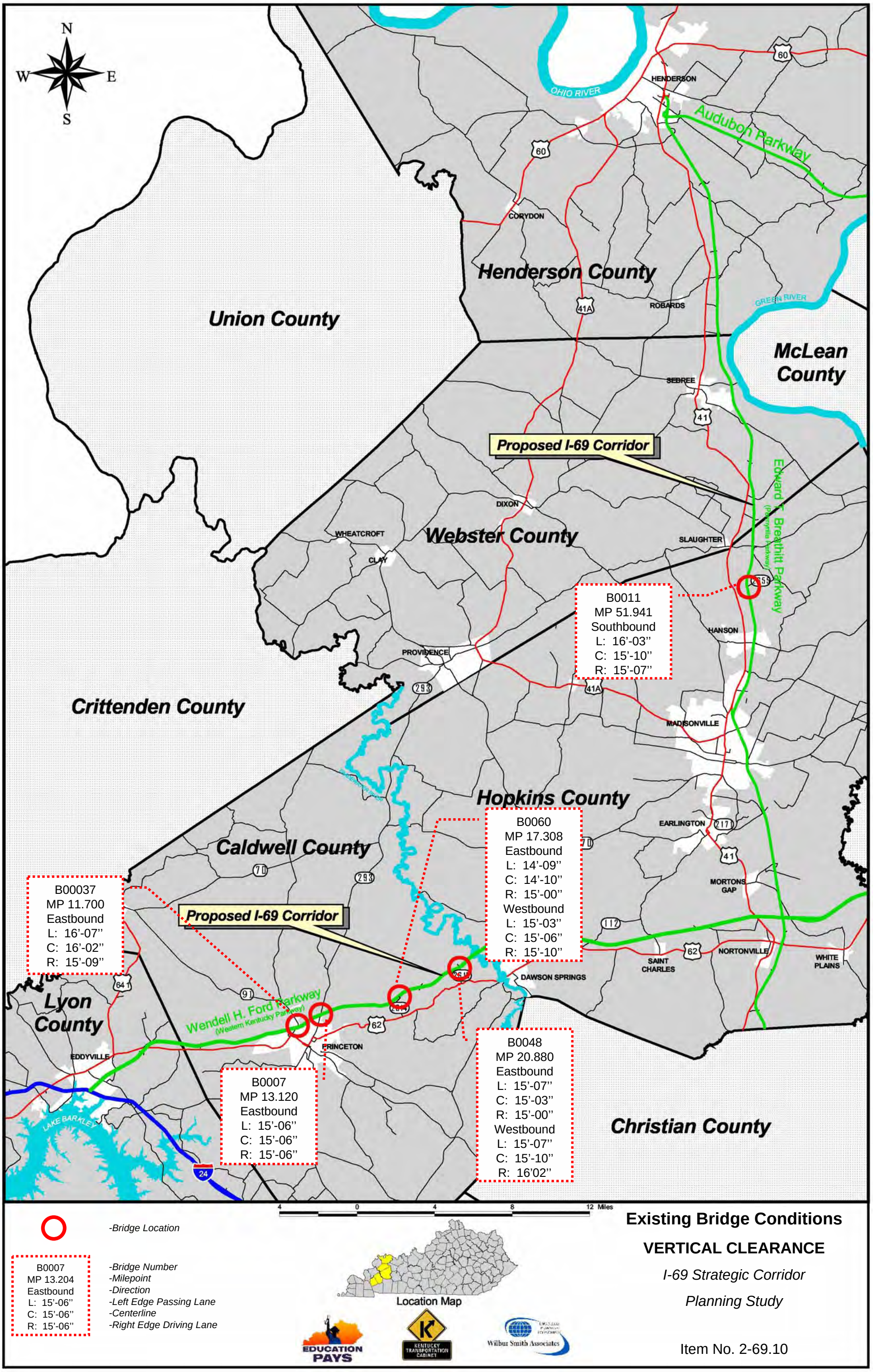


Figure 14. Substandard Vertical Bridge Clearances

C. Bridge Conditions

According to the KYTC Bridge Division, a bridge is eligible for Federal rehabilitation funds when it meets two criteria: (1) the bridge has a sufficiency rating below 50.0 and (2) the bridge is considered either structurally deficient or functionally obsolete. In KYTC's Highway Information Systems (HIS) database, several of the bridge structures are shown as either Functionally Obsolete or Structurally Deficient. By Federal definition, bridges are classified as functionally obsolete when they do not meet current geometric design guidelines, such as lane width, approach alignment, overhead clearances, etc. A classification as structurally deficient indicates that a bridge is no longer able to carry the vehicle weight it was originally designed to carry. In the HIS database, the determination of whether a bridge is functionally obsolete is based on information in the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges". Based on functional classification, the Parkways are compared against the criteria for "Other Multilane Divided Facilities" as opposed to "Interstate and Other Divided Freeways". If each bridge was compared to the criteria for Interstates, then additional bridges would be classified functionally obsolete adding to the 15 discussed below.

Information related to structurally deficient or functionally obsolete bridges is included in the bridge table in **Appendix F**. Of the 50 mainline bridges and 23 overpasses along the proposed corridor, two (2) are considered structurally deficient and 13 are considered functionally obsolete.

The two (2) structurally deficient bridges are overpasses of the existing Parkways, including the following:

- One (1) is in Webster County on the Breathitt Parkway, with a sufficiency rating that falls below 50.0; and
- One (1) is in Caldwell County on the Ford Parkway, with a sufficiency rating of 54.6. Although this rating does not fall below 50.0, the structure should continue to be monitored for eligibility for Federal rehabilitation funds.

Of the thirteen (13) structures that are functionally obsolete, 2 are over the existing Parkways and 11 are mainline bridges. Of the two (2) bridges located over existing Parkways that are considered functionally obsolete:

- One (1) is in Hopkins County over the Ford Parkway; and
- One (1) is in Lyon County over the Ford Parkway, with a sufficiency rating of 57.1. The structure is not a mainline bridge, but passes over the Parkway. Although the rating did not fall below 50.0, the structure should continue to be monitored for eligibility for Federal rehabilitation funds.

Of the eleven (11) mainline bridges considered functionally obsolete:

- One (1) is along the Ford Parkway in Lyon County;
- Four (4) are along the Ford Parkway in Hopkins County;

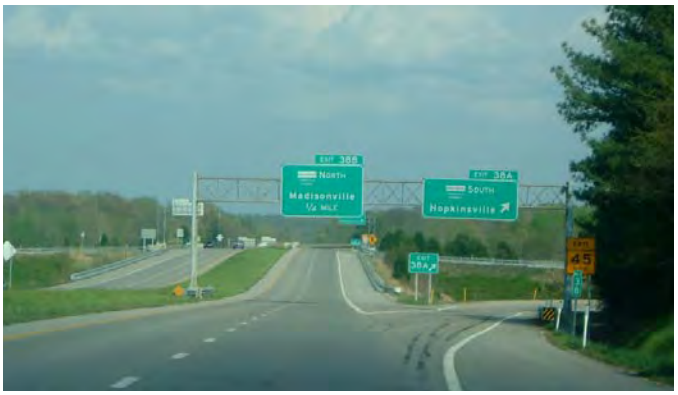
- Five (5) are along the Breathitt Parkway in Hopkins County; and
- One (1) is along the Breathitt Parkway in Webster County.

Sufficient information is not available through the as-built plans to determine the condition or application of bridge safety appurtenances such as approach guardrail, type of bridge rail, pier protection, etc.

VI. INTERCHANGES AND RAMPS

There are a total of sixteen (16) interchanges along the I-69 study corridor. Of these sixteen (16) interchanges, six (6) are located on the Ford Parkway and ten (10) are on the Breathitt Parkway.

This chapter summarizes interchange and ramp conditions, taken from the as-built design plans, and compares those conditions with AASHTO guidelines for several key areas. These findings are identified in **Figures 15 through 19** and **Table 15**. The figures show interchange data only for elements that do not meet the recommended guidelines.



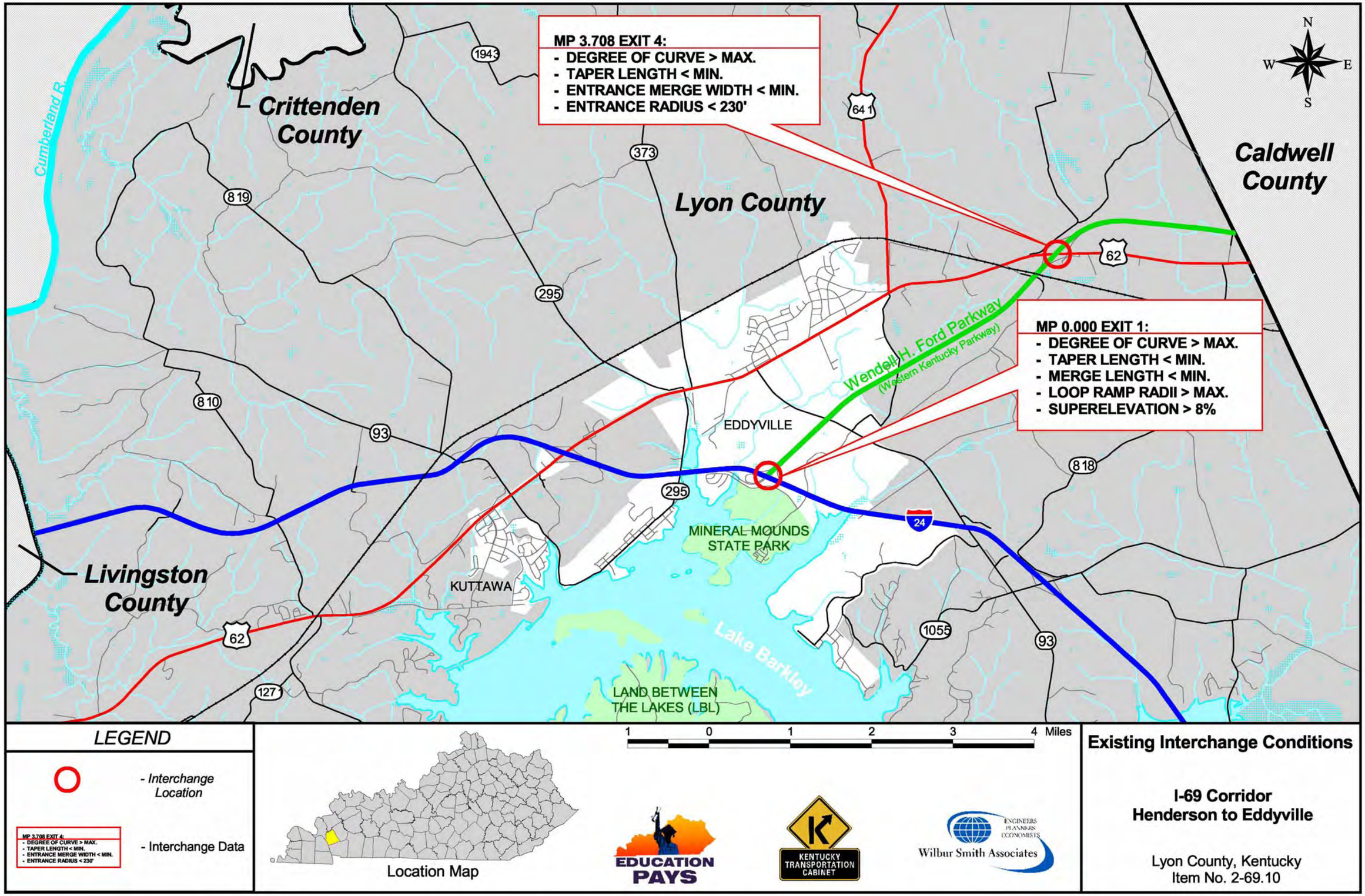
Interchanges have design guidelines for design speed, typical sections, horizontal and vertical alignment that are similar to mainline sections, along with added requirements for merge and weaving sections.

In the guidelines recommended by AASHTO, there is some degree of variability and options that are available to designers to alter a specific set of standards that are established for interchange and ramp features. Therefore, without a more comprehensive evaluation of the features and characteristics at each location, it is difficult to conclusively determine the applicable minimum standards and the degree to which existing conditions adhere to those standards. Nevertheless, this chapter establishes basic assumptions related to various design features at interchanges and ramps and makes a general determination as to whether minimum guidelines are achieved at each location.

A. Design Speed

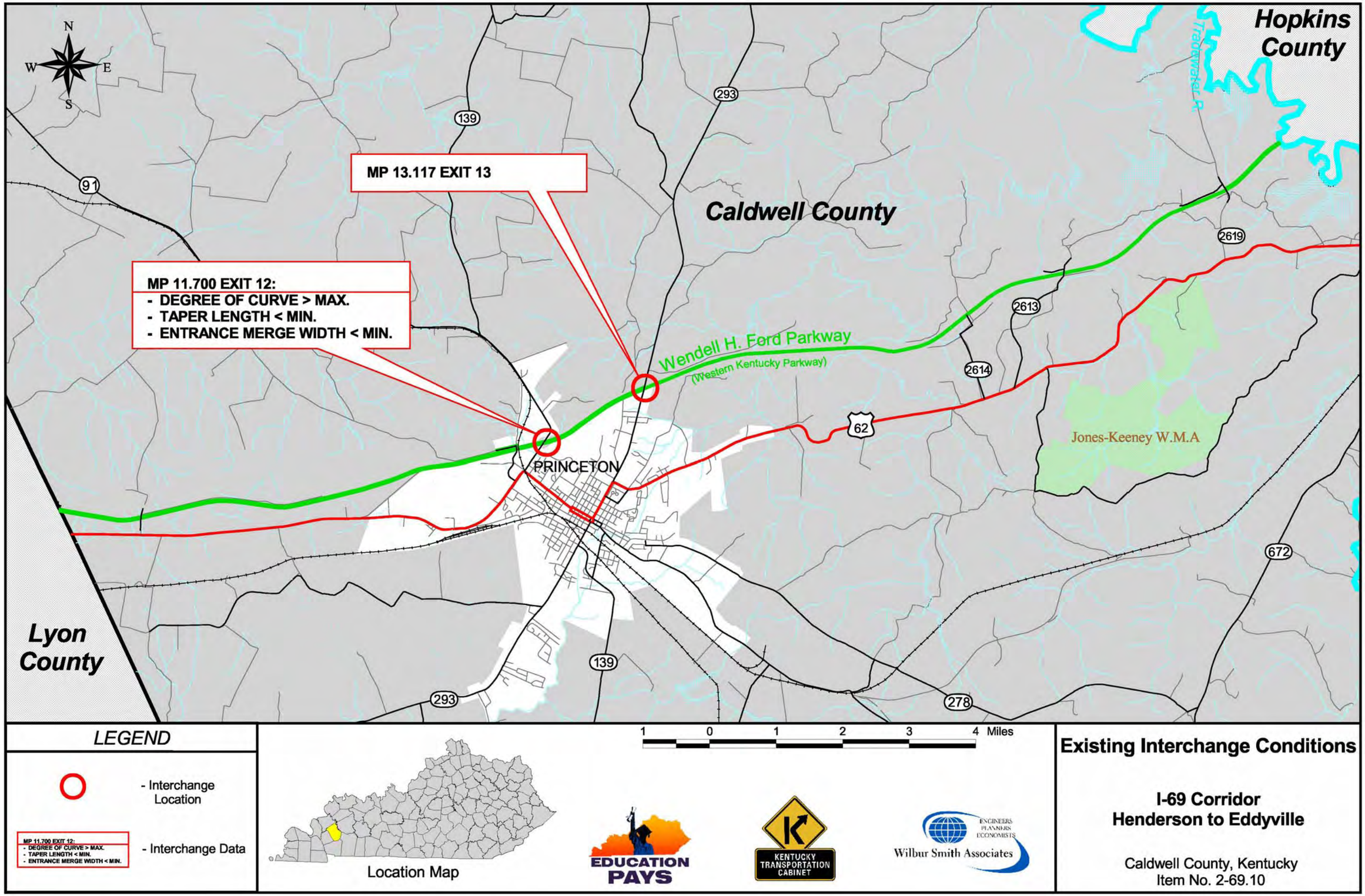
AASHTO minimum design speeds for entrance and exit ramps are 40 MPH for directional ramps, 35 MPH for semi-directional ramps in rural areas and 25 MPH for semi-directional ramps in urban areas. For loop ramps, 25 MPH minimum guidelines are recommended for both rural and urban areas. For horizontal alignment of directional, semi-directional ramps and loop ramps with 40 MPH, 35 MPH and 25 MPH design speeds, respectively, the corresponding minimum radii are 465', 350' and 170'.

The design speed was not available for some ramps on the as-built plans; however, a cursory evaluation indicates that the radii of many of the ramps do not meet the minimum guidelines for the recommended design speed. Therefore, although there was insufficient information to definitively locate or quantify where these possible variations exist, many of the ramps do not meet the minimum guidelines for design speed.



Note: Data is shown only for elements that do not meet recommended guidelines.

Figure 15. Substandard Interchange Conditions for Lyon County *6-2*



Note: Data is shown only for elements that do not meet recommended guidelines.

Figure 16. Substandard Interchange Conditions for Caldwell County

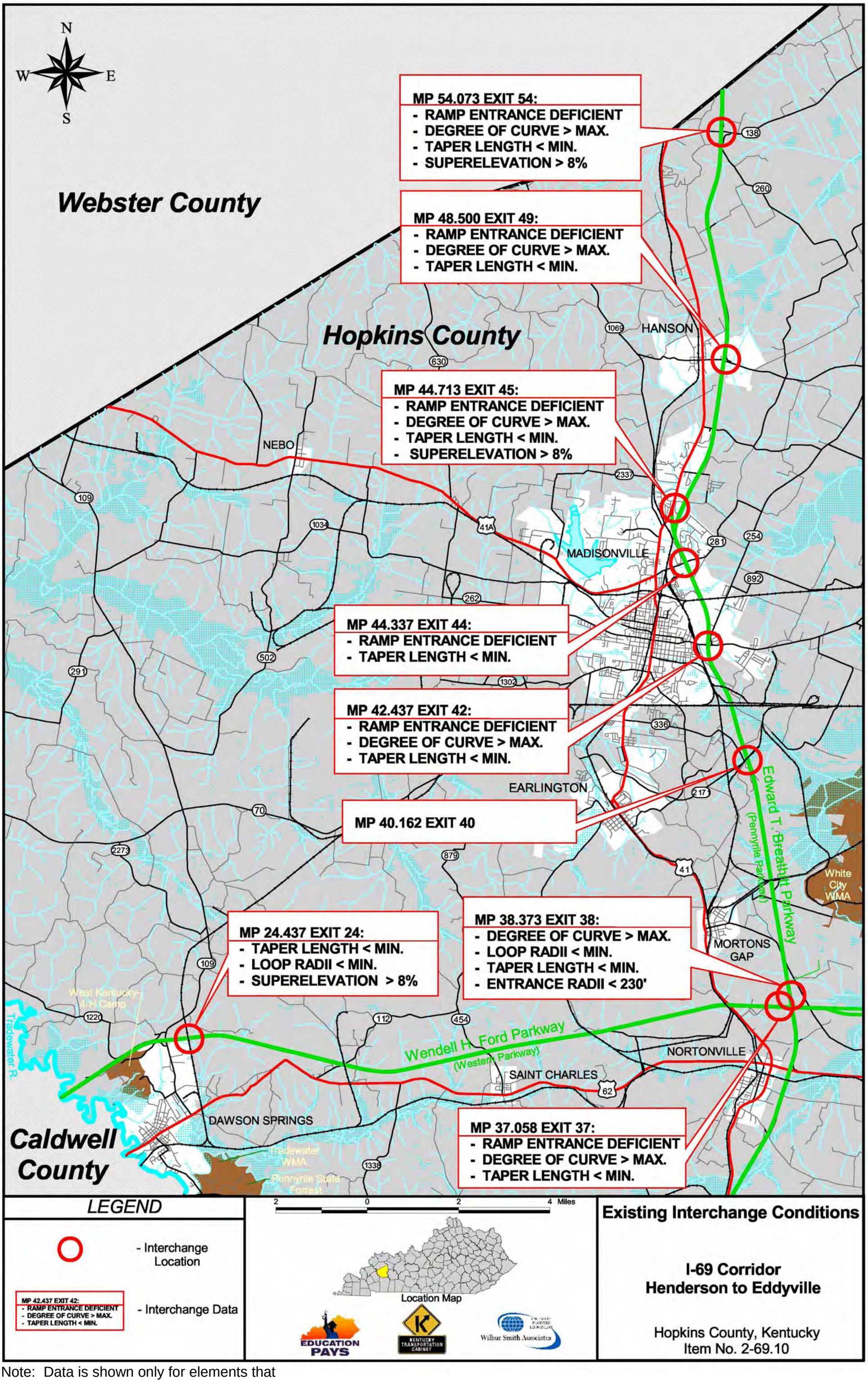


Figure 17. Substandard Interchange Conditions for Hopkins County

Note: Data is shown only for elements that do not meet recommended guidelines.

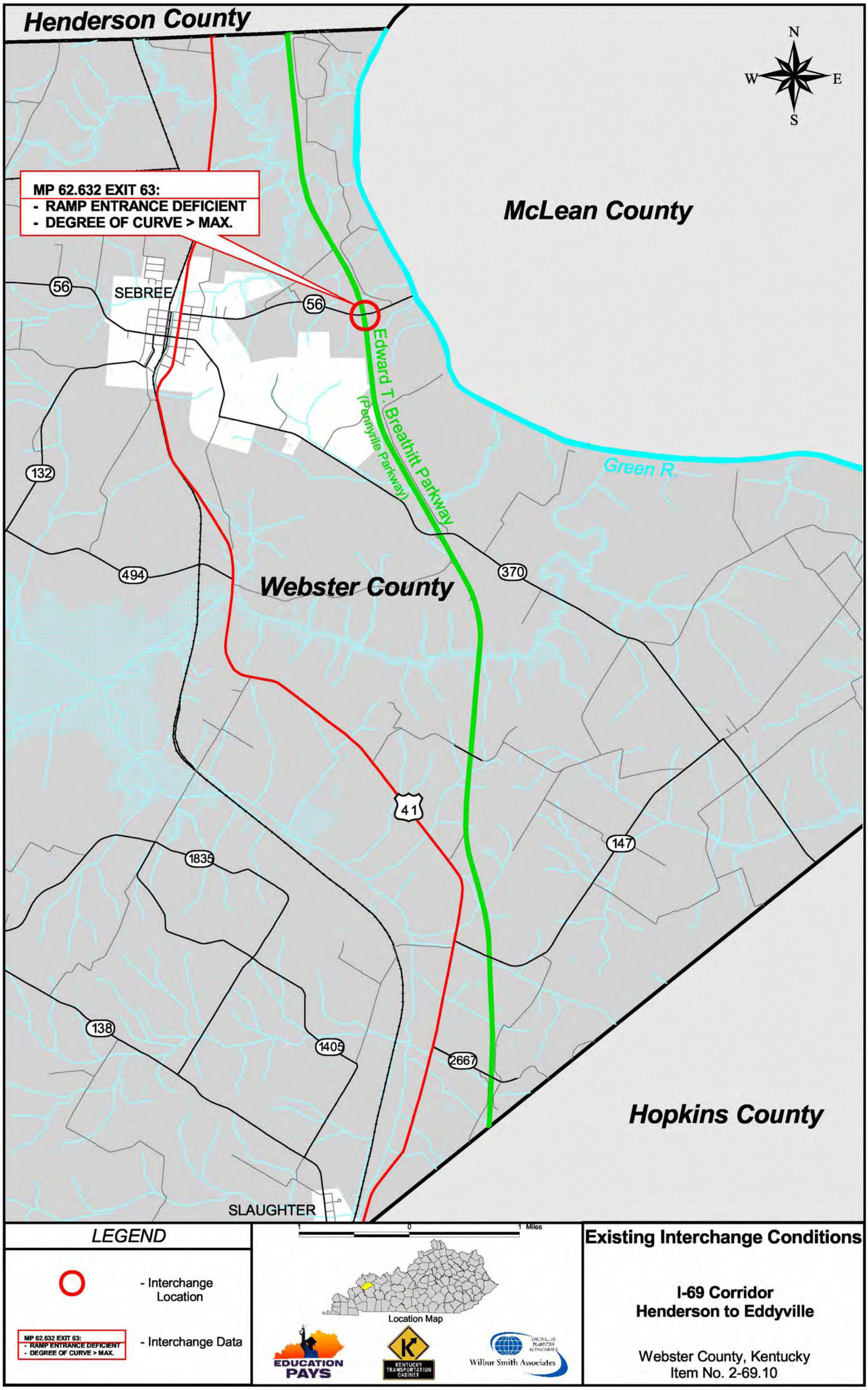


Figure 18. Substandard Interchange Conditions for Webster County

Note: Data is shown only for elements that do not meet recommended guidelines.

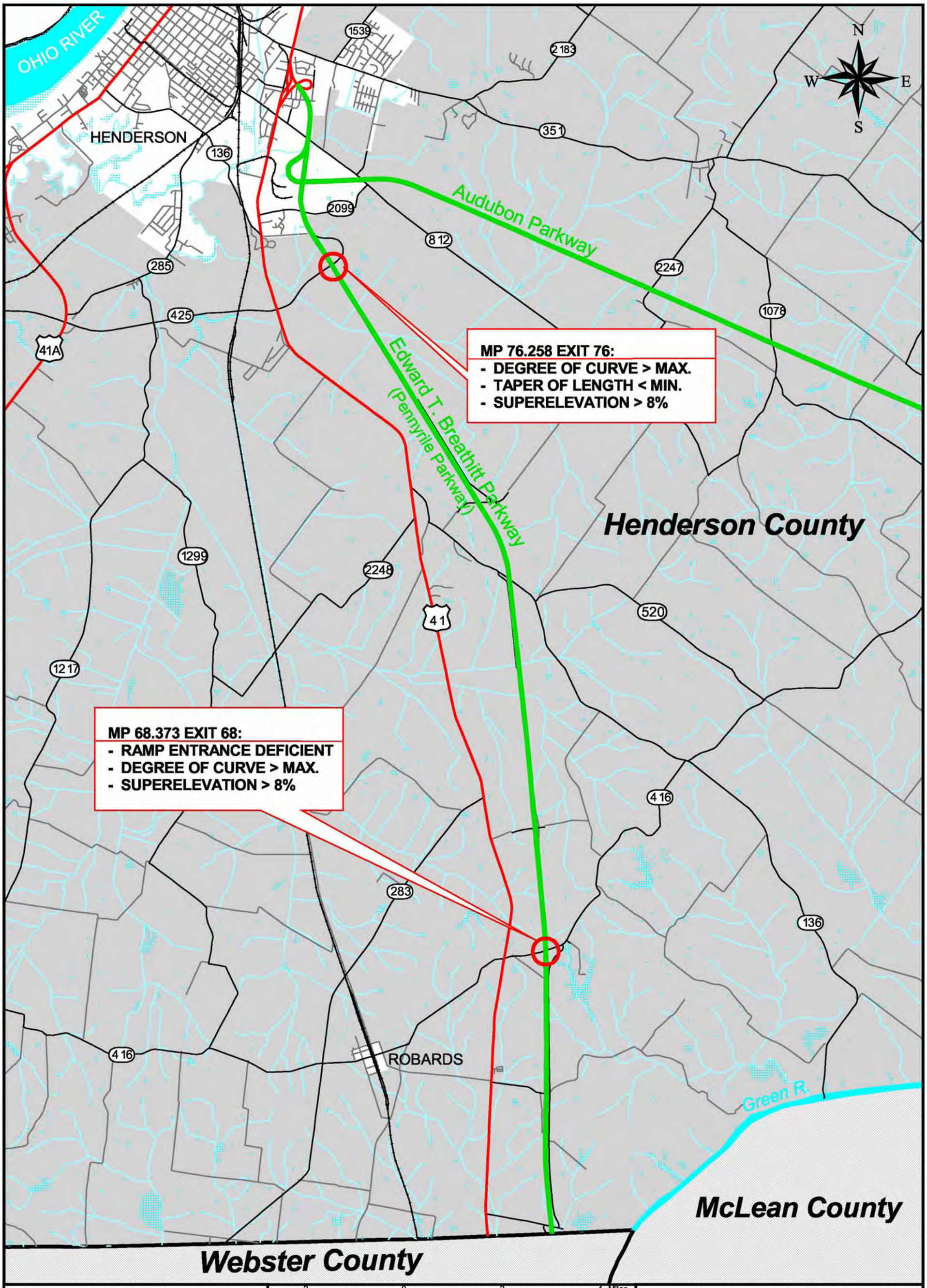


Figure 19. Substandard Interchange Conditions for Henderson County

Note: Data is shown only for elements that do not meet recommended guidelines.

Table 15 – Interchange Geometrics for I-69

WENDELL H. FORD (WESTERN KENTUCKY) PARKWAY												
			Ramp Characteristics					Meet Interstate Standards?				
County	MP	Exit Number	Design Year	Entrance	Exit	Type	Width	Entrance Radius	Ramp Radius	Taper	Superelevation	Remarks
Lyon	0.000	1	1976	A		Taper	15'		No	No	No	Begin WKY Parkway
					B	Taper	15'		No	No	No	at I-24 Interchange
				C		Taper	15'		No	No	No	[Trumpet-type]
					D	Loop	15'		No	No	No	64°-46'-42" Skew Left
Lyon	3.708	4	1967		A	Taper	18'	No	No	No	No	US 62
				B		Taper	18'	No		No	No	46°-00' Skew Right
					C	Parallel	18'	No		No	No	
				D		Taper	18'	No		No		
Caldwell	11.700	12	1961		A	Taper	16'	No		No		KY 91
				B		Taper	16'	No	No			42°-10' Skew Left
					C	Taper	16'	No		No		
				D		Taper	16'	No	No	No		
Caldwell	13.117	13	1990	A		Taper	15'					KY 293
					B	Taper	15'					Ramp design per KYTC
Hopkins	24.437	24	1961		A	Loop	16'			No	No	KY 109
				B		Loop	16'			No	No	6°-14' Skew Left
					C	Loop	16'			No	No	(former Toll Plaza)
				D		Loop	16'			No	No	
Hopkins	38.373	38	1962	A		Taper	16'	No	No	No	Not Available	Pennyrile Pkwy. I-Chng.
					B	Loop	16'	No	No	No	Not Available	(Exit 34)
					C	Taper	16'	No	No	No	Not Available	
				D		Loop	16'	No	No	No	Not Available	
					E	Taper	16'	No	No	No	Not Available	
				F		Loop	16'	No	No	No	Not Available	
				G		Taper	16'	No	No	No	Not Available	
					H	Loop	16'	No	No	No	Not Available	

Sources: A Policy on the Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials, 4th Edition, 2001.

Ford Parkway As-Built Design Plans

Breathitt Parkway As-Built Design Plans

Note: According to KYTC Highway District 2, auxilary lanes were added as part of a rehabilitation project in the late 90s between Interchange 44 and 45 along the Breathitt Parkway.

EDWARD T. BREATHITT (PENNYRILE) PARKWAY												
			Ramp Characteristics					Meet Interstate Standards?				
County	MP	Exit Number	Design Year	Entrance	Exit	Type	Width	Entrance Radius	Ramp Radius	Taper	Superelevation	Remarks
Hopkins	37.058	37	1959	A		Taper	16'	No		No	Not Available	KY 813
					B	Loop	16'		No		Not Available	
				C		Loop	16'		No		Not Available	
					D	Taper	16'	No		No	Not Available	
Hopkins	40.162	40	1992	A		Taper	15'				Not Available	KY 2171
					B	Taper	15'				Not Available	Ramp design per KYTC
					C	Taper	15'				Not Available	
					D	Taper	15'				Not Available	
Hopkins	42.437	42	1959	A		Parallel	16'	No		No	Not Available	KY 70
					B	Taper	16'	No		No	Not Available	
					C	Taper	16'	No		No	Not Available	
				D		Parallel	16'	No	No	No	Not Available	
Hopkins	44.337	44	1959		A	Taper	16'	No		No	Not Available	KY 281
				B		Parallel	16'	No		No	Not Available	
					C	Taper	16'	No		No	Not Available	
				D		Taper	16'	No		No	Not Available	
Hopkins	44.713	45	1967	SB		Taper	24'	No	No	No		US 41N, En-SB, Ex-NB
					NB	Taper	24'	No	No	No	No	
Hopkins	48.500	49	1990	A/C	B/D	Taper	15'-16'	No	No	No		KY 260 (A & C Obsolete)
Hopkins	54.073	54	1966	NE		Taper	18'	No		No	No	KY 138
				SW		Taper	18'	No		No	No	
					SE	Taper	18'	No		No		
					NW	Taper	18'	No	No	No	No	
Webster	62.632	63	1967	A		Loop	18'	No		No		KY 56
					B	Loop	18'	No		No		(former Toll Plaza)
					C	Loop	18'	No		No		
				D		Loop	18'	No		No		
Henderson	68.373	68	1967	A		Taper	18'	No		No		KY 416
					B	Taper	18'	No	No	No		
					C	Taper	18'	No	No	No		
				D		Taper	18'	No		No	No	
Henderson	76.258	76	1978		A	Taper	15'			No	No	KY 425
				B		Taper	15'			No	No	
					C	Loop	15'			No	No	
				D		Taper	15'		No	No	No	

B. Typical Sections

The following is a summary of existing typical section design elements (lane widths and shoulder widths) on the interchange ramps and a comparison of these elements with current AASHTO guidelines.

1. Lane Widths

The minimum AASHTO guideline for lane width along an interchange ramp is 15 feet. The lane widths on all existing exit ramps throughout the entire corridor range in width from 15 feet at the I-24 Interchange in Lyon County to 18 feet at the KY 416 Interchange in Henderson County. Therefore, the lane width on the interchange ramps meets the minimum AASHTO guidelines for freeway design. A summary of ramp widths is presented in **Table 15**.

2. Shoulder Widths

AASHTO design guidelines recommend shoulders on entrance and exit ramps that could be used for emergency stopping and to minimize the effect of breakdowns. Curbs should only be used where adverse drainage conditions might exist. Most typical sections in the existing plans indicate that raised mountable curbs were used on the entrance and exit ramps. Other than the width provided for the ramp itself, there was no additional width provided for shoulders. Therefore, the ramps do not meet AASHTO guidelines for shoulders.

C. Alignment Geometry

The following is a summary of the geometry of the as-built ramp configurations as compared to the current AASHTO guidelines.

1. Horizontal Alignment

Many of the directional, semi-directional and loop ramps at the existing interchanges do not meet the recommended minimum design guidelines for horizontal alignment. At the interchanges, the maximum degree of curve on most of the existing interchange ramps exceeds the design standard of 465’ minimum radius for directional type ramps, 350’ minimum radius for semi-directional type ramps in rural areas and 170’ minimum radius for semi-directional type ramps in urban areas and for loop type ramps. Ramp locations that exceed the minimum horizontal design standards appear in **Table 15**.

2. Superelevation Rate

The recommended maximum superelevation rate for ramp configurations is 8 percent. Many of the directional and loop ramps have superelevations that exceed the 8% maximum. The ramp locations which exceed the maximum recommended rate are shown in **Table 15**.

3. Vertical Alignment

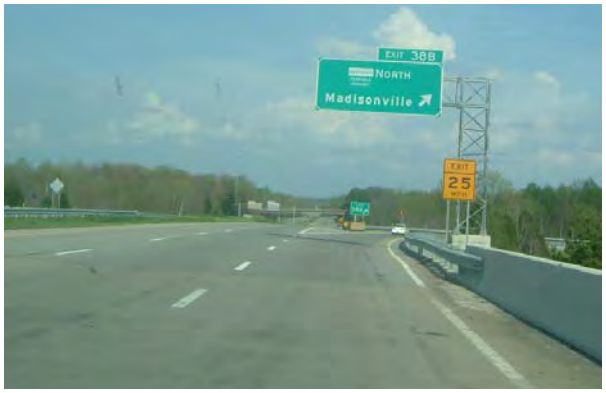
The as-built plan sets do not provide vertical profile information for ramps. However, it is not anticipated that significant vertical alignment problems exist along the Parkways.

D. Speed-Change Lanes and Weaving Characteristics

The following is a summary of the geometry of the as-built ramp configurations as compared to the current AASHTO guidelines for speed-change lanes and weaving areas.

1. Speed-Change Lanes

Perhaps the single most important factor affecting safety and operational efficiency at interchanges is the effective design of the speed-change lanes (entrance and exit ramps). The two typical types of speed-change lanes include the parallel type and the taper type. These design types can be applied to entrance or exit ramps.



Entrance ramps and exit ramps at many interchanges along the two Parkways do not appear to meet minimum interstate guidelines for lengths and tapers.

Operational studies have shown that the minimum desirable rate of taper for taper type entrance ramps is 50:1 between the outer edge of the acceleration lane and the edge of the through-traffic lane. The length of parallel type entrance ramp required to accelerate to highway speed is dependent on the actual design speed of the mainline roadway. However, if the length of acceleration length exceeds 1300', the use of a taper type is recommended. Where a parallel type ramp is used, the taper length at the downstream end of the lane should be 25:1. Exit ramp configurations are also described as taper type or parallel type. The taper type ramps are generally designed with an alignment break at the outer edge of pavement with a divergence angle of 2 to 5 degrees. The parallel type begins with an exit taper of 20:1 and the length of parallel lane is dependent on the design speed of the mainline roadway.

Existing entrance ramps on the Ford and Breathitt Parkways do not meet the minimum guideline of 50:1 entrance tapers, and existing exit ramps have exit taper lengths that do not meet the minimum taper length of 20:1. The minimum deceleration length for exit ramps to a stop condition is 615 feet. None of the current directional exit ramps meets this criterion on either Parkway. In addition to the entrance and exit ramp taper lengths, the initial ramp curvatures do not meet the minimum radius of 230 feet.

2. Weaving Characteristics

The minimum length of weaving section recommended for a service-to-service interchange is 1,000 feet. There are three (3) interchanges where the length of weaving is below that recommended in the AASHTO guidelines. Two of those interchanges are on the Ford Parkway: KY 109 at MP 24.437 in Hopkins County and the Breathitt Parkway at MP 38.373 in Hopkins County. The third is the KY 56 interchange on the Breathitt Parkway at MP 62.632 in Webster County.

The interchanges at MP 24.437 on the Ford Parkway in Hopkins County and MP 62.632 on the Breathitt Parkway in Webster County were initially designed for toll collection stations. The configurations included short weaving sections on the mainline of approximately 300 feet. The design was adequate to serve the toll facility, where low speeds were prevalent. However, although the toll collection operations have since been suspended, the initial interchange configurations were never upgraded to accommodate the resulting higher speeds.

E. Interchange Crash Data

Crashes at interchanges along the study section of the Parkways were also considered as part of this analysis. Crashes occurring within a 0.1-mile section on either side of the intersecting route at each interchange were summarized by crash type, as shown in **Table 16**. Along the Parkways, there are three interchanges that fall within the high crash segments identified previously in **Sections 4** and **5** of **Chapter 3**:

- Exit 1 in Lyon County, at the interchange with I-24, had 11 crashes in the period studied. Five (5) of these were crashes with an animal.
- Exit 4 in Lyon County, at the interchange with US 62, had 6 crashes in the period studied. Five (5) of these were crashes with a fixed object.
- Exit 42 in Hopkins County, at the interchange with KY 70/85, had 65 crashes in the period studied. The majority of these crashes (37) were ramp-related and another 20 were rear-end crashes in the travel lanes.

Two other interchanges along the Parkways had a high number of crashes within 0.1-miles of the intersecting route. These include:

- Exit 37 in Hopkins County, at the interchange with KY 813, had a total of 21 crashes. Half of these (10) were crashes with a fixed object.
- Exit 44 in Hopkins County, at the interchange with KY 281, had 34 crashes in the period studied. Fourteen (14) of these were rear-end crashes and another 12 were ramp-related.

Crash types at interchanges can be studied to identify potential design and geometric problems with entrance ramps, exit ramps and bridge clearances. The number of ramp, rear-end and fixed-object crashes at interchanges may indicate the need for entrance, exit and clearance improvements at certain interchanges along both Parkways.

Table 16 - Interchange Crash Data

Exit Number	County	Intersecting Route	Number of Crashes by Type [1]							Total Crashes
			Ramp	Rear-End	Fixed Object	Animal	Sideswipe	Ran Off Road	Other	
Ford Parkway										
42	Lyon	I-24	1	0	2	5	1	0	2	11
4	Lyon	US 62	0	0	5	0	0	0	1	6
12	Caldwell	KY 91	0	0	1	1	0	0	0	2
13	Caldwell	KY 293	2	0	1	1	0	1	0	5
24	Hopkins	KY 109	2	1	1	1	0	0	0	5
38	Hopkins	Breathitt Parkway	0	0	4	0	0	0	1	5
Breathitt Parkway										
37	Hopkins	KY 813	2	1	10	0	5	1	2	21
40	Hopkins	KY 2171	0	0	0	0	0	0	2	2
42	Hopkins	KY 70	37	20	3	3	1	0	1	65
44	Hopkins	KY 281	12	14	2	0	2	3	1	34
45	Hopkins	US 41	0	1	1	2	0	0	1	5
49	Hopkins	KY 260	0	0	1	1	0	1	0	3
54	Hopkins	KY 138	0	0	3	1	0	1	3	8
63	Webster	KY 56	2	1	4	0	1	1	0	9
68	Henderson	KY 416	0	0	0	1	0	0	2	3
76	Henderson	KY 425	1	1	1	0	0	0	1	4

[1] Number of crashes in period studied (1998-2001), within 0.1 mile on either side of intersecting route.

VII. KEY FINDINGS OF EXISTING CONDITIONS OVERVIEW

In their present form, the Ford and Breathitt Parkways do not operate in a manner that is appreciably different than they would operate were they to be designed to meet or exceed existing design guidelines for interstate highways. For reference, a summary of the AASHTO guidelines are highlighted in **Table 17** as they were discussed in previous chapters. These two Parkways already provide many of the basic design characteristics, or physical features, that are common for interstate highway facilities, such as full control of access, divided cross-sections, two travel lanes in each direction and 70 mile-per-hour design speeds. However, it is the actual dimensions of these physical features (the width of medians, the length and curvature of ramps, the width of bridges, the height of overpasses, etc.) on the Parkways that do not always meet current interstate design standards.

To facilitate an understanding of where the deficiencies are relative to each other, the deficiencies have been summarized on **Figure 20** for the Ford Parkway and **Figure 21** for the Breathitt Parkway. Each deficiency is coded and can be cross-referenced to **Table 18** for the Ford Parkway and **Table 19** for the Breathitt Parkway. Summary comments related to these deficiencies are listed below in **Sections C, D, E,** and **F**.

The findings presented in this chapter are based on available data and limited field reviews. Additional analysis in future phases of this project will serve to further define the conclusions and recommendations drawn from this analysis.

The following is a brief summary of the key issues associated with the two Parkways and their proposed conversion to Interstate 69:

A. Project Goals

The initial set of national goals for I-69 include:

- The movement of goods;
- The provision of more job opportunities to local communities; and
- System linkage.

Consideration has been given to integrating local needs and concerns for the Eddyville to Henderson segment with the national goals. Preliminary local project goals considered for this section include:

- Maximize the use of the existing Parkways;
- Serve local industry; and
- Provide an improved facility for increased truck traffic.

Table 17 – AASHTO Minimum Guidelines

Area Type	Rural			Urban			Urban/Rural		
Design Element	Mainline	Ramps	Loops	Mainline	Ramps	Loops	Directional	Entrance	Exit
Design Speed (MPH) (507, 829, 830)	70	35	25	50	25	25	40		
Level of Service (508)	C			D					
Driving Lane Width (508, 842)	12'	15'	15'	12'	15'	15'			
Inside Shoulder Width (4-lane freeway & ramps) (509,514,517,842)	4'	2'-4'	2'-4'	4'	2'-4'	2'-4'	1'-6'		
Inside Shoulder Width (6-lane, Truck DDHV <=250) (509,514,517,842)				10'					
Inside Shoulder Width (6-lane, Truck DDHV > 250) (509,514,517,842)				12'					
Outside Shoulder Width (Truck DDHV <= 250) (509, 842)	10'	8'-10'	8'-10'	10'	8'-10'	8'-10'	8'-10'		
Outside Shoulder Width (Truck DDHV > 250) (509, 842)	12'			12'					
Depressed Median Width [1] (513)	36'			36'					
Over Freeway Vertical Bridge Clearance (510, 767)	16'-00"								
Bridge Width (Horizontal) ADT>2000 (390)	Traveled Lanes + shoulders (approach roadway width)								
Bridge Width (Horizontal) Length > 200' [2]	Traveled Lanes + 4' each side								
Design ADT (vehicles per day)	> 6,000	750-1,500		>6,000	750-1,500				
Clear Zone (Fill Slope 1V:4H or flatter) [3]	30'-46'	14'-18'		20'-28'	14'-18'				
Clear Zone (Cut Slope 1V:3H or flatter) [3]	22'-30'	14'-16'		14'-22'	14'-16'				
Superelevation (509)	+/- 8%								
Horizonal Curvature Minimum Radius (8% max SE) (161)	1820'	350'	170'	750'	170'	170'	465'		
Minimum Runoff (8% max SE) (174)	240'	155'	137'	192'	137'	137'	165'		
Minimum Runout (8% max SE) (174)	60'	39'	34'	48'	34'	34'	41'		
Maximum Grade (510, 833)	4%	5%-7%	5%-7%	5%	5%-7%	5%-7%	4%-6%		
Stopping Sight Distance (112)	730'	250'	155'	425'	155'	155'	305'		
Taper Ratio (849)								50:1	
Divergence Angle (853)									2%-5%

Note: Page number references from AASHTO's *A Policy on Geometric Design of Highways and Streets* are provided in parenthesis.

[1] AASHTO Draft *A Policy on Design Standards - Interstate System* calls for a minimum of 36' in rural areas, but page 513 of AAHSTO's *A Policy on Geometric Design of Highways and Streets* specifies 50'.

[2] This item is referenced in the AASHTO Draft *A Policy on Design Standards - Interstate System*

[3] Information on clear zones is provided in AASHTO's *Roadside Design Guide.*

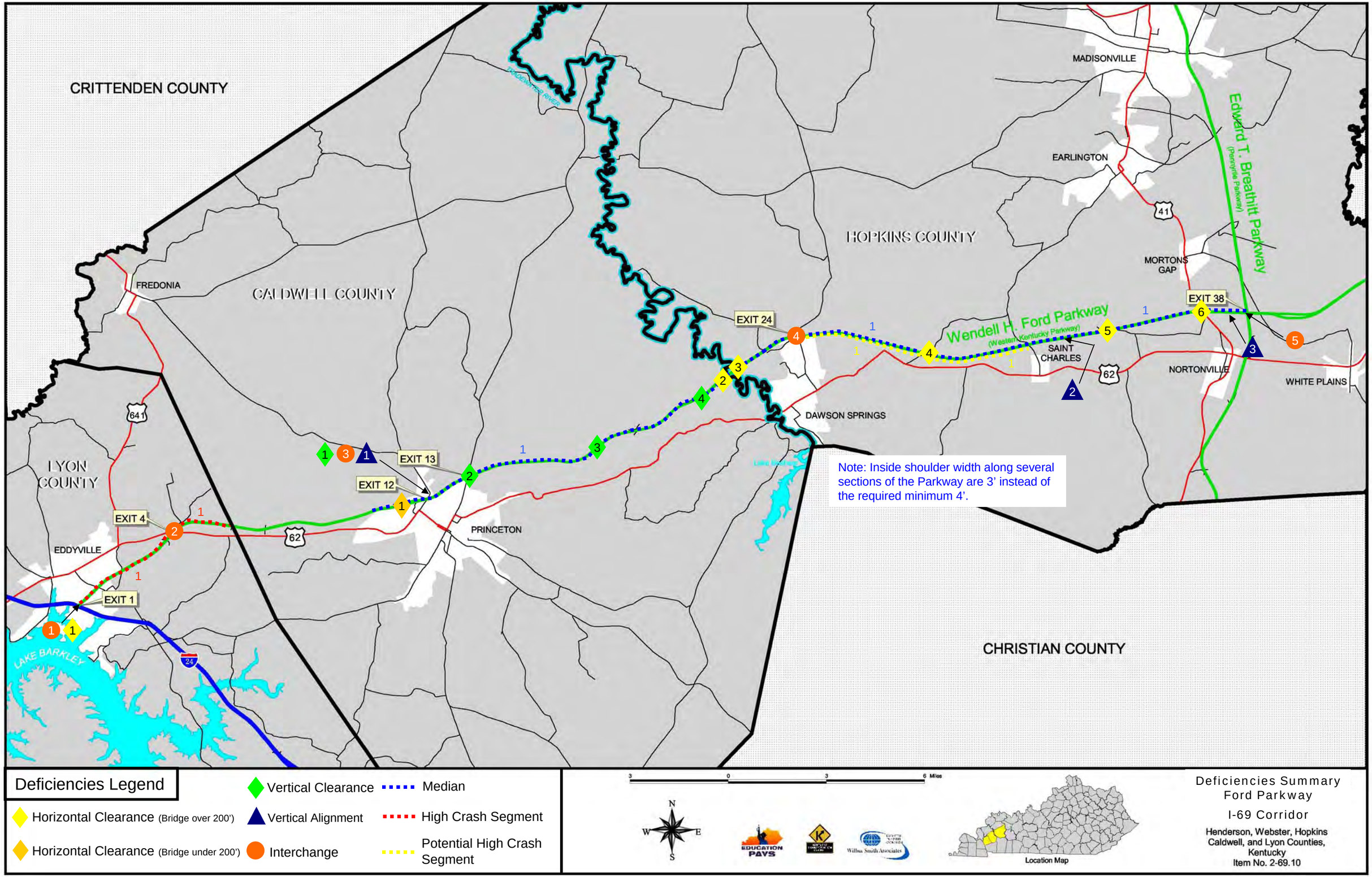


Figure 20. Deficiencies Summary – Ford Parkway *7-3*

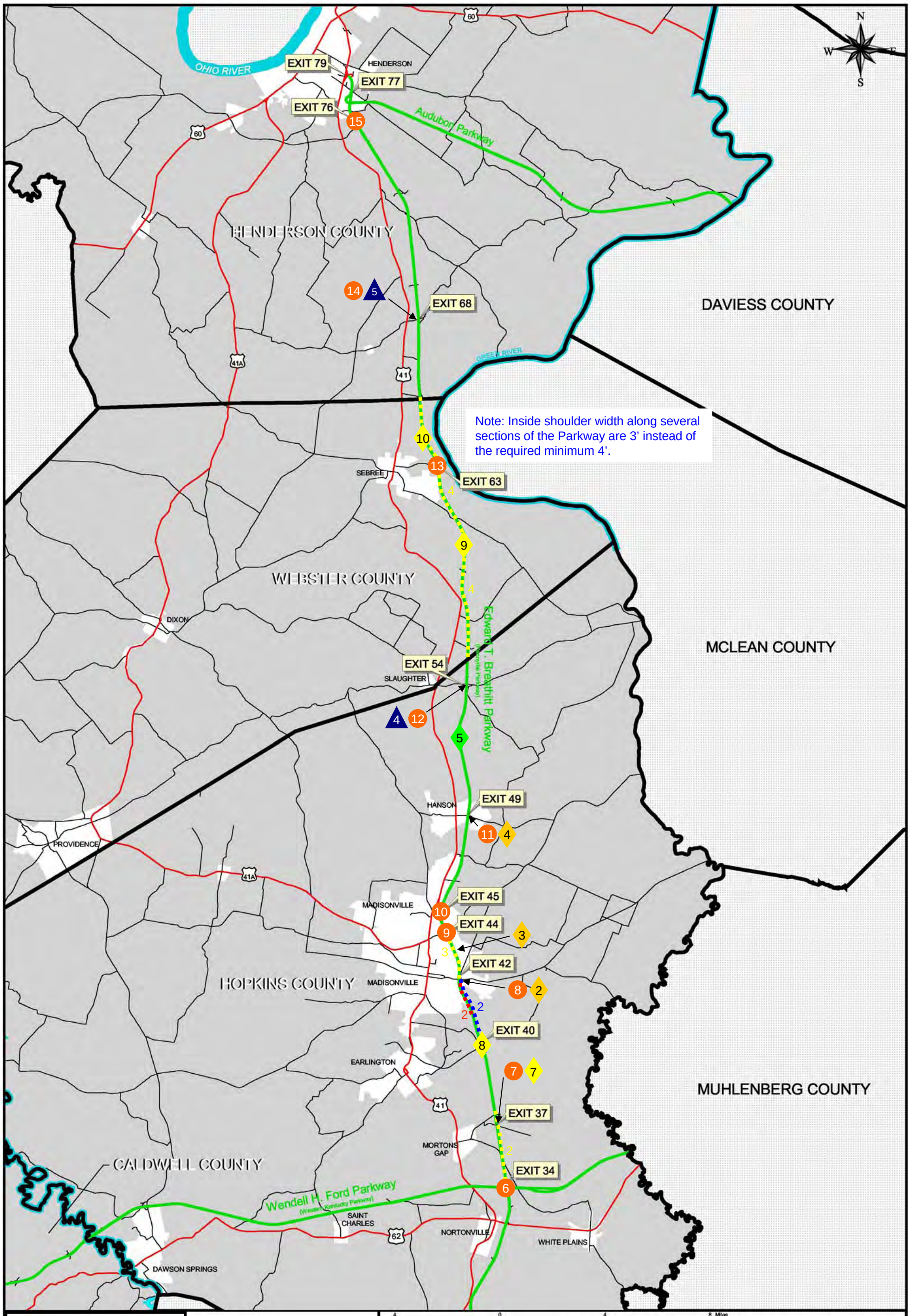


Figure 21. Deficiencies Summary – Breathitt Parkway 7-4

Table 18 – Deficiencies Summary for the Ford Parkway

Deficiency Type	Milepoint	Deficiency Description
Ford Parkway - Lyon County		
1	0.001	Horizontal clearance less than minimum (note: bridge is over 200')
1	0.000	All ramps have substandard geometrics
2	3.708	All ramps have substandard geometrics
1	0.000 - 5.610	High crash segment (critical rate >= 1.0)
Ford Parkway - Caldwell County		
1	11.357	Horizontal clearance less than minimum (note: bridge is under 200')
1	11.714	Vertical curve radius less than minimum
3	11.700	All ramps have substandard geometrics
1	11.700	Vertical clearance less than minimum
2	13.120	Vertical clearance less than minimum
3	17.308	Vertical clearance less than minimum
4	20.880	Vertical clearance less than minimum
2	21.752	Horizontal clearance less than minimum (note: bridge is over 200')
1	9.880 - 21.764	Median width less than minimum
Ford Parkway - Hopkins County		
3	22.003	Horizontal clearance less than minimum (note: bridge is over 200')
4	24.437	All ramps have substandard geometrics
4	28.346	Horizontal clearance less than minimum (note: bridge is over 200')
2	32.733	Vertical curve radius less than minimum
5	33.872	Horizontal clearance less than minimum (note: bridge is over 200')
6	36.900	Horizontal clearance less than minimum (note: bridge is over 200')
3	37.357	Vertical curve radius less than minimum
5	38.373	All ramps have substandard geometrics
1	21.764 - 38.332	Median width less than minimum
1	24.435 - 31.581	Potential high crash segment (critical rate 0.90 - 0.99)

Table 19 – Deficiencies Summary for the Breathitt Parkway

Deficiency Type	Milepoint	Deficiency Description
Breathitt Parkway - Hopkins County		
6	38.373	All ramps have substandard geometrics
7	37.058	All ramps have substandard geometrics
7	37.054	Horizontal clearance less than minimum (note: bridge is over 200')
8	39.774	Horizontal clearance less than minimum (note: bridge is over 200')
8	42.437	All ramps have substandard geometrics
2	42.418	Horizontal clearance less than minimum (note: bridge is under 200')
3	43.438	Horizontal clearance less than minimum (note: bridge is under 200')
9	44.337	All ramps have substandard geometrics
10	44.713	All ramps have substandard geometrics
11	48.500	All ramps have substandard geometrics
4	48.971	Horizontal clearance less than minimum (note: bridge is under 200')
5	51.941	Vertical clearance less than minimum
12	54.073	All ramps have substandard geometrics
4	54.122	Vertical curve radius less than minimum
2	34.271 - 37.070	Potential high crash segment (critical rate 0.9-.99)
2	39.550 - 42.437	Median width less than minimum
2	41.002 - 42.437	High crash segment (critical rate >= 1.0)
3	42.437 - 44.337	Potential high crash segment (critical rate 0.9-.99)
Breathitt Parkway - Webster County		
9	59.280	Horizontal clearance less than minimum (note: bridge is over 200')
13	62.632	All ramps have substandard geometrics
10	63.887	Horizontal clearance less than minimum (note: bridge is over 200')
4	55.003 - 65.305	Potential high crash segment (critical rate 0.9-.99)
Breathitt Parkway - Henderson County		
5	68.500	Vertical curve radius less than minimum
14	68.373	All ramps have substandard geometrics
15	76.258	All ramps have substandard geometrics

B. Early Coordination and Public Involvement

The following findings are summarized from **Chapter II** of this report and are based on comments at the local coordination and public meetings, responses to a written survey, and/or responses received from local, state, and federal agencies. Detailed summaries of local and public comment surveys, as well as resource agency letters, are included for reference in **Appendices B, C,** and **D**.

Meetings with Local Officials and Stakeholders:

- 98% (42 of 43 survey respondents) of the attendees indicated that the I-69 project would be beneficial to the region.
- Public perception of the main issues along the existing Parkways includes traffic congestion, high speeds, large trucks, poor sight distance, substandard curves, narrow lanes, narrow shoulders, and stopped vehicles.
- Survey respondents indicated that additional access is needed near the Princeton Industrial Park, 4 Star Industrial Park, KY 862, US 41, US 62 and KY 935. Improved access is suggested on the Ford Parkway at Exit 4, Exit 13 and Exit 24. Improved access is suggested on the Breathitt Parkway at Exit 30, Exit 37, Exit 40, Madisonville, Exit 63 and Exit 68.
- Local officials also recommended that the main areas to be avoided by future improvements include natural areas or habitats and historic or cultural sites, followed by businesses, commercial properties and hazardous sites.

Public Meetings and Surveys:

- 92% (76 of 83) of survey respondents indicated that the I-69 project would be beneficial to the region.
- During the public meetings, some local officials and other citizens expressed support for implementing I-69 signage along the Parkways. Public meeting discussions included concern about having the route labeled on the map, but having no signs along the Parkways, since this may confuse motorists.
- Public perception of the main issues identified along the existing Parkways includes narrow shoulders, large trucks, too much traffic, high speeds, surface repair, and signs and markings.
- Survey respondents indicated that additional access is needed near the Princeton Industrial Park, at KY 93, east of KY 293, near the Riverport Authority and Mineral Mound State Park, Nortonville, at KY 814, at KY 416, and between Madisonville and Henderson. Improved access is suggested at Exits 1 and 24 on the Ford Parkway, and at Exit 37, near Madisonville, and Exit 63 on the Breathitt Parkway.
- Survey respondents recommended that the main areas to be avoided by future improvements include historic or cultural sites, followed by personal properties or homes.

Resource Agency Coordination – Local Agencies and Stakeholders

Comments were received from eight local agencies and stakeholders, as follows:

- Three responses provided support for I-69 due to increased economic development expected to result from this interstate highway passing through the area.
- Two responses recommended that I-69 should follow the existing Parkways.
- The other three respondents appeared to assume that I-69 would follow along the existing Parkways and, therefore, addressed issues associated with this designation. Among those were a request for (1) signs to identify the Parkways as the I-69 corridor, (2) a full interchange on the Breathitt Parkway at KY 2097 for the Henderson Industrial Park, (3) a new interchange on the Ford Parkway at US 41 in Hopkins County, (3) reconstruction of the KY 109 interchange on the Ford Parkway, and (4) reconstruction of KY 335 from the Breathitt Parkway to KY 481.
- Other issues mentioned in the responses included improving high crash locations, avoiding surface mining and underground mining activity, and giving consideration to animal feeding operations and wildlife refuges.

Resource Agency Coordination – State and Federal Agencies

Responses were received from six state agencies and five federal agencies. Three respondents indicated that they had no comments. One stated that I-69 should be located along the existing Parkways. Some respondents addressed procedural requirements, should the proposed project advance into future phases. Others provided information and/or concerns about the following:

- Kentucky Geological Survey – The project is located within two physiographic regions which may include the following issues: karst features, minimal/moderate landslide hazards, gas wells, some suitable aggregate for road construction, the potential for faults or earthquake ground motion, and potential conflicts related to mineral rights.
- KYTC Division of Materials: The following geotechnical information and issues were identified and provided: rock formations and appropriate uses; vertical displacement faults; previous and active coal mining locations; oil and gas extraction wells; wetland areas and blueline streams; erosion control methods; karst drainage systems and sinkholes; soil qualities; cut slopes and embankment benches; and earthquake activity (a geologic map of the study area was provided).
- KYTC Division of Multimodal Programs: Coordination with the Henderson MPO was encouraged. It was also noted that changes to the Sebree interchange in Webster County should consider the TransAmerica bicycle trail east of Sebree.
- Federal Aviation Administration: Four public airports located in the vicinity of the proposed project were identified, and maps of these facilities were provided.
- United States Department of Health and Human Services: Issues identified were public health concerns, including air quality; water quality/quantity; wetlands and floodplains; hazardous materials/wastes; non-hazardous solid waste; noise; occupational health and safety; land use and housing; and environmental justice.

- United States Environmental Protection Agency: Highlighted were the scoping and streamlining process and documentation to comply with the National Environmental Policy Act (NEPA) as the project advances. Maps were provided detailing Potential Environmental Justice Areas, Sensitive Environmental Areas and General Landcover Types.

C. Operational Considerations and Safety

The following is a summary of the key findings related to the operational considerations and safety of the Parkways:

- Crash Analysis (Ford Parkway): When compared to other state parkways, there is one high crash segment along the Ford Parkway near the US 62 interchange at Eddyville in Lyon County (MP 3.702 to MP 5.610) where the crash rate exceeds the statewide average for all parkways. 72% of these accidents were a combination of collisions with fixed objects or animals. Another segment between MP 0.000 and MP 3.702, just east of the I-24 interchange in Lyon County, nearly exceeds the statewide average for parkways and should be considered a potential high crash segment.
- Crash Analysis (Breathitt Parkway): When compared to other parkways, there is one high crash segment where the actual crash rate exceeds the statewide average for Parkways. The high crash segment is in Hopkins County between MP 41.002 and MP 42.437, near the KY 70/85 exit at Madisonville. Sixty-nine percent (69%) of these accidents are the result of rear-end collisions likely related to the ramp operations at Interchange 42 at Madisonville. There is also one potential high crash segment in Hopkins County between MP 42.437 and 44.337, near the US 41A exit at Madisonville.
- Crash Analysis (as an Interstate): When compared to Kentucky interstate highways, rather than state parkways, one additional high crash segment was identified along the Ford Parkway located just east of the I-24 interchange in Lyon County (between MP 0.000 and MP 3.702). 74% of these crashes are either a collision with an animal or fixed object.
- Potential High Crash Segments: There are five (5) additional segments considered to be potential high crash segments, including three (3) in Hopkins County and two (2) which are side-by-side in Webster County.
- Additional Findings Related to Crash Analysis: There were only 6 crashes coded as 'median cross-over' or 'head-on' collisions on the parkways. Three interchanges are located in high crash locations – Exits 1 and 4 on the Ford Parkway and Exit 42 on the Breathitt Parkway. Further analysis in the high crash segments may identify corrections related to horizontal clearance, wildlife measures, ramp design or operational controls. However, this is not unlike other existing interstates in Kentucky.
- Traffic Volumes (2002): Existing traffic volumes along the Ford Parkway range from 9,000 vpd in Lyon County to 10,900 vpd in Hopkins County. For the

Breathitt Parkway, 2002 traffic volumes range from 10,500 vpd in Hopkins County near the Ford Parkway to 26,400 vpd in Hopkins County (within the urban area of Madisonville).

- Truck Percentages (2002): Existing truck percentages range from 25.0% to 31.3% along the Ford Parkway while truck percentages range from 22.9% to 32.9% along the Breathitt Parkway.
- Traffic Volumes without I-69 (2030): Average annual growth rates along the Parkways range from 1.7% to 2.1%. These rates result in traffic volumes ranging from 15,100 to 18,100 vpd along the Ford Parkway and from 17,200 to 43,500 vpd along the Breathitt Parkway.
- Traffic Volumes with I-69 (2030): Assuming I-66 and I-69 will travel along a portion of the Ford Parkway, growth rates range from 3.2% to 3.7% along the Ford Parkway. Rates range from 2.2% to 2.3% along the Breathitt Parkway. These result in traffic volumes ranging from 23,100 to 30,500 vehicles per day along the Ford Parkway and from 19,100 to 50,500 vehicles per day along the Breathitt Parkway.
- Truck Percentages (2030): Future truck volumes were not forecast as part of this study; however, truck traffic is expected to increase substantially if the national goals of I-69 are met.
- Level of Service (2002): All Parkway segments operate at LOS C or better in the Year 2002 and should therefore be considered acceptable at present.
- Level of Service (2030): Future year (Year 2030) levels of service are expected to operate at acceptable conditions throughout the study area both with and without the I-69 designation, since only one segment along either Parkway is expected to fall below LOS C. This segment, expected to operate at LOS D, is found in Hopkins County in the urban area of Madisonville and can, therefore, be considered an acceptable LOS.

D. Mainline Geometry/Typical Section

The following is a summary of the key findings related to the suitability of the mainline geometry and typical section of the Parkways:

- Design Speed: The Ford and Breathitt Parkways meet or exceed minimum design speed guidelines for interstate highways in rural and urban areas.
- Lane Width: Lane widths on the mainline of the two Parkways meet the minimum AASHTO guidelines for freeway design.
- Outside Shoulder Width: It is anticipated that all of the existing outside shoulders will meet interstate highway criteria for shoulder width.
- Inside Shoulder Width: The Parkways do not fully conform to AASHTO design guidelines for inside shoulder widths on freeways. All of the Ford Parkway and

sections of the Breathitt Parkway have 3' inside shoulder widths, while guidelines recommended a 4' inside shoulder.

- Median Width: The existing median width along the Breathitt Parkway meets AASHTO standards for rural freeways with the exception of a short roadway section between Milepoint 39.550 and Milepoint 42.437 in Hopkins County. While portions of the Ford Parkway also meet accepted practice, the majority in Caldwell and Hopkins Counties do not meet current AASHTO standards.
- Clear Zones: It is not possible to evaluate the applicability of current design standards and availability of acceptable clear zones with the information currently available.
- Guardrail Placement and Condition: Sufficient information does not exist on the as-built plans to evaluate the placement of guardrail along the I-69 corridor.
- Superelevation: The design speeds and maximum radius used for the design of the mainline sections of the existing Parkways are acceptable and in general compliance with the intent of the current AASHTO design guidelines.
- Horizontal Alignment: The horizontal curvature for the Parkways is acceptable and in general compliance with current AASHTO design guidelines.
- Vertical Alignment: The majority of vertical curves along the Parkways are sufficient to meet current AASHTO guidelines. Of the five (5) unacceptable vertical curves, three (3) are located on the Ford Parkway and two (2) on the Breathitt Parkway.

E. Bridges and Overpasses

The following is a summary of the key findings related to the bridges and overpasses along the Parkways:

- Lateral Clearance (Ford Parkway): Of the 22 mainline bridges along the Ford Parkway, 14 (70%) fail to meet the minimum 38'-00" lateral (horizontal) clearance.
- Lateral Clearance (Breathitt Parkway): Of the 28 mainline bridges on the Breathitt Parkway, 14 (50%) fail to meet the minimum lateral (horizontal) clearance.
- Vertical Clearance: Five (5) overpass structures along the two Parkways do not meet minimum vertical clearance standards of 16'-00".
- Functional Adequacy: Thirteen (13) bridges are considered functionally obsolete. Of these thirteen (13) structures, 2 pass over the Parkways (both along the Ford Parkway) and 11 are mainline bridges (6 on the Breathitt Parkway and 5 on the Ford Parkway). Two (2) overpasses are considered structurally deficient, with one located along each Parkway.

F. Interchanges and Ramps

The following is a summary of the key findings related to the interchanges and ramps along the Parkways:

- Design Speed: Although there was insufficient information from the as-built plans to properly locate or quantify possible deficiencies on the Ford and Breathitt Parkways, many of the ramps do not meet the minimum guidelines for design speed.
- Lane Width: Lane widths ranged from 15' to 18' and are acceptable and in general compliance with AASHTO guidelines.
- Shoulder Width: Ramps at interchanges on the two Parkways do not meet AASHTO guidelines for shoulder width.
- Horizontal Alignment: Many of the directional and loop ramps at the existing interchanges do not meet recommended design guidelines for horizontal alignment.
- Vertical Alignment: The as-built plan sets do not provide vertical profile information for ramps. However, it is not anticipated that significant problems exist in this area.
- Superelevation: Many of the directional and loop ramps have superelevations that exceed the 8% maximum.
- Speed-Change Lanes: Existing ramps on the Ford and Breathitt Parkways do not meet the minimum guidelines for tapers.
- Weaving Characteristics: There are three (3) interchanges where the length of weaving is below recommended design guidelines. Two are on the Ford Parkway: KY109 at MP 24.437 in Hopkins County and the Breathitt Parkway at MP 38.373 in Hopkins County. The third is the KY 56 interchange on the Breathitt Parkway at MP 62.632 in Webster County.

VIII. POTENTIAL IMPROVEMENT ALTERNATIVES AND DEVELOPMENT COSTS

This chapter provides an overview of the range of alternatives under consideration for the development of the I-69 corridor. The first section includes a discussion of corridor options not likely to address the purpose and need for the I-69 project on the national level or the transportation policy at the state level. The second section outlines the potential improvement options identified for the I-69 corridor, including the no-build alternative, as well as the associated development costs. The final section in this chapter provides information related to additional roadside features (welcome centers, rest areas and Commercial Vehicle Monitoring stations) to be considered in the development of any of the improvement options.

A. I-69 Corridor Purpose and Need

The initial concept of I-69 was addressed in the 1995 *Corridor 18 Feasibility Study* mandated by the 1991 Intermodal Surface Transportation and Efficiency Act (ISTEA). This study was prepared for the Federal Highway Administration under the direction of a multi-state task force made up of representatives of the various state transportation agencies, including the Kentucky Transportation Cabinet. In the 1995 study, two alternates were proposed through Kentucky:

- One along the Ford and Breathitt Parkways, I-24, and the Purchase Parkway (which has since been designated as the Julian M. Carroll Parkway), and
- One along a new alignment in Kentucky, west of the Breathitt Parkway, in a northwesterly direction from I-24 at Eddyville to Marion and then to Henderson.

In a follow-up study, the 1997 *Corridor 18 Special Issues Study*, it was assumed that I-69 would follow along the existing Parkways, as discussed in **Chapter I** of this study.

The 1997 study also indicated that the alternate along new alignment was still under consideration as a means of opening up the area between Eddyville, Marion, and Henderson for economic development. However, in recent years, the Transportation Cabinet has a goal to utilize as much of the existing infrastructure as possible. As a result, the KYTC is pursuing another project between Eddyville and Marion which is expected to address the purpose and need for opening up this area for economic development, and that purpose is no longer valid for the routing of I-69.

The national goals for I-69 and Preliminary Project Goals, discussed in **Chapter I**, form the basis for establishing the purpose and need for the I-69 project in Kentucky. This new state policy is reflected in the Preliminary Project Goals set forth in **Chapter I** of this study, since one of the goals for the I-69 project in Kentucky is to: Maximize the use of the existing Parkways.

As a result, the construction of a new I-69 route on new alignment would not maximize the use of the existing Parkway system and would not ultimately meet the purpose and

need for the project. For this reason this alternate has been dismissed from further consideration.

B. Potential Improvements and Development Costs

In this study, the remaining alternatives have been further defined for consideration relative to the development of the Interstate 69 corridor along the existing Parkways between Eddyville and Henderson, Kentucky. Options for I-69 include the following:

- No Build Alternate – KYTC could elect to participate no further in the development of I-69, thus, leaving a gap in the nationally designated I-69 route. While this may cause some concern, there would still be connections to the existing Julian M. Carroll Parkway at the Tennessee border and the Edward T. Breathitt Parkway at the Indiana border. Therefore, the existing Parkways would probably still serve to carry I-69 traffic through the state of Kentucky.
- Minor Upgrades and Spot Safety Improvements to the Parkways – This alternate would address key safety and operational concerns but obtain design exceptions or approval of design flexibility for a number of circumstances where the Parkways do not meet current AASHTO guidelines.
- Partial Reconstruction and Widening of the Parkways – This alternate would enable the Parkways to meet most AASHTO guidelines but attempt to maintain improvements within the right-of-way by making extensive use of median barriers and guardrail along the parkways.
- Full Reconstruction and Widening of the Parkways – This alternate would enable the Parkways to meet full AASHTO guidelines by obtaining additional right-of-way along the Parkways to allow for widening and reconstruction.

These alternatives represent incremental levels of infrastructure investment to implement I-69 between Henderson and Eddyville. The following subsections present further discussion of the alternatives, including a preliminary estimate of the costs for implementation of the three build alternatives.

For the purpose of this analysis, the following general design criteria are assumed for the various reconstruction scenarios, where appropriate:

Design Assumptions for Cost Estimates [1]			
Design Speed	70 mph	Min. Curve Radius	1820'
Lane Width	12'	Max. Superelevation	0.08
Shoulder Widths		Max. Grade	0.04
Inside:	8'	Avg. R/W Width	300'
Outside:	12'	Control of Access	Full
Number of lanes	4	Avg. Interchange Spacing	5 mi (est.)
Clear Zone	30'	Avg. Rest Area Spacing	50 mi (est.)
Median Width	60'		

[1] All design assumptions shown in the table are not necessarily applicable to all improvement options, and were applied where appropriate to the varying levels of improvement.

1. No-Build Alternate

Under the no-build alternate, the existing Ford and Breathitt Parkways would continue as they are now without I-69 designation. No special funding would be needed to upgrade or construct a new facility in the short or long-term, except as required by any problems that may arise due to increased traffic generated by I-69 traveling between Tennessee and Indiana or from Mexico to Canada.

2. Minor Upgrades and Spot Safety Improvements along the Parkways

As previously noted, the Parkways in their current condition have operational conditions that are similar to those that would be expected if they were to be converted to Interstate 69 and reconstructed to meet current AASHTO guidelines for interstate highways. Given these similarities, this alternate would not upgrade the Parkways to fully meet all guidelines for interstate highways. Instead, design exceptions would be considered where safety and operational conditions would not create an undue risk to motorists. New infrastructure investment along the Ford and Breathitt Parkways would be targeted toward upgrading the design features along the routes that potentially represent the most significant safety and operational issues.

A summary of the preliminary unit costs and design assumptions for implementing the improvements for the alternative to partially reconstruct and upgrade the Parkways is presented in **Table 20**.

Table 20 – Unit Costs (Spot Improvements and Minor Reconstruction)

Item	Unit	2003 Cost ($M)
Install Cable Median Barrier/Improve Median	Mile	$ 0.1
Guardrail and Shoulder Improvements	Mile	$ 0.3
Mainline Structures (Upgrade Guardrail/Approaches)		
Large (> 500'), Medium (200-500') and Small (<200')	Structure	$ 0.1
Other Structures (no improvements)		
Interchanges		
Diamond-Type (Upgrade)	Interchange	$ 4.6
Full Directional (Upgrade)	Interchange	$ 13.3
Partial Directional (Upgrade)	Interchange	$ 9.3
Other Features		
Welcome Centers	Welcome Center	$ 5.8
Rest Area	Rest Area	$ 4.8
Commercial Vehicle Monitoring Station	CV Station	$ 6.9
Design and Environmental	15% of Construction Costs	
Right-of-Way and Utilities	30% of Construction Costs	

A summary of potential improvements that were assumed as a basis for examining this option is as follows:

- Maintain existing mainlines along the Parkways;
- Utilize cabled guardrail within existing median;
- Minimal requirements for new right-of-way acquisition along Parkways;
- Add guardrail on outside edge of pavement where needed to protect against roadside hazards or narrow bridges; and
- Upgrade improvements to some substandard interchanges.

As indicated in **Table 21**, the preliminary cost for implementation of these improvements is estimated at approximately $150 million of new investment at an average rate of $1.9 million per mile. Because most of the improvements are contained within the existing right-of-way, minimal right-of-way costs are anticipated. The largest single cost element would be the improvement of 11 diamond interchanges, where approximately $50 million, or half of the total construction costs, is anticipated. The diamond interchanges include those with elements that do no meet recommended guidelines, as shown in **Chapter 6**, **Figures 15** through **19**: Exits 4, 12, 24, and 38 on the Ford Parkway and Exits 37, 42, 44, 45, 49, 54, 68 and 76 on the Breathitt Parkway. Additionally, most of

the estimated right-of-way costs would also be associated with the interchange construction.

Table 21 – Minor Upgrades and Spot Safety Improvements Preliminary Cost Estimate

Segment	Length (mi.)	Design and Enviro. (million)	ROW and Utilities (million)	Construction Cost (million)				Total Cost (million)
				Road work	Main Line Struc-tures	Inter-changes	Other Features[1]	
Eddyville to Dawson Springs From 1-24 to KY 109	24.4	$2.8	$5.7	$4.4	$0.9	$13.7	-	$27.5
Dawson Springs to Nortonville From KY 109 to Breathitt Pkwy.	13.9	$3.0	$6.0	$5.6	$0.3	$4.6	$9.6	$29.0
Nortonville to Madisonville From Ford Pkwy. to KY 70	8.1	$0.9	$1.8	$1.3	$0.2	$4.6	-	$8.8
Madisonville to Sebree From KY 70 to KY 56	20.2	$4.0	$8.0	$2.1	$1.6	$22.8	-	$38.5
Sebree to Henderson From KY 56 to KY 425	13.7	$5.0	$9.9	$3.1	$1.0	$4.6	$24.4	$48.0
Total:	**80.3**	**$15.7**	**$31.4**	**$16.5**	**$4.1**	**$50.1**	**$34.0**	**$151.7**

[1] Other Features include welcome centers, rest areas and CVM stations. These cost estimates are based on recommendations for additional roadside features, included in Section C of this Chapter. These include welcome centers and/or rest areas south of Henderson and between Princeton and Dawson Springs, as well as a CVM station and/or truck parking area in the Henderson area.

NOTE:
Cost estimates are based upon planning-level unit cost assumptions that were derived from development costs on comparable projects, from comparable project elements, or from similar corridor studies in Kentucky (such as the Interstate 66 Southern Kentucky Corridor Study).

3. Partial Reconstruction of the Parkways

The next incremental level of infrastructure investment to convert the two Parkways to Interstate 69 would involve partial reconstruction of the Parkways to allow them to meet most, if not all, design guidelines for interstate highways. Wherever possible, reconstruction would be done within the existing right-of-way. The center median would be reconstructed with a permanent barrier, allowing the existing two lanes to be shifted to the center, thereby increasing clear zones on the outside edges of the roadways.

A summary of potential improvements that were assumed as a basis for examining this option is as follows:

- Partial reconstruction of mainlines to increase clear zone distance and enable installation of concrete median barrier;
- Limited need for new right-of-way acquisition along Parkways;
- Use of median guardrail or concrete median barrier;
- Partial widening of narrow bridges and partial reconstruction of low overpasses; and
- Partial reconstruction of 16 interchanges.

A summary of the preliminary unit costs and design assumptions for implementing the improvements for the alternative to partially reconstruct and upgrade the Parkways is shown in **Table 22**.

Table 22 – Unit Costs (Partial Reconstruction)

Item	Unit	2003 Cost ($M)
Road and Earthwork (Upgrade, Add Barrier)	Mile	$ 1.5
Mainline Structures (Upgrade, Avg. Width = 44')		
Large (> 500')	Structure	$ 0.8
Medium (200 – 500')	Structure	$ 0.3
Small (<200')	Structure	$ 0.1
Other Structures		
RR Bridge (Mainline Overpass, Upgrade)	Structure	$ 1.4
RR Bridge (RR Overpass, Upgrade	Structure	$ 1.3
Overpass (2-Ln, Upgrade)	Structure	$ 1.4
Overpass (4-Ln, Upgrade)	Structure	$ 2.9
Interchanges		
Diamond-Type (Upgrade)	Interchange	$ 4.6
Full Directional (Upgrade)	Interchange	$ 13.3
Partial Directional (Upgrade)	Interchange	$ 9.3
Other Features		
Welcome Centers	Welcome Center	$ 5.8
Rest Area	Rest Area	$ 4.8
Commercial Vehicle Monitoring Station	CV Station	$ 6.9
Design and Environmental	15% of Construction Costs	
Right-of-Way and Utilities	20% of Construction Costs	

As indicated in the **Table 23**, the preliminary cost for implementation of these improvements is estimated at approximately $380 million of new investment at an average rate of $4.7 million per mile. As with the spot improvements scenario, minimal right-of-way costs are anticipated for this option as most of the improvements associated with the partial reconstruction and widening of the Parkways to meet interstate guidelines are contained within the existing right-of-way.

Table 23 – Partial Reconstruction Preliminary Cost Estimate

Segment	Length (mi)	Design and Enviro. (million)	ROW and Utilities (million)	Construction Costs (million)					Total Cost (million)
					Structures				
				Road work	Main line	Other[1]	Inter-changes	Other Fea-tures[2]	
Eddyville to Dawson Springs From 1-24 to KY 109	24.4	$11.2	$15.0	$35.9	$1.9	$14.0	$22.9	-	$100.9
Dawson Springs to Nortonville From KY 109 to Breathitt Pkwy.	13.9	$ 7.9	$10.6	$20.4	$0.8	$4.2	$17.8	$9.6	$71.3
Nortonville to Madisonville From Ford Pkwy. to KY 70	8.1	$4.1	$5.4	$12.0	$0.5	$5.5	$9.1	-	$36.5
Madisonville to Sebree From KY 70 to KY 56	20.2	$ 8.9	$11.8	$29.7	$5.2	$1.4	$22.8	-	$79.7
Sebree to Henderson From KY 56 to KY 425	13.7	$9.9	$13.2	$20.1	$3.4	$1.4	$18.4	$24.4	$89.4
Total:	**80.3**	**$42.0**	**$56.0**	**$118.1**	**$11.6**	**$26.5**	**$91.0**	**$34.0**	**$379.7**

[1] Other Structures include railroad and roadway overpasses along the Parkways.
[2] Other Features include welcome centers, rest areas and CVM stations. These cost estimates are based on recommendations for additional roadside features, included in Section C of this Chapter. These include welcome centers and/or rest areas south of Henderson and between Princeton and Dawson Springs, as well as a CVM station and/or truck parking area in the Henderson area.

NOTE:
Cost estimates are based upon planning-level unit cost assumptions that were derived from development costs on comparable projects, from comparable project elements, or from similar corridor studies in Kentucky (such as the Interstate 66 Southern Kentucky Corridor Study).

4. Full Reconstruction and Widening of the Parkways

The highest level of infrastructure investment for converting the Parkways to Interstate 69 would involve full reconstruction and widening of Parkways as new interstate highways including all 16 interchanges. While reconstruction would be able to make use of the existing right-of-way, it would also generally require obtaining a significant amount of new right-of-way to allow for a full four-lane interstate cross-section to be constructed.

A summary of the preliminary unit costs and design assumptions for the alternative to fully reconstruct the Parkways as new interstate highways is shown in **Table 24**.

Table 24 – Unit Costs (Full Reconstruction)

Item	Unit	2003 Cost ($M)	
Road and Earthwork (Reconstruction)	Mile	$	4.2
Mainline Structures (Reconstruction, Avg. Width = 44')			
Large (> 500')	Structure	$	2.3
Medium (200 - 500')	Structure	$	1.0
Small (<200')	Structure	$	0.2
Other Structures			
RR Bridge (Mainline Overpass, Reconstr.)	Structure	$	2.3
RR Bridge (RR Overpass, Replacement)	Structure	$	2.2
Overpass (2-Ln, Replacement)	Structure	$	2.3
Overpass (4-Ln, Replacement)	Structure	$	4.8
Interchanges			
Diamond-Type (Reconstruction)	Interchange	$	9.1
Full Directional (Replacement)	Interchange	$	26.5
Partial Directional (Replacement)	Interchange	$	18.6
Other Features			
Welcome Centers	Welcome Center	$	5.8
Rest Area	Rest Area	$	4.8
Commercial Vehicle Monitoring Station	CV Station	$	6.9
Design and Environmental	15% of Construction Costs		
Right-of-Way and Utilities	20% of Construction Costs		

The cost for these improvements could potentially require approximately $850 million of new investment at a cost of $10.6 million per mile. The preliminary cost estimate is presented in **Table 25**.

Table 25 – Full Reconstruction and Widening Preliminary Cost Estimate

Segment	Length (mi)	Design and Enviro. (million)	ROW And Utilities (million)	Construction Cost (million)					Total Cost (million)
					Structures				
				Road work	Main line	Other[1]	Inter-changes	Other Fea-tures[2]	
Eddyville to Dawson Springs From 1-24 to KY 109	24.4	$26.6	$35.5	$102.7	$5.3	$23.3	$45.9	-	$239.3
Dawson Springs to Nortonville From KY 109 to Breathitt Pkwy.	13.9	$16.9	$22.6	$58.4	$2.3	$7.0	$35.6	$9.6	$152.3
Nortonville to Madisonville From Ford Pkwy. to KY 70	8.1	$9.4	$12.6	$34.2	$1.3	$9.1	$18.2	-	$84.9
Madisonville to Sebree From KY 70 to KY 56	20.2	$22.1	$29.5	$85.0	$14.8	$2.3	$45.5	-	$199.3
Sebree to Henderson From KY 56 to KY 425	13.6	$19.6	$26.1	$57.2	$9.6	$2.3	$36.8	$24.4	$176.0
Total:	**80.3**	**$94.6**	**$126.2**	**$337.5**	**$33.3**	**$44.1**	**$ 182.0**	**$34.0**	**$851.8**

[1] Other Structures include railroad and roadway overpasses along the Parkways.
[2]Other Features include welcome centers, rest areas and CVM stations. These cost estimates are based on recommendations for additional roadside features, included in Section C of this Chapter. These include welcome centers and/or rest areas south of Henderson and between Princeton and Dawson Springs, as well as a CVM station and/or truck parking area in the Henderson area.

NOTE:
Cost estimates are based upon planning-level unit cost assumptions that were derived from development costs on comparable projects, from comparable project elements, or from similar corridor studies in Kentucky (such as the Interstate 66 Southern Kentucky Corridor Study).

5. Summary

Table 26 provides a cost comparison of each of the potential alternatives. To provide a basis for comparison, cost estimates related to building a new alignment parallel to the parkways are included. However, the option to construct I-69 along a new corridor has been dismissed from further consideration by the KYTC.

Table 26 – Comparison of Preliminary Costs

Alternative	Meet Current Standards	Future Expansion w/o Additional ROW[2]	Impact on Environment	Cost (million)	Cost per Mile (million)
1. No Build	No	n/a	Least	$0.0[3]	$0.0
2. Minor Upgrade	Yes[1]	No	Least	$151.7	$1.9
3. Partial Reconstruction	Yes	No	Minimal	$379.7	$4.7
4. Total Reconstruction	Yes	Yes	Minimal	$851.8	$10.6
5. New Alignment	Yes	n/a	Substantial	$1,364.0	$22.0

[1] Improvements under this alternate would be targeted toward upgrading the design features along the routes that potentially represent the most significant safety and operational issues. Design exceptions would be considered where safety and operational conditions would not create an undue risk to motorists.

[2] This column answers the question: If additional travel lanes are required to meet future capacity after I-69 improvements are made, could the lanes be added within the right-of-way provided under each alternative?

[3] Funding for routine maintenance activities would still be needed.

It can generally be concluded that the sections of the Breathitt and Ford Parkways under consideration for designation as I-69 are currently providing efficient and safe travel routes through the Western Kentucky region. In the short-term, designating these roadways as I-69 would not substantially alter their operating characteristics in a manner that would be different than the conditions currently experienced along the two Parkways today. In addition, these Parkways are not alone in having design features that do not meet all of the current standards for interstate highways. Other interstate highways across Kentucky and throughout the United States have varying degrees of design characteristics that do not meet current interstate standards. Therefore, signing the Ford and Breathitt Parkways as I-69 today may not be an unrealistic option and should merit further investigation.

As I-69 develops across the country from Texas to Michigan, additional traffic (especially trucks) will be induced to the corridor. As traffic volumes grow and the percentages of trucks increase, congestion along the main lanes and at system-to-system and system-to-service interchanges will increase. In addition, crash rates and causes should be regularly monitored to insure that, as traffic changes occur, safety problems do not develop that are not currently known to exist.

Independent of the decision of when the Parkways should be officially designated as I-69, it will be necessary to provide for a systematic program of highway improvements along the Parkways that will serve to maintain acceptable operational levels of service and safety and will address the areas along the Parkways that do not meet interstate design criteria.

C. Additional Roadside Features

Additional features that should be considered as part of an upgrade to the Parkways include welcome centers/rest areas/other roadside amenities, commercial vehicle monitoring stations and intelligent transportation systems. Each is briefly discussed here.

1. Welcome Centers, Rest Areas, and Other Roadside Amenities

If the Ford and Breathitt Parkways are designated as part of I-69, there will be a need to provide additional amenities along the routes to accommodate automobile and truck travel and to assist visitors entering the state.

Welcome Centers and Rest Areas will be needed to serve interstate travelers along the proposed I-69 and I-66 corridors, as well as visitors entering the state.

Consideration should also be given to the proposed extension of the I-66 corridor along the Ford Parkway from its junction with the Breathitt Parkway to the junction with the William H. Natcher (Green River) Parkway.

Currently, KYTC provides rest areas at approximately 60-mile intervals along interstate highways and should provide service in both directions. Therefore, welcome centers and rest areas along the proposed I-69 corridor are recommended. Where appropriate, these should be located so as to serve interstate travel along both I-66 and I-69. The following locations are recommended for consideration as welcome centers and/or rest areas:

- South of Henderson (Southbound Welcome Center and Northbound Rest Area)
- Between Princeton and Dawson Springs (Dual Rest Areas)

Currently, a Travel Information Center is located in Henderson along US 41, just south of the Ohio River Bridges. With the implementation of I-69, and assuming that proposed alternatives for I-69 through and around the Henderson/Evansville

metropolitan area will bypass this location, a new official Kentucky Welcome Center and interstate rest area is recommended along I-69 near Henderson to serve southbound traffic. An adjacent northbound rest area is also recommended near the vicinity of this welcome center.

Along the Ford Parkway, an additional pair of rest areas may be needed at a point between I-24 and the Breathitt Parkway interchange. It is recommended that these rest areas be considered at a location between Princeton and Dawson Springs. If a central location for the rest areas is assumed midway between Exit 12 (Princeton) and Exit 24 (Dawson Springs), the rest areas would be located near milepoint (MP) 18. This location would be about 53 miles east of the Paducah Welcome Center near MP 7 on I-24. This location would also be about 58 miles west of the existing service area near MP 76 on the Ford Parkway (future I-66) corridor.

In the planning of future welcome center/rest areas along the I-69 corridor, the KYTC may want to give consideration to the inclusion of state-of-the-art amenities and traveler resources that are being adopted in new interstate travel service facilities around the nation. These amenities include:

- Exhibit areas
- Improved handicap accessibility
- Indoor vending machines with seating
- Updated restrooms
- Special-use family restrooms
- Space for future technological attractions such as an interactive kiosk
- Children's outside play area
- Outdoor space for pets to exercise
- State police field office
- Improved lighting
- 24-hour surveillance cameras

Beyond welcome centers/rest areas, the KYTC may also consider opportunities for public/private partnerships to develop other roadside amenities and commercial service areas.

2. Commercial Vehicle Monitoring Stations

Commercial vehicle monitoring (CVM) stations serve to monitor commercial trucks that are entering and operating within the state relative to legal weights and permitting. CVM stations are located at key points of entry into the state or at other locations where it could be anticipated that there may be a large number of trucks that have not been intercepted through existing monitoring stations. Currently a CVM station is located north of the Ohio River Bridge along US 41. Proposed alternatives for I-69 through and around the Henderson/Evansville metropolitan area will bypass this CVM station. If so,

the construction of a new station is recommended in the Henderson area to capture truck traffic that is inbound to Kentucky. Since increased truck traffic is expected along I-69, a separate truck parking/rest area should also be considered at this location.

No other monitoring stations are anticipated along the study corridors. On the southeastern end of the corridor, inbound commercial vehicles will be captured at CVM stations located near the state line along I-24 near Paducah and along the Julian M. Carroll (Purchase) Parkway near Fulton. An ongoing study being sponsored by the KYTC and the Kentucky Transportation Center at the University of Kentucky is evaluating proposed locations for mid-state CVM stations. This study may yield further recommendations relative to the need for locating CVM stations along the proposed I-69 corridor to capture mid-state truck trips.

3. Intelligent Transportation Systems

Intelligent Transportation Systems, or ITS, refers to any application of advanced technology for the purpose of improving surface transportation. Use of ITS technologies along the I-69 corridor could offer benefits to motorists through incident detection and advance motorist information.

The KYTC's *Intelligent Transportation Systems Strategic Plan (June 2000)* includes a summary of existing ITS programs in Kentucky and initiatives for expanding ITS applications throughout Kentucky. Goals established through the *ITS Strategic Plan* may provide direction for future ITS implementation along I-69 and within the study area:

Message Signs Improve Driver Awareness

- Surveillance technologies can be used to monitor traffic flow, detect incidents and notify emergency response teams.
- Travel information through dynamic message signs, highway advisory radio and the Internet can be used to improve driver awareness and reduce traffic congestion related to construction activities, adverse weather conditions and roadway hazards.

According to the KYTC *ITS Strategic Plan*, no ITS programs have been implemented along the Ford or Breathitt Parkways. Consideration should be given to planning for and/or implementing ITS technologies as part of future activities related to I-69.

IX. RECOMMENDATIONS AND NEXT STEPS

This chapter provides recommendations and next steps for future phases of the I-69 Corridor along the Ford and Breathitt Parkways in Kentucky. The recommendations made in this chapter are the result of the Strategic Corridor Planning Study process for the I-69 Corridor. The identified next steps for future phases of this project include additional analysis items that would provide further direction for design decisions related to the corridor. The final section of this chapter provides a brief discussion of other improvement initiatives in the region, including highway corridor connections to the I-69 route, which might enhance regional highway service and accessibility.

A. Recommendations

It is recommended that Alternative 2, the Minor Upgrades and Spot Safety Improvements Alternative, discussed in **Chapter VIII**, proceed into future phases of project development, as needed, based on the following:

- Major construction of an Interstate 69 route on a new alignment is recommended for dismissal from further consideration because it would not ultimately meet the purpose and need for the project, as discussed in **Chapter VIII**. Further, routing I-69 along the Ford and Breathitt Parkways is perhaps the most context-sensitive solution possible. In particular, using the two existing Parkways as I-69 would minimize any negative impacts resulting from the construction of a new facility on new alignment, thus, providing the ultimate “minimal impact” alternative.
- It is also recommended that Alternates 3 and 4, the other major reconstruction alternates, be dismissed from further consideration in future phases of project development. Given that I-69 would be routed along the existing Parkways, avoiding or minimizing major reconstruction activities along the Parkways would further support context-sensitive design principles. Any major reconstruction would require additional right-of-way and would result in potential negative impacts. Maximizing the use of the existing right-of-way and existing infrastructure will also result in the least potential impact on the environment, the community, and local owners of homes and businesses.
- The Ford Parkway and Breathitt Parkway adequately meet AASHTO guidelines for most of the design elements along each of these routes. There are only a few elements and/or locations where deficiencies may exist. In some cases, these are only minor and could be accepted as design exceptions. However, there are a few deficiencies that should be addressed in the near future, particularly those that deal with public safety. In the long term, the two Parkways could be upgraded over time to better meet design guidelines.
- A review of operational and safety issues support the premise that the two Parkways present no major problems along most of their lengths at present, with only a few locations exhibiting potential safety problems, based on crash history, and only one location with a potential level of service deficiency.
- Many of the deficiencies identified on the existing Parkways could be considered acceptable under the principle of design flexibility. Flexibility is allowed in

AASHTO guidelines if flexible design options are supported by engineering studies. In recent years, flexibility and context-sensitive solutions have actually been encouraged due to growing public concern about the community and environmental impacts of major highway projects.

- Precedents already exist at locations along many interstate highways throughout the United States where expressways currently operate safely and effectively with design conditions that do not meet current AASHTO guidelines for interstate facilities.
- Using the existing Parkways as I-69 addresses another current "context-sensitive" issue, i.e., financial feasibility, since Alternate 2 along the existing Parkways offers the lowest cost solution at a time when all levels of government must consider that taxpayers' funds are being used more effectively. While this may not be a traditional context-sensitive issue, the fiscal context should be considered a major factor in making a decision about this project.
- Economic considerations cannot justify investing over a billion dollars for a new interstate highway or from a half-billion to a billion dollars to upgrade the Parkways without a significant improvement in operational or safety benefits for motorists. This is especially true when minor improvements can be made to the existing Parkways under Alternate 2 to address operational and safety problems for a fraction of the cost of the other alternates.
- If a decision is made to implement I-69 Alternate 2 along the Ford and Breathitt Parkways, a program of improvements to upgrade the Parkways could be developed. This program could be phased-in over time in a fiscally-responsible manner as funds are available and as operational conditions warrant, rather than implementing improvements that do not appear to be needed now or in the immediate future.
- Early public involvement for the I-69 project seems to indicate that the strongest local and regional support is for routing I-69 along the existing Parkways, rather than constructing a new facility elsewhere. There also appears to be strong public support for making this designation at the earliest possible date.

B. Next Steps

Regardless of the ultimate direction of future I-69 corridor initiatives and the recommended level of reconstruction along the Parkways, a short and long range set of improvement strategies is recommended prior to future project development phases to insure the efficient and coordinated implementation of future improvements.

To develop a program of improvement projects, additional information and further study will be needed to draw more specific conclusions about design conditions along the Parkways and to formulate final recommendations for future improvements. Much of the analysis in this report is based on the as-built design plans, which may or may not still be an accurate reflection of actual conditions along the Parkways. Therefore, field reconnaissance efforts to collect additional data will likely be needed to analyze and make critical design decisions and set priorities for improvements along the Parkways.

Following is a preliminary listing of recommended future I-69 data collection efforts and analysis:

- Operational Considerations – Further analysis of operational considerations may include field review of high crash segments to determine if roadway design or environmental conditions are contributing to crash history. Since existing signing inventories are not available, a review of the existing signing installations may be needed to define any specific needs for new or corrective action.
- Mainline Geometry and Typical Section – Field reviews and analysis would provide the necessary information to determine if the roadway cross-section features (especially shoulders, medians and clear zones) remain consistent with the original construction specifications. Further study would be needed to determine the most appropriate treatment (barrier design or widening) for the existing median to address safety and drainage issues. Since this is not a newly constructed facility with detailed topographic maps of all lateral hazards, field reconnaissance may be needed to consider clear zone allowances. Field review would also provide the opportunity to review appropriate guardrail placement and to assess the need for corrections.
- Bridges – Field review and analysis would allow for further consideration of vertical bridge clearances at overpass locations along the Parkways. AASHTO guidelines recommend that the clearance be recorded over the useable shoulder which, in the case of the Ford and Breathitt Parkways, would be the outside shoulders. Additional data collection would be required to obtain the clearance at the edge of the outside shoulder. The condition and application of bridge safety appurtenances (i.e., approach guardrail, type of bridge rail, pier protection, etc.) could also be reviewed for corrections.
- Interchanges and Ramps – Additional study of design speeds would determine contributing factors to safety or operational problems on the interchange ramps. Additional study would provide the opportunity to determine if any of the horizontal ramp designs are contributing to mainline capacity constraints, safety concerns, or operational problems. Interchanges originally designed for toll operations may need additional study to evaluate weaving section lengths. Other ramp considerations for further analysis include existing shoulder widths, super-elevation rates, vertical alignment, taper lengths, and operational analysis.

Ultimately, the specific improvements should be prioritized to address areas where design improvements are currently needed to allow adequate service to the future I-69 corridor, provide acceptable levels of service, and maintain motorist safety. It is necessary to develop these improvement strategies while taking into consideration the existing maintenance and improvement program and the likelihood of future funding limitations on the state and federal transportation programs.

C. I-69 Connectors

Should the two Parkways be designated or developed as I-69, it is recommended that consideration be given to improving other highway corridor connections to the route in order to enhance regional highway service and accessibility.

Currently, the US 60 and US 641 corridor north of Eddyville is designated as a strategic priority corridor and a future connector to I-69. The KYTC is currently undertaking design efforts for the portion of the route between Marion and Fredonia, along a corridor that lies to the east of the existing US 641 route. In addition, the KYTC has initiated planning efforts for the portion of the route that would extend from Fredonia south to Eddyville.

Local officials from Hopkinsville have also expressed a strong interest in designating the portion of the Breathitt Parkway south of the Ford Parkway (not included in the current I-69 study area) as a strategic corridor connection to I-69. South of Hopkinsville, an extension of the Breathitt Parkway to I-24 would provide an additional north-south connection serving the I-69 corridor. The 8-mile extension of the Breathitt Parkway is shown as a proposed roadway on the KYTC's Official Highway Map.

The KYTC may want to pursue efforts to encourage the formal recognition of these segments as part of the National I-69 corridor, as other I-69 connectors have been similarly designated in other parts of the U.S.

References:

1. *A Policy on Geometric Design of Highways and Streets*, 2001, Fourth Edition, American Association of State Highway and Transportation Officials (AASHTO), Washington, D.C.
2. *Roadside Design Guide*, AASHTO, 1996
3. *A Policy on Design Standards – Interstate System,* AASHTO, 2003 (Draft)
4. *Highway Design Manual*, Kentucky Transportation Cabinet
5. *Kentucky Transportation Cabinet Highway Information System, 2002*
6. *Analysis of Traffic Accidents in Kentucky (1995-1999),* Kentucky Transportation Center

Appendix A – Federal Register Notice

• Include justification, reasons, or data for each change you are requesting.

We also welcome comments in support of the final policy.

We will consider all communications received on or before the closing date for comments. We may change the final policy because of the comments received.

Background

The final policy provides all transport airplane programs an acceptable method of compliance with 14 CFR part 25 for intrusion resistance and ballistic protection of flightdeck doors. The Frequently Asked Questions (FAQ) section has also been updated.

Issued in Renton, Washington, on September 12, 2002.

Vi L. Lipski,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 02–24134 Filed 9–20–02; 8:45 am]

BILLING CODE 4910–13–M

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

Planning Study: Lyon, Caldwell, Hopkins, Webster, and Henderson Counties in Kentucky

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice of intent.

SUMMARY: The FHWA is issuing this notice to advise the public of its intent to initiate a planning study for a proposed highway project in the southwestern portion of Kentucky, located between Eddyville and Henderson, Kentucky.

FOR FURTHER INFORMATION CONTACT: Evan J. Wisniewski, Project Development Team Leader, Federal Highway Administration, 330 West Broadway, Frankfort, KY 40601, Telephone: (502) 223–6740, e-mail: *evan.wisniewski@fhwa.dot.gov*; or Ms. Annette Coffey, Director, Division of Planning, Kentucky Transportation Cabinet, 125 Holmes Street, Frankfort, KY 40622, Telephone: (502) 564–7183, e-mail: *Annette.coffey@mail.stat.ku.us.*

SUPPLEMENTARY INFORMATION:

Electronic Access

An electronic copy of this document may be downloaded by using a computer, modem and suitable communications software from the Government Printing Office's Electronic Bulletin Board Service at (202) 512–1661. Internet users may reach the Office of the Federal Register's home page at *http://www.nara.gov/fedreg* and the Government Printing Office's Web page at *http://www.access.gpo.gov.nara.*

Background

The I–69 project is part of a proposed "High Priority Corridor" of national significance (Corridor 18) that extends from the Canadian border at Port Huron, Michigan, to the Mexican border in the Lower Rio Grande Valley of Texas, in accordance with the legislative intent of the Intermodel Surface Transportation Efficiency Act (ISTEA) of 1991 and subsequent federal transportation legislation. Segments of the corridor across Kentucky are in various stages of project development. This study will address alternatives and issues related to the development of an interstate highway between Eddyville and Henderson that will improve travel within the study area and become a segment of the national I–69 corridor.

During this study, comments will be gathered from appropriate federal, state, and local agencies, as well as other interested persons and the general public, in accordance with requirements set forth in the National Environmental Policy Act (NEPA) of 1969 and subsequent federal regulations and guidelines developed by the Executive Office of the President's Council on Environmental Quality and the United States Department of Transportation for the implementation of the NEPA process.

This study will include a scoping process for the early identification of potential alternatives and environmental issues related to the proposed project. At this time, the level of environmental documentation that will ultimately be prepared is not known. However, if an Environmental Impact Statement (EIS) is prepared for the proposed project in the future, the information gained through the scoping process in this planning study may be used as input to the scoping process for the development of that EIS. If an EIS is prepared in the future, written comments on the scope of alternatives and impacts will still be considered at that time, after the filing of the Notice of Intent (NOI).

(Catalog of Federal Domestic Assistance Program Number 20.205, "Highway Planning and Construction." The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.) (23 U.S.C. 315; 49 CFR 1.48)

Issued on: September 16, 2002.

Evan J. Wisniewski,

Project Delivery Team Leader, Kentucky Division, Frankfort, KY 40601.

[FR Doc. 02–24020 Filed 9–20–02; 8:45 am]

BILLING CODE 4910–22–M

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

[Docket No. NHTSA–2002–13333]

Notice of Receipt of Petition for Decision that Nonconforming 1997 BMW 850 Series Passenger Cars Are Eligible for Importation

AGENCY: National Highway Traffic Safety Administration, DOT.

ACTION: Notice of receipt of petition for decision that nonconforming 1997 BMW 850 Series passenger cars are eligible for importation.

SUMMARY: This document announces receipt by the National Highway Traffic Safety Administration (NHTSA) of a petition for a decision that 1997 BMW 850 Series passenger cars that were not originally manufactured to comply with all applicable Federal motor vehicle safety standards are eligible for importation into the United States because (1) they are substantially similar to vehicles that were originally manufactured for importation into and sale in the United States and that were certified by their manufacturer as complying with the safety standards, and (2) they are capable of being readily altered to conform to the standards.

DATES: The closing date for comments on the petition is October 23, 2002.

ADDRESSES: Comments should refer to the docket number and notice number, and be submitted to: Docket Management, Room PL–401, 400 Seventh St., SW., Washington, DC 20590. [Docket hours are from 9 a.m. to 5 p.m.].

FOR FURTHER INFORMATION CONTACT: Luke Loy, Office of Vehicle Safety Compliance, NHTSA (202–366–5308).

SUPPLEMENTARY INFORMATION:

Background

Under 49 U.S.C. 30141(a)(1)(A), a motor vehicle that was not originally manufactured to conform to all applicable Federal motor vehicle safety standards shall be refused admission into the United States unless NHTSA has decided that the motor vehicle is substantially similar to a motor vehicle originally manufactured for importation into and sale in the United States,

Appendix B – Local Meeting Minutes and Materials

1. Local Officials/Stakeholders Meeting, Lyon County, July 16, 2002
2. Local Officials/Stakeholders Meeting, Caldwell County, July 17, 2002
3. Local Officials/Stakeholders Meeting, Hopkins County, July 17, 2002
4. Local Officials/Stakeholders Meeting, Henderson County, July 18, 2002
5. Summary of Local Officials/Stakeholders Meeting, July 16-18, 2002
6. Local Officials/Stakeholders Questionnaire Summary
7. Local Officials/Stakeholders Meeting Exhibits, July 16-18, 2002

MINUTES
Local Officials/Stakeholders Meeting
Lyon County Judicial Conference Room
July 16, 2002 – 2:00 p.m. CST

Strategic Corridor Planning Study for I-69
Lyon, Caldwell, Hopkins, Webster & Henderson Counties
Eddyville to Henderson, Kentucky
Item No. 2-69.10

This meeting with local elected officials in Lyon County, KY, began the process of coordination for the I-69 Strategic Corridor Planning Study (Item No. 9-144.00). As part of the corridor planning study process, the purpose of this meeting was to introduce the project, discuss potential project issues, and solicit input from the local area officials. Those in attendance included:

Attendees

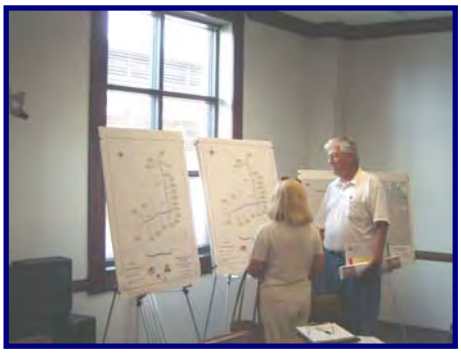
Jim Boyd	Lyon County Judge Exec.
Steve Cruce	Lyon County Magistrate
Charles Ferguson	Lyon County Magistrate
Lee Gold	Lyon County Schools
Kay McCollum	Lyon County KWW
Frank Buchanon	City of Grand Rivers
Randell O'Bryan	City of Grand Rivers
Richard Oldfield	Grand Rivers Chamber of Commerce
Bill Gary	Green Turtle Bay
Lee McCollum	City of Kuttawa
David Young	Kentucky Utilities
Craig Morris	Pennyrile ADD
Chris Sutton	Pennyrile ADD
Tim Choate	KYTC District 1
Wayne Mosley	KYTC District 1
Allen Thomas	KYTC District 1
Jeff Thompson	KYTC District 1
Jim Wilson	KYTC Central Office, Division of Planning
Marc Williams	Wilbur Smith Associates
Samantha Wright	Wilbur Smith Associates

Exhibit Boards shown at Meetings

- I-69 Project Study Area
- Henderson to Evansville segment – 3 alternatives
- Typical Section Renderings for Existing, Minimum Interstate and Maximum Interstate Scenarios
- Sample of Deficiencies Analysis – Vertical bridge clearances
- Base Year ADTs and LOS
- Future Year ADTs and LOS without the I-66 and I-69 corridors
- Future Year ADTs and LOS with the I-66 and I-69 corridors
- High Accident Locations

Handouts Provided to Attendees

- Agenda
- Project Summary Brochure
- Survey Questionnaire



The meeting was conducted as shown in the following agenda. All questions, comments, and concerns expressed by attendees are underlined.

I. Welcome and Introductions

Jim Wilson welcomed all attendees and asked for introductions. Mr. Wilson then introduced the I-69 Strategic Corridor Planning Study with the following comments:

- The Kentucky Transportation Cabinet is beginning a planning study on the portion of I-69 between Eddyville and Henderson. They are seeking input from local interests in an effort to identify goals and

issues for the project.

- In 1991, ISTEA first designated certain corridors of national significance – I-69 (Corridor 18) was one of these corridors. The segment between Indianapolis and Canada is already constructed. Our section of I-69 between Eddyville and Henderson is a Section of Independent Utility (SIU) and is #5 of 32 national SIUs.
- The latest version of the KY state highway map identifies a preliminary vision for the I-69 corridor as well as the I-66 corridor.
- The I-69 Strategic Corridor Planning Study Draft Report is expected in 9-12 months.

Questions and comments during this portion of the meeting included:

- Has the tie-in in Madisonville been finalized by the Cabinet? What about the economic benefits of coming down through Crittenden and Livingston Counties – this area has been forgotten. As a policy decision and partially based on the state budget issues, the Cabinet has decided the I-69 corridor will be based on the existing Parkway system. The national study did not provide an economic comparison of alternatives.
- Who determined the route should follow the Parkways? The Transportation Cabinet determined that we should investigate the use of the parkways initially.
- Where is I-66 in this area? I-66 and I-69 will be common between Madisonville and Eddyville, according to the Official State Highway Map.
- Are there any planning studies to connect Morganfield with I-69? There is a design project for US 641 from Marion south to Fredonia that is just getting started. A planning study between Fredonia and Eddyville for US 641 will be starting in the next 6 months.
- These improvements are still not likely to help Livingston County.
- Connecting the County Seats of Livingston, Crittenden County and Lyon County would be ideal for this corridor.

II. Viewing of I-69 Video

Marc Williams introduced the I-69 video. The video gives the national project perspective and reveals how the Eddyville to Henderson portion fits in. The video indicates that this section is SIU # 5. The KYTC District 1 Office and Craig Morris with the Area Development District each have copies of the video for those interested in showing it to their respective groups.

III. Status Report on Henderson to Evansville Segment of I-69

Mr. Williams gave the following insight on the project status.

- SIU #4 is between Henderson and Evansville and is currently in the Environmental Impact phase. The alternatives have been narrowed to three – as shown on map. Our study starts at the southern end of SIU #4 on the south side of Henderson.
- SIU #6 (Fulton to Eddyville) is not being considered at this time.
- SIU #7 from Fulton to Dyersburg , TN is approximately 30 days away from having an Environmental Impact statement for this section.

IV. Project Summary Brochure

Mr. Williams then began a review of the project summary brochure provided to all attendees. Page 1 of the brochure reiterates the information presented in the I-69 video. Page 2 discusses the Eddyville to Henderson section of the I-69 study and tasks, including a review of the transportation network, public interest and input, environmental considerations, and development and analysis of alternatives for upgrading the Parkways. The remainder of the brochure covers these items more specifically. On the back cover is a map of the project area and some contact information for those interested in more details or materials on this study.

The brochure and questionnaire used at this meeting can be found online at the Kentucky Transportation Cabinet Division of Planning's Web Page, http://www.kytc.state.ky.us/planning/index.shtm.

V. Sample Typical Sections

Next, Mr. Williams discussed the issues involved with upgrading the Parkways to interstate standards. Simple illustrations were used to show what would be involved in upgrading the existing section. The Parkways do not meet the current Interstate design standards and the main focus of this study is to analyze the existing geometric characteristics.

VI. Design Deficiencies along Existing Parkways

Mr. Williams discussed the analysis of design deficiencies along the Parkways. Specifically, the following items were mentioned:

- The existing medians are too narrow. Guardrail can be added or the median widened – there are benefits/costs for each.
- Vertical bridge clearances must be addressed before changing the designation to Interstate.
- Interchange considerations include taper lengths.
- At the minimum, we expect an upgrade to cost more than $300 million. A new road on new alignment may reach the billion dollar range.

Questions and comments during this portion of the meeting included:

- Where will the funding come from? Probably about 80% of this would be Federal funds, with some input of State funds. Special federal funding would have to be provided for this project.
- Will it be here in our lifetimes? We don't want to mislead anyone about when such a project could start. It is definitely going to be a long term proposition – probably at least 20 years before I-69 crosses Kentucky.
- How long before the Planning study is finished? About 9-12 months before the study for the Eddyville to Henderson segment is finished. It could be nearly a decade before you see design or construction starting.
- How detailed do you see the phasing of projects or priorities? It seems the urban areas and interchanges would be more important to start with first. At the end of the deficiencies analysis, the scope of the project may change. However, it is expected that the results of this study would include recommendations for priority sections. This project will likely proceed in piece-meal fashion due to the high dollar amount.
- At what point in this process do you change the signs? By the book, it would be when the last correction is made. However, the Cabinet may consider putting up "Future Interstate 69 Corridor" signs. At some point, the FHWA and KYTC will have to decide when it will be appropriate to sign the corridor as I-69.

VII. Project Survey Questionnaire

Mr. Williams reviewed the questionnaire items next and the following comments were made:

- KYTC and Kentucky FHWA representatives are serving on the National I-69 Committee and they have a meeting next week in Memphis, TN. They would like to take your questionnaire comments from today to their meetings next week.
- Attendees were asked to please take the time to fill out a questionnaire before their departure.
- It was requested that attendees take a minute to fill out the existing problems section of the survey questionnaire. Mr. Williams stressed the importance of the local perspective in the deficiencies analysis, because the users know the problems better than anyone. Attendees were asked to consider the following questions: Are there issues within close proximity to the existing Parkways that might be an issue – ponds, water quality concerns, residential areas, or other sensitive locations? Are there locations where additional access would be beneficial? Are there interchanges that could be relocated for better use or accessibility?

VIII. Public Involvement Meetings

Mr. Williams indicated that the Kentucky Transportation Cabinet would likely plan for public meetings in September. These public meetings may coincide with the locations chosen for the local officials meetings. The meetings would probably be a day-long or half-day open house with exhibits and walk-through tours. Sometimes a more formal presentation is in order. Attendees were asked where the best meeting locations might be. The following responses were offered:

- Individual meetings in the individual county seats would get the most turnout.
- In Eddyville, the public library or the Courthouse have public meeting facilities.
- A meeting from 2-7 p.m. on a weekday would cover a lot of the bases.

IX. Conclusion and Next Steps

Other issues discussed during this portion of the meeting include (Question or comment by attendee, Response from staff):

- Will the state be responsible for the maintenance costs of I-69? Yes.

- Can the typical section be varied along the route or will it be the same throughout the state? Design consistency is always a goal. But, there may be some variations where it's not practical to do this. You probably don't want short sections where the shoulders, clear zones, etc. are pinched. Longer sections with consistent variation may be OK.

- What kind of traffic are you expecting with I-66 and I-69 both – how will it effect I-24? It will add traffic to I-24, but we won't be studying that specifically as part of this study. It will be a consideration though.

MINUTES
Local Officials/Stakeholders Meeting
Caldwell County Fiscal Court Meeting Room
July 17, 2002 – 10:00 a.m. CST

Strategic Corridor Planning Study for I-69
Lyon, Caldwell, Hopkins, Webster & Henderson Counties
Eddyville to Henderson, Kentucky
Item No. 2-69.10

This meeting with local elected officials in Caldwell County, KY, began the process of coordination for the I-69 Strategic Corridor Planning Study. As part of the corridor planning study process, the purpose of this meeting was to introduce the project, discuss potential project issues, and solicit input from the local area officials. Those in attendance included:

Attendees

Daniel Beavers	Mayor of Princeton
Charles Slaton	Princeton Planning & Zoning
Mike Dearing	Princeton Board of Adjustments
Paul Hooks	Princeton Board of Adjustments
Vickie Hughes	Chamber of Commerce President
John Humphries	Princeton EPB
Diane Knox	City of Princeton
Chief L. Robertson	Chief of Police
Bill Giannini	Princeton Planning & Zoning
Doug Millikan	Princeton Planning & Zoning
Bill Perry	Princeton Planning & Zoning
Van Knight	Caldwell County Judge Executive
Dickie Thomas	Princeton Planning & Zoning
Craig Morris	Pennyrile ADD
Mary Murray	Federal Highway Administration
Kevin McClearn	KYTC District 2
Nick Hall	KYTC District 2
Stephen Grace	KYTC District 2
Doug Taylor	KYTC District 2
Jim Wilson	KYTC Central Office, Planning
Marc Williams	WSA
Samantha Wright	WSA

Exhibit Boards shown at Meetings

- I-69 Project Study Area
- Henderson to Evansville segment – 3 alternatives
- Typical Section Renderings for Existing, Minimum Interstate and Maximum Interstate Scenarios
- Sample of Deficiencies Analysis – Vertical bridge clearances
- Base Year ADTs and LOS
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- High Accident Locations

Handouts Provided to Attendees

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- Survey Questionnaire

The meeting was conducted as shown in the following agenda. All questions, comments, and concerns expressed by attendees are

underlined.

I. Welcome and Introductions

Jim Wilson welcomed all attendees and asked for introductions. Mr. Wilson then introduced the I-69 Strategic Corridor Planning Study with the following comments:

- The Kentucky Transportation Cabinet is beginning a planning study on the portion of I-69 between Eddyville and Henderson. They are seeking input from local interests in an effort to identify goals and issues for the project.
- In 1991, ISTEA first designated certain corridors of national significance – I-69 (Corridor 18) was one of these corridors. The segment between Indianapolis and Canada is already constructed. Our section of I-69 between Eddyville and Henderson is a Section of Independent Utility (SIU) and is #5 of 32 national SIUs.
- The latest version of the KY state highway map identifies a preliminary vision for the I-69 corridor as well as the I-66 corridor.

II. Viewing of I-69 Video

Marc Williams introduced the I-69 video. The video gives the national project perspective and reveals how the Eddyville to Henderson portion fits in. It indicates that the Eddyville to Henderson section is SIU #5. The KYTC District 2 Office and Craig Morris at the Area Development District each have copies of the video for those interested in showing it to their respective groups.

The Arkansas DOT is the lead agency for the national study. Mary Murray was present, representing the federal perspective on the project – FHWA. Ms. Murray explained that the presence of FHWA at this meeting was to hear the local perspective in Eddyville, Princeton, Madisonville, and Henderson.

III. Status Report on Henderson to Evansville Segment of I-69

Mr. Williams gave the following insight on the project status.

- SIU #4 is between Henderson and Evansville and is currently in the Environmental Impact phase. The alternatives have been narrowed to three – as shown on the map. Our study starts at the southern end of SIU #4 on the south side of Henderson.
- SIU #6 (Fulton to Eddyville) is not being considered at this time.
- SIU #7 from Fulton to Dyersburg, TN is approximately 30 days away from having an Environmental Impact statement completed for this section.

IV. Project Summary Brochure

Mr. Williams then began a review of the project summary brochure provided to all attendees. Page 1 of the brochure reiterates the information presented in the I-69 video. Page 2 discusses the Eddyville to Henderson section of the I-69 study and tasks, including a review of the transportation network, public interest and input, environmental considerations, and development and analysis of alternatives for upgrading the Parkways. The remainder of the brochure explains these items more specifically. On the back cover is a map of the project area and some contact information for those interested in more details or materials on this study.

The brochure and questionnaire used at this meeting can be found online at the Kentucky Transportation Cabinet Division of Planning's Web Page, http://www.kytc.state.ky.us/planning/index/shtm.

Mr. Williams informed attendees that a policy decision has been made by the Kentucky Transportation Cabinet to study the Parkways and potential upgrades as part of this study. This study will not consider alternative corridors outside of the Parkways.

V. Sample Typical Sections

Next, Mr. Williams summarized the issues involved with bringing the Parkways up to interstate standards. The Parkways have a lot of features similar to interstate facilities now, including grade separation, limited access, median sections, etc. However, to be designated as I-69, there are additional standards to be met. For example, the existing medians are too narrow. Guardrail could be added or the median widened – there are benefits/costs for each.

VI. Design Deficiencies along Existing Parkways

Mr. Williams discussed the design deficiencies along the Parkways conducted as part of this study. The following items were mentioned.

- An analysis of all deficiencies along the Parkways in terms of interstate standards is currently being conducted.
- There are vertical bridge clearances that must be addressed before changing the Parkways' designations to Interstate.
- Lateral bridge clearances are also important – bridge widths must be the same width as the lanes and shoulders.
- Interchange considerations include taper and ramp lengths.
- Part of what the KYTC needs help deciding is the degree of improvement desired. One option is to try and meet the minimum interstate standards within the existing right-of-way, where possible. The other option is to expand the right-of-way to accommodate a maximum interstate section. This option would meet the standards being set in adjacent states like Tennessee and Indiana.
- At the minimum, we expect a low-end upgrade to cost more than $300-350 million (3.5 million per mile) or $600 million (7 million per mile) at the high-end. A new road on new alignment may reach in the billion-dollar range.

Questions asked as part of this discussion included:

- Where will the funding for construction and maintenance come from? Probably about 80% of the construction would be Federal funds, with some input of State funds. The maintenance funding is typically based on lane-miles of interstate within each state – all maintenance fees would not be covered with federal funds. Special federal funding would have to be provided for the project.
- Will FHWA mandate that Kentucky spend the 20% on the road? Tennessee has stopped construction right now due to funding issues. The Tennessee shut-down was budgetary due to general revenue issues. It is not clear at this time whether Kentucky will have the 20% necessary for completion of this project.
- Are you looking at other alternatives? Not at this time – just the study of the Parkways.
- Is there a 4-lane extension to Marion as part of this project? Not as part of this study.

VII. Project Survey Questionnaire

Mr. Williams reviewed the questionnaire items next. Then the following comments were made.

- KYTC and Kentucky FHWA representatives are serving on the National I-69 Committee and they have a meeting next week in Memphis, TN. They would like to take your questionnaire comments from today to their meetings next week.
- Attendees were asked to please take the time to fill out a questionnaire before their departure.
- It was requested that attendees take a minute to fill out the existing problems section of the survey questionnaire. Mr. Williams stressed the importance of the local perspective in the deficiencies analysis, because the users know the problems better than anyone. Attendees were asked to consider the following questions: Are there issues within close proximity to the existing Parkways that might be an issue – ponds, water quality concerns, residential areas, or other sensitive locations? Are there locations where additional access would be beneficial? Are there interchanges that could be relocated for better use or accessibility?

VIII. Public Involvement Meetings

Mr. Williams indicated that the Kentucky Transportation Cabinet would likely plan for public meetings in September. These public meetings may coincide with the locations chosen for the local officials meetings. The meetings would probably be a day-long or half-day open house with exhibits and walk-through tours.

Sometimes a more formal presentation is in order. Attendees were asked where the best meeting locations might be. The following responses were offered:

- There is a large courtroom upstairs that will hold 250 people, it's handicap accessible and would be available for use.
- There's also a room at the Senior Citizen's Center, but the sound system would probably not be as good there.

IX. Conclusion and Next Steps

Other issues discussed during this portion of the meeting include (Question or comment by attendee, Response from staff):

- What's your best estimate for truck traffic for I-69? Probably 15-20% to start and more like 20-30% in the future.
- What is the time frame for finishing the Kentucky section of I-69? Probably in the 20-30 year time frame before the entire system is constructed or upgraded to I-69. There may be design exceptions by FHWA that may speed up this process, but that has yet to be decided. There may be an opportunity to sign the routes as future I-69 Corridors, but there is no timeframe for this yet either.
- Is it known for certain that the river will be crossed between Evansville and Henderson? There is a federal designation for a river crossing in this area, although local ideas may have some impact on the location. We are also bound to the national goals for this study and interpreting these into the local perspective.

MINUTES
Local Officials/Stakeholders Meeting
Madisonville Chamber of Commerce
July 17, 2002 – 3:00 p.m. CST

Strategic Corridor Planning Study for I-69
Lyon, Caldwell, Hopkins, Webster & Henderson Counties
Eddyville to Henderson, Kentucky
Item No. 2-69.10

This meeting with local elected officials in Hopkins County, KY, began the process of coordination for the I-69 Strategic Corridor Planning Study. As part of the corridor planning study process, the purpose of this meeting was to introduce the project, discuss potential project issues, and solicit input from the local area officials. Those in attendance included:

Attendees

Jimmie Daniel	City of Hanson City Council
Lee Owen	Hopkins County I-69 Committee
Brent Yonts	Representative, House 15
Steven Whitsell	4 Star Industrial Park
Patricia Hawkins	Hopkins County Fiscal Court
David Willis	Hopkins County Joint Planning Commission
Danny Koon	Madisonville/Hopkins County Economic Development Corporation
John Peters	Madisonville Community College
Kim Ezell	Hopkins County Joint Planning Commission
Patrick Walters	Hopkins County Joint Planning Commission, Chairman
Karen Cunningham	City of Madisonville
Lisa Miller	Madisonville/Hopkins County Chamber of Commerce
Paula Dennison	Hopkins County Joint Planning Commission
Dick Adams	State Senator
Dick Frymire	Hopkins County Judge/Executive
Craig Morris	Pennyrile ADD
Mary Murray	Federal Highway Administration
Ted Merryman	KYTC District 2
Melvin Hicklin	KYTC District 2
Kevin McClearn	KYTC District 2
Nick Hall	KYTC District 2
Jim Wilson	KYTC Central Office, Division of Planning
Marc Williams	WSA
Samantha Wright	WSA

Exhibit Boards shown at Meetings

- I-69 Project Study Area
- Henderson to Evansville segment – 3 alternatives
- Typical Section Renderings for Existing, Minimum Interstate and Maximum Interstate Scenarios
- Sample of Deficiencies Analysis – Vertical bridge clearances
- Base Year ADTs and LOS
- Future Year ADTs and LOS without the I-66 and I-69 corridors
- Future Year ADTs and LOS with the I-66 and I-69 corridors
- High Accident Locations

Handouts Provided to Attendees

- Agenda
- Project Summary Brochure
- Survey Questionnaire

The meeting was conducted as shown in the following agenda. All questions, comments, and concerns expressed by attendees are underlined.

I. Welcome and Introductions

Jim Wilson welcomed all attendees and asked for introductions. Mr. Wilson then introduced the I-69 Strategic Corridor Planning Study with the following comments:

- The Kentucky Transportation Cabinet is beginning a planning study on the portion of I-69 between Eddyville and Henderson. They are seeking input from local interests in an effort to identify goals and issues for the project.
- In 1991, ISTEA first designated certain corridors of national significance – I-69 (Corridor 18) was one of these corridors. The section between Indianapolis and Canada is already constructed. Our section of I-69 between Eddyville and Henderson is a Section of Independent Utility (SIU) and is #5 of 32 national SIUs.
- The latest version of the KY state highway map identifies a preliminary vision for the I-69 corridor as well as the I-66 corridor.

II. Viewing of I-69 Video

Marc Williams introduced the I-69 video. The video gives the national project perspective and reveals how the Eddyville to Henderson portion fits in. The KYTC District 2 Office and Craig Morris at the Area Development District each have a copy of the video for those interested in showing it to their respective groups. Mr. Williams then used the State Highway Map to demonstrate the Corridor location through Kentucky, as shown in the video. The I-66 and I-69 corridors are both shown on the map.

III. Status Report on Henderson to Evansville Segment of I-69

Mr. Williams gave the following insight on the project status.

- SIU #4 is between Henderson and Evansville and is currently in the Environmental Impact phase. The alternatives have been narrowed to three, as shown on the map. Our study starts at the southern end of SIU #4 on the south side of Henderson.
- SIU #6 (Fulton to Eddyville) is not being considered at this time.
- SIU #7 from Fulton to Dyersburg, TN is approximately 30 days away from having an Environmental Impact statement complete for this section.

IV. Project Summary Brochure

Mr. Williams then began a review of the project summary brochure provided to all attendees. Page 1 of the brochure reiterates the information presented in the I-69 video. Page 2 discusses the Eddyville to Henderson section of the I-69 study and tasks, including a review of the transportation network, public interest and input, environmental considerations, and development and analysis of alternatives for upgrading the Parkways. The remainder of the brochure goes through these items more specifically. On the back cover is a map of the project area and some contact information for those interested in more details or materials on this study.

The brochure and questionnaire used at this meeting can be found online at the Kentucky Transportation Cabinet Division of Planning's Web Page, http://www.kytc.state.ky.us/planning/index.shtm.

Mr. Williams informed attendees that the Kentucky Transportation Cabinet is talking to the news media as part of these meetings and is sharing this information and website locations for transmittal to the general public.

V. Sample Typical Sections

Next Mr. Williams summarized the issues involved with bringing the Parkways up to interstate standards. The Parkways have a lot of features similar to interstate facilities now, including grade separation, limited access, median sections, etc. However, to be designated as I-69, there are additional standards to be met. For example, side slopes and clear zones do not meet the current interstate standards.

VI. Design Deficiencies along Existing Parkways

Mr. Williams discussed the design deficiencies along the Parkways examined as part of this project:

- One option for upgrading the Parkway facilities is to try and meet the minimum interstate standards within the existing right-of-way, where possible. Some issues that would have to be resolved include overpass height, rock cuts, clear zones, lateral clearances for bridges, and others. Maintenance in the median is an issue that may be included in life-cycle costs for the minimum alternative.
- The other option is to expand the right-of-way to accommodate a maximum interstate section. This option would meet the standards being set in adjacent states like Tennessee (88' median) and Indiana (18' bridge heights). Future expansion of the route to 6-lanes would be facilitated by the maximum section option.
- It is important to remember that this project is not going to be completed overnight – planning for the national project has been going on for about 10 years now. At the minimum, we expect a low-end upgrade to cost more than $300-350 million (3.5 million per mile) or $600 million (7 million per mile) at the high-end. A new road on new alignment may reach in the billion-dollar range. Federal and state funding reserves are not currently available to cover such a project.
- The current study will be completed in the next 9-12 months, including the analysis of existing deficiencies along the Parkways.

VII. Project Survey Questionnaire

Mr. Williams reviewed the questionnaire items next, including the following comments:

- KYTC and Kentucky FHWA representatives are serving on the National I-69 Committee and they have a meeting next week in Memphis, TN. They would like to take your questionnaire comments from today to their meetings next week.
- Attendees were asked to please take the time to fill out a questionnaire before their departure.
- It was requested that attendees take a minute to fill out the existing problems section of the survey questionnaire. Mr. Williams stressed the importance of the local perspective in the deficiencies analysis, because the users know the problems better than anyone. Attendees were asked to consider the following questions: Are there issues within close proximity to the existing Parkways that might be an issue – ponds, water quality concerns, residential areas, or other sensitive locations? Are there locations where additional access would be beneficial? Are there interchanges that could be relocated for better use or accessibility?

VIII. Public Involvement Meetings

Mr. Williams indicated that the Kentucky Transportation Cabinet would likely plan for public meetings in September. These public meetings may coincide with the locations chosen for the local officials meetings. The meetings would probably be a day-long or half-day open house with exhibits and walk-through tours. Sometimes a more formal presentation is in order. Attendees were asked where the best meeting locations might be. The following responses were offered:

- There is likely to be a lot of local participation for this project – the Chamber of Commerce meeting room is probably too small for this.

IX. Conclusion and Next Steps

Other issues discussed during this portion of the meeting include (Question or comment by attendee, Response from staff):

- You might want to include the minimum/maximum interstate standard option on the survey questionnaire.
- What will happen at interchanges where expansion will impact adjacent land uses? These areas will be studied for impact and may be relocated based on identified issues and costs.
- What percent of funding is Federal, what percentage is State? The I-69 project will likely be about 80% funded by Federal funds.
- As far as meeting locations, it may be possible to set up in the mall to get foot traffic during the day.

MINUTES
Local Officials/Stakeholders Meeting
Henderson County Courthouse, Fiscal Court Meeting Room
July 18, 2002 – 10:00 a.m. CST

Strategic Corridor Planning Study for I-69
Lyon, Caldwell, Hopkins, Webster & Henderson Counties
Eddyville to Henderson, Kentucky
Item No. 2-69.10

This meeting with local elected officials in Henderson County, KY, began the process of coordination for the I-69 Strategic Corridor Planning Study. As part of the corridor planning study process, the purpose of this meeting was to introduce the project, discuss potential project issues, and solicit input from the local area officials. Those in attendance included:

Attendees

Ed Whitfield	Congressman
Paul Herron, Jr.	State Senator Dist. 4
Greg Mullican	Henderson Chamber of Commerce
David Scott	4 Star Industrial Park
Peggy Wood	Henderson Co. Planning Commission
Sandy Watkins	Henderson Co. Judge Executive
Jim Jones	Henderson Co.
William Hubiak	Henderson County Engineer
Bill Stephens	WSON Radio
Jon Sights	4 Star Industrial Park
Gina Boaz	GRADD
Mary Murray	Federal Highway Administration
Doug Tyler	KYTC, District 2
Charles Schaub	KYTC Central Office, Multimodal
Jim Wilson	KYTC Central Office, Planning
Marc Williams	WSA
Samantha Wright	WSA

Exhibit Boards shown at Meetings

- I-69 Project Study Area
- Henderson to Evansville segment – 3 alternatives
- Typical Section Renderings for Existing, Minimum Interstate and Maximum Interstate Scenarios
- Sample of Deficiencies Analysis – Vertical bridge clearances
- Base Year ADTs and LOS
- Future Year ADTs and LOS without the I-66 and I-69 corridors
- Future Year ADTs and LOS with the I-66 and I-69 corridors
- High Accident Locations

Handouts Provided to Attendees

- Agenda
- Project Summary Brochure
- Survey Questionnaire

The meeting was conducted as shown in the following agenda. All questions, comments, and concerns expressed by attendees are underlined.

I. Welcome and Introductions

Jim Wilson welcomed all attendees and asked for introductions. Mr. Wilson then introduced the I-69 Strategic Corridor Planning Study with the following comments:

- The Kentucky Transportation Cabinet is beginning a planning study on the portion of I-69 between Eddyville and Henderson. They are seeking input from local interests in an effort to identify goals and issues for the project.
- In 1991, ISTEA first designated certain corridors of national significance – I-69 (Corridor 18) was one of these corridors. The section between Indianapolis and Canada is already constructed. Our section of I-69 between Eddyville and Henderson is a Section of Independent Utility (SIU) and is #5 of 32 national SIUs.
- The latest version of the KY state highway map identifies a preliminary vision for the I-69 corridor as well as the I-66 corridor.

II. Viewing of I-69 Video

Marc Williams introduced the I-69 video. The video gives the national project perspective and reveals how the Eddyville to Henderson portion fits in. The KYTC and Gina Boaz at the Area Development District each have copies of the video for those interested in showing it to their respective groups.

Mr. Williams discussed how the current focus of the I-69 Study is to review the existing Parkway system to determine what upgrades would be necessary to designate these routes as interstate corridors.

III. Status Report on Henderson to Evansville Segment of I-69

Mr. Williams gave the following insight on the project status.

- SIU #4 is between Henderson and Evansville and is currently in the Environmental Impact phase. The alternatives have been narrowed to three – as shown on the map. Our study starts at the southern end of SIU #4 on the south side of Henderson.
- SIU #6 (Fulton to Eddyville) is not being considered at this time.
- SIU #7 from Fulton to Dyersburg, TN is approximately 30 days away from having an Environmental Impact statement completed for this section.

IV. Project Summary Brochure

Mr. Williams then began a review of the project summary brochure provided to all attendees. Page 1 of the brochure reiterates the information presented in the I-69 video. Page 2 discusses the Eddyville to Henderson section of the I-69 study and tasks, including a review of the transportation network, public interest and input, environmental considerations, and development and analysis of alternatives for upgrading the Parkways. The remainder of the brochure discusses these items more specifically. On the back cover is a map of the project area and some contact information for those interested in more details or materials on this study.

The brochure and questionnaire used at this meeting can be found online at the Kentucky Transportation Cabinet Division of Planning's Web Page, http://www.kytc.state.ky.us/planning/index.shtm.

Mr. Williams informed attendees that a policy decision has been made by the Kentucky Transportation Cabinet to study the Parkways and potential upgrades as part of this study. This study will not consider alternative corridors outside of the Parkways.

V. Sample Typical Sections

Next, Mr. Williams summarized the issues involved with bringing the Parkways up to interstate standards.

- The Parkways have a lot of features similar to interstate facilities now, including grade separation, limited access, median sections, etc. However, to be designated as I-69, there are additional standards to be met.
- Some issues that would have to be resolved include overpass heights, ramp lengths and angles, bridge widths, and others.
- The project would probably be 4-lanes to begin, but future traffic volumes in sections will likely require 6 lanes.
- Upgrades to the Parkways that would permit further widening in the future should also be considered as part of this project.

VI. Design Deficiencies along Existing Parkways

Mr. Williams discussed the design deficiencies along the Parkways next. Using the sample exhibit, it was explained how the KYTC is looking at all the geometric elements along the existing Parkways. This exhibit showed the vertical clearance deficiencies along a section of the WK Parkway in Caldwell County. These can be compared to the current 16-foot KY standard for bridge heights along an Interstate. Mr. Williams made the following comments:

- One option for upgrading the Parkway facilities is to strive to meet the minimum interstate standards within the existing right-of-way, where possible.
- Another option is to expand the right-of-way to accommodate a maximum interstate section. This option would meet the standards being set in adjacent states like Tennessee (88' median) and Indiana (18' bridge heights). Future expansion of the route to 6-lanes would be facilitated by the maximum section option.
- At the minimum, the Kentucky Transportation Cabinet expects a low-end upgrade to cost more than $300-350 million (3.5 million per mile) or $600 million (7 million per mile) at the high-end.

What would the cost be to build a brand new road? A new road on new alignment may reach in the billion dollar range ($10-12 million per mile).

VII. Project Survey Questionnaire

Mr. Williams reviewed the questionnaire items next and the following comments were made:

- KYTC and Kentucky FHWA representatives are serving on the National I-69 Committee and they have a meeting next week in Memphis, TN. They would like to take your questionnaire comments from today to their meetings next week.
- Attendees were asked to please take the time to fill out a questionnaire before their departure.
- It was requested that attendees take a minute to fill out the existing problems section of the survey questionnaire. Mr. Williams stressed the importance of the local perspective in the deficiencies analysis, because the users know the problems better than anyone. Attendees were asked to consider the following questions: Are there issues within close proximity to the existing Parkways that might be an issue – ponds, water quality concerns, residential areas, or other sensitive locations? Are there locations where additional access would be beneficial? Are there interchanges that could be relocated for better use or accessibility?

VIII. Public Involvement Meetings

Mr. Williams indicated that the Kentucky Transportation Cabinet would likely plan for public meetings in September. These public meetings may coincide with the locations chosen for the local officials meetings. The meetings would probably be a day-long or half-day open house with exhibits and walk-through tours. Sometimes a more formal presentation is in order. Attendees were asked where the best meeting locations might be. The following responses were offered:

- KYTC District 2: Henderson just had a meeting about the Henderson to Evansville segment. We may consider bringing some of these materials to our meetings and providing someone to discuss that project if interested people show up.
- KYTC District 2: We should share the deficiencies at the public meeting and get input on which improvement elements they are in favor of. We should also use the local media.
- Locals are not going to be opposed to building on the existing Parkway system.
- Henderson High School and the South Junior High have both been used for meetings. The High School would be better for an open format meeting. The Junior High has a speaker system.
- The Henderson Community College also has a facility.
- The open format is probably better for this community – they like one-on-one.
- 4-7 or 8 is probably the best so people can come by after work. We'll plan to keep the displays at the District office.
- Can we run a questionnaire in the newspaper? We have done inserts in the past with pretty good response. The Messenger does do this once in a while.
- Placemats in rest stops may be another idea. Outreach to truckers will likely be a large part of this public involvement effort. The truck stop on US 41 may be a good place to hand out information.

IX. Conclusion and Next Steps

Other issues discussed during this portion of the meeting include (Question or comment by attendee, Response from staff):

- Is the 2030 traffic doubling? Yes, the traffic is expected to double. This will include about 20-30% trucks in the future with the I-66 and I-69 corridors coming through this area.
- This project is about dollars. Are we talking about a 4-lane or 6-lane road? We don't want to give false expectations. It could be a long time before this comes to fruition. It is expected the roadway would primarily be 4-lanes, maybe some 6-lanes near Madisonville.
- From the national perspective, what are the priorities – southern, northern, middle sections? The national study has not developed national priorities. They have left this to the states to move forward sections within their states. All SIUs have been determined to be able to stand on their own. KY is unique because of the Parkways we already have that provide 4-lane, limited access travel.
- One reason Indiana has moved ahead so quickly is because they've been studying this since 1984. The original plan was to follow the river in the very western part of KY, but this turned out to be too costly to pursue.
- Is there any possibility of using more than one design on the corridor – some minimum and some maximum? There may be some opportunities for this, but we'll try to keep the variability down to a minimum. There may also be opportunities to apply for design exceptions in certain areas as well.
- New interchanges would be beneficial at the 4 Star Park and Tyson's complex.
- Is the Fort Campbell connection going to be discussed during this project? This is separate from our study, but we want to record these sentiments to report as part of our project. Finishing up design on a connection from the end of the Pennyrile Parkway to I-24 – this should serve the Fort the same as I-69 would.
- Has there been, to this point, any opposition to using the Parkways? Nothing out and out against it – just one of the surveys received in the last 2 days indicated that the project would not be beneficial.
- What is the timeframe for this? Once the planning document is established, it is possible that the KYTC may begin constructing small segments within a 5 year timeframe. For the complete section in KY to be completed could take 20-30 years. A lot of this depends on funding availability in the coming years.

Summary of Local Officials/Stakeholders Meeting, July 16-18, 2002

Strategic Corridor Planning Study for I-69
Lyon, Caldwell, Hopkins, Webster & Henderson Counties
Eddyville to Henderson, Kentucky
Item No. 2-69.10

Project Status

The Kentucky Transportation Cabinet is sponsoring a Strategic Corridor Planning Study to examine the proposed portion of Interstate 69 between Eddyville and Henderson, Kentucky, otherwise known as Segment of Independent Utility (SIU) #5. This planning study is reviewing the Edward T. Breathitt/Pennyrile (EB) and Wendell H. Ford/Western Kentucky (WF) Parkways to determine what improvements would be necessary to upgrade these roads to serve as Interstate 69. A deficiencies analysis of existing Parkway characteristics in relation to minimum interstate standards is about 90% complete and a draft report is expected soon. Items considered as part of this analysis include horizontal and vertical curvature; lane, shoulder and median widths; acceleration and deceleration lane lengths and tapers; lateral and vertical bridge clearances; clear zones and other elements. The first set of local officials/stakeholders meetings was held July 16-18 at four locations along the proposed corridor: Eddyville, Princeton, Madisonville and Henderson, Kentucky. The following sections summarize the comments and questions received at these four local officials meetings, as well as preliminary results from the survey questionnaires completed by the attendees.

Comments and Questions – Local Officials/Stakeholders Meetings

Comments by Attendees:

- There is likely to be a lot of local participation for this project.
- Locals are not going to be opposed to building on the existing Parkway system.
- These improvements are still not likely to help Livingston County.
- Connecting the County Seats of Livingston, Crittenden County and Lyon County would be ideal for this corridor.
- New interchanges would be beneficial at the 4 Star Park and Tysons complex.
- You might want to include a minimum/maximum interstate standard option on the survey questionnaire for the public meeting.
- As far as public meeting locations, it may be possible to set up in the mall to get foot traffic during the day.
- Individual public meetings in the individual county seats to get the most turnout.
- Henderson just had a meeting about the Henderson to Evansville segment. We may consider bringing some of these materials to our meetings and providing someone to discuss if interested people show up.

Questions (underlined) and answers:

- <u>From the national perspective, what are the priorities – southern, northern, middle sections?</u> The national study has not developed national priorities. They have left this to the states to move forward sections within their states. All SIUs have been determined to be able to stand on their own. KY is unique because of the Parkways we already have that provide 4-lane, limited access travel.
- <u>Who determined the route should follow the Parkways?</u> The Transportation Cabinet determined that we should investigate the use of the Parkways initially.
- <u>Has there been, to this point, any opposition to using the Parkways?</u> Nothing out and out against it – just one of the surveys received in the last 2 days indicated that the project would not be beneficial.
- <u>Are you looking at other alternatives?</u> Not at this time – just the study of the Parkways.
- <u>Has the tie-in in Madisonville been finalized by the Cabinet? What about the economic benefits of coming down through Crittenden and Livingston Counties – this area has been forgotten.</u> The Transportation Cabinet determined that we should investigate the use of the Parkways initially. The national study did not provide an economic comparison of alternatives.

- What is the time frame for finishing the Kentucky section of I-69? Probably in the 20-30 year time frame before the entire system is constructed or upgraded to I-69. There may be design exceptions by FHWA that may speed up this process, but that has yet to be decided. There may be an opportunity to sign the routes as future I-69 Corridors, but there is no timeframe for this yet either.
- Where will the funding for construction and maintenance come from? Special funding would have to be made available for this project. Probably about 80% of the construction would be Federal funds, with some input of State funds. The maintenance funding is typically based on lane-miles of interstate within each state – all maintenance fees would not be covered with federal funds.
- How long before the Planning study is finished? About 9-12 months before the study for the Eddyville to Henderson section is finished. It could be nearly a decade before you see design or construction starting.
- Will this project be completed in our lifetimes? We don't want to mislead anyone about when such a project could start. It is definitely going to be a long term proposition – probably at least 20 years before I-69 crosses Kentucky. There has only been a small amount of funding designated for Kentucky so far.
- What is the timeframe for this? Once the planning document is established, it is possible that the KYTC may begin constructing small segments within a 5 year timeframe. For the complete section in KY to be completed could take 20-30 years. A lot of this depends on funding availability in the coming years.
- What would the cost be to build a brand new road? A new road on new alignment may reach in the billion dollar range ($10-12 million per mile). For minimum interstate standards, costs are expected to average about $3.5 million per mile and about $7.0 million per mile for maximum interstate standards.
- This project is about dollars. Are we talking about a 4-lane or 6-lane road? We don't want to give false expectations. It could be a long time before this comes to fruition. It is expected the roadway would primarily be 4-lanes, maybe some 6-lanes near Madisonville.
- The 2030 traffic is doubling? Yes, the traffic is expected to double. This will include about 20-30% trucks in the future with the I-66 and I-69 corridors coming through this area.
- What kind of traffic are you expecting with I-66 and I-69 both – how will it effect I-24? It will add traffic to I-24, but we won't be studying that specifically as part of this study. It will be a consideration though.
- What's your best estimate for truck traffic for I-69? Probably 15-20% to start and more like 20-30% in the future.
- Can the typical section be varied along the route or will it be the same throughout the state? Design consistency is always a goal. But, there may be some variations where it's not practical to do this. You probably don't want short sections where the shoulders, clear zones, etc. are pinched. Longer sections with consistent variation may be OK.
- At what point in this process do you change the signs? By the book, it would be when the last correction is made. However, the Cabinet may consider putting up "Future Interstate 69" signs. At some point, the FHWA and KYTC will have to decide when it will be appropriate to sign the corridor as I-69.
- What will happen at interchanges where expansion will impact adjacent land uses? These areas will be studied for impact and may be relocated based on identified issues and costs.
- How detailed do you see the phasing of projects or priorities? It seems the urban areas and interchanges would be more important to start with first. At the end of the deficiencies analysis, the scope of the project may change. However, it is expected that the results of this study would include recommendations for priority sections. This project will likely proceed in piece-meal fashion due to the high dollar amount.
- Where is I-66 in this area? I-66 and I-69 will be common between Madisonville and Eddyville, according to the Official State Highway Map.
- Is it known for certain that the river will be crossed between Evansville and Henderson? There is a federal designation for a river crossing in this area, although local ideas may have some impact on the location. We are also bound to the national goals for this study and interpreting these into the local perspective.
- Is there a 4-lane extension to Marion as part of this project? Not as part of this study.
- Are there any planning studies to connect Morganfield with I-69? A design project from Marion south down to Fredonia is just about to start on KY 641. A planning study between Fredonia to Eddyville for KY 641 will be starting in the next 6 months.
- Is the Fort Campbell connection going to be discussed during this project? This is separate from our study, but we want to record these sentiments to report as part of our project. Finishing up design on a connection from the end of the Pennyrile Parkway to I-24 – this should serve the Fort the same as I-69 would.

Project Survey Questionnaire Summary – Local Officials/Stakeholders Meetings

A total of 43 surveys were returned by the local officials and stakeholders (38 from the meetings and 5 mail-ins).

1. Do you think this project would (check one):

Response Options	Number of Responses
Be beneficial to the region	42
Not be beneficial to the region	1
Have little or not impact on the region	0

2. Do you know of any problems along the existing parkways between Eddyville and Henderson? Please rate the severity of current problems by circling a number between 1 (no problems) to 5 (serious problems):

Existing Issues	Number of Responses	Average Rating (1-5)
Traffic Congestion	38	2.0
High Speeds	39	2.3
Large Trucks	40	2.7
Poor Sight Distance	39	2.0
Dangerous Curves	37	1.9
Narrow Lanes	37	2.1
Narrow Shoulders	39	2.4
Stopped Vehicles	39	2.2
Other – Surface Repair	3	4.7
Other – Rough Roads	4	4.8
Other – Breaks and Potholes	2	4.5
Other – Exit Lighting	1	4.0
Other – Short Ramps	3	3.0
Other – Standing Water	3	3.0
Other – Access to 4 Star Park	1	5.0
Other – More Access Needed	4	4.5
Other – Service & Rest Stops	1	3.0
Other – Animals	2	2.5
Other – Raised Medians	1	3.0
Other – Low Bridges	1	5.0
Other – Rock Falls	1	4.0

3. Are there any specific safety issues along the existing Parkways? Where and what problems exist?

Safety Issues	Number of Responses	Location
Interchange/ramp issues	14	WF and EB Parkways (Sebree, Madisonville, Mortons Gap, Nortonville, Dawson Springs, Robards, I-24)
Surface condition	7	WF and EB Parkways
Interchange lighting	3	WF and EB Parkways, specifically Exit 13 on WF Parkway
Lack of rest stops with restrooms	2	WF and EB Parkways
Standing water	2	WF and EB Parkways
Narrow/raised medians	2	WF and EB Parkways
Rock cuts in clear zone	1	WF and EB Parkways
Narrow/soft shoulders	1	WF and EB Parkways
Large/coal truck traffic	1	WF and EB Parkways

Rockfall areas	2	WK Parkway about 1 to 1.5 miles west of Exit 12

4. Are there locations along the existing Parkways where additional access (interchanges) may be needed or where the existing access needs to be improved?

Access Issues	Number of Responses	Location
Need New Interchange	5	West of Princeton/Princeton Industrial Park
Need New Interchange	6	On EB Parkway between Robard and Sebree (to serve 4 Star Industrial Park)
Need New Interchange	3	US 41 and WF Parkway
Need New Interchange	1	KY 862
Need New Interchange	2	Access to US 62, WF Parkway between Eddyville and Princeton
Need New Interchange	1	KY 935 and WF Parkway
Need General Additional Access	1	WK Parkway, Henderson, Eddyville Exits
Interchange Improvements	1	Exit 13 on WF Parkway
Interchange Improvements	2	Exit 40 on EB Parkway (Earlington)
Interchange Improvements	1	Exit 37 on EB Parkway (Mortons Gap)
Interchange Improvements	1	Exit 68 on EB Parkway (Robards)
Interchange Improvements	2	Madisonville
Interchange Improvements	1	Sebree, Nortonville, Dawson Springs
Ramps too small	2	Exit 4 on WK Parkway near Industrial Park

5. Are there areas that should be avoided if improvements are made to the existing Parkways? Please check a box for areas to avoid and identify any specific locations:

Existing Issues	Number of Responses	Identified Locations
Personal properties or homes	4	
Business/commercial property	6	
Natural areas or habitats	8	Kentucky Lake, Lake Barkley
Recreational areas	5	Kentucky Lake, Lake Barkley
Historic or cultural sites	9	
Hazardous or monitored sites	7	Chicken houses, Industrial plants
Scenic areas or viewsheds	2	

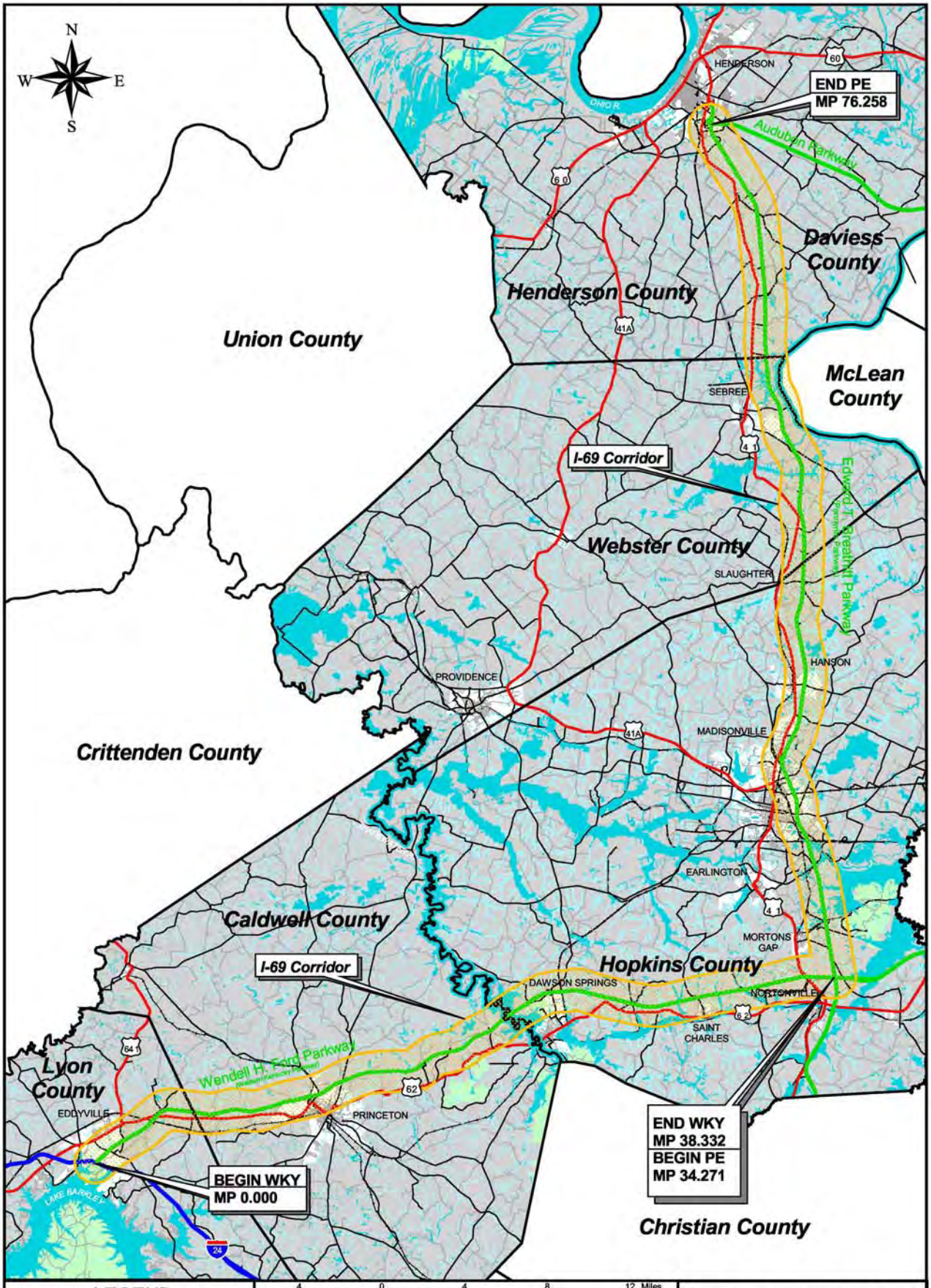
Additional Survey Comments:

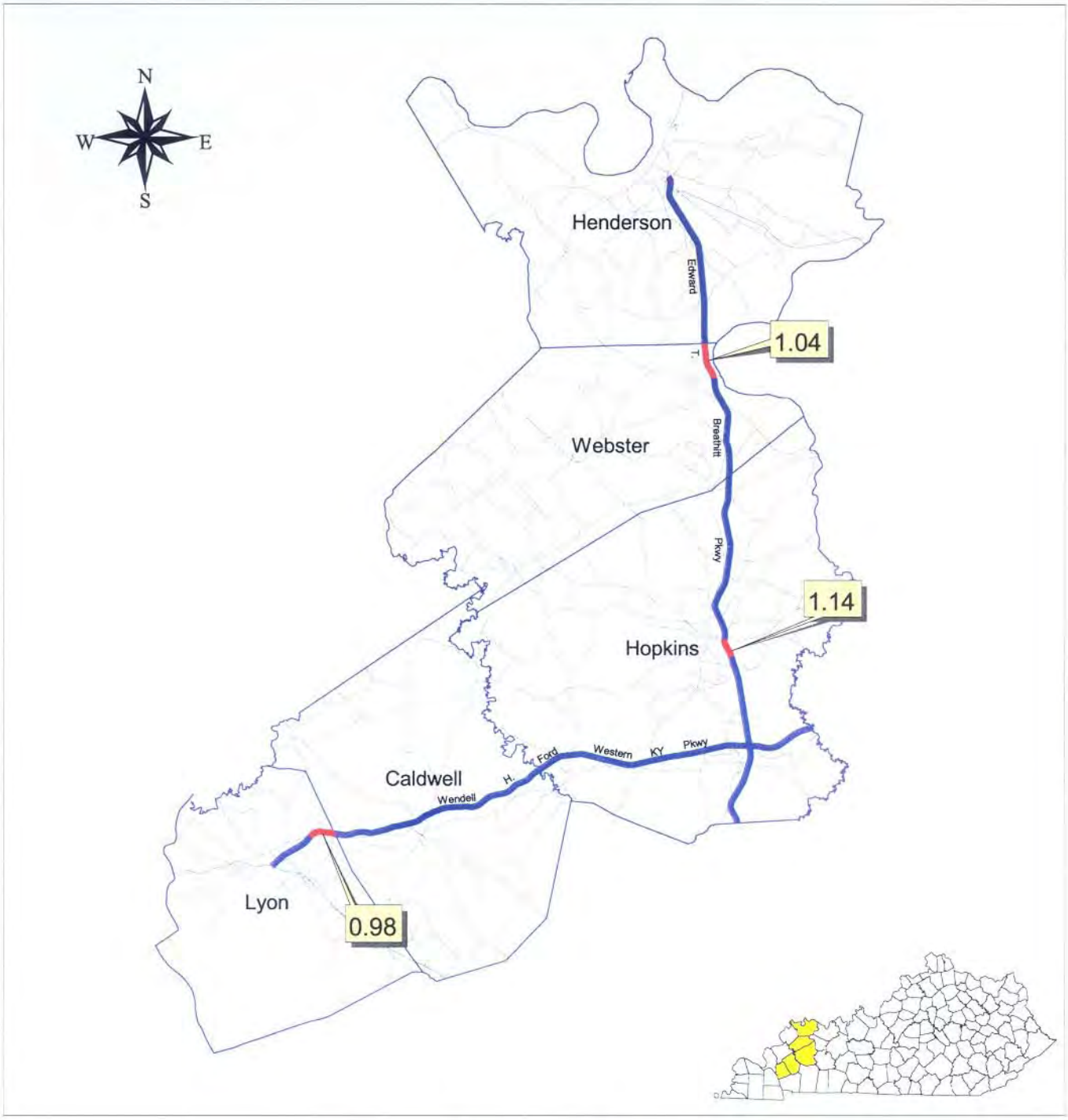
Opinions

- This is a good plan to improve the state Parkways.
- This project would be very beneficial to the area.
- I liked the proposed I-69 signs in the video - it would be nice to have them in KY.
- This is a very good project and we should proceed in a timely manner.
- This is a good location for I-69.
- I think it's very wise to use the existing Parkways. New bridges are needed at Henderson and Evansville. The Henderson strip needs to be bypassed.
- I-69 is greatly needed for improved economic opportunities for western KY. I-69 Kentucky needs to be built to complete National interstate standards, median, overpasses, bridges, etc…
- The KYTC should consider economic development in Crittenden and north Livingston Counties. Connecting good roads between County seats is of extreme importance.
- The ride East from Dawson Springs, KY to the Pennyrile is too rough.
- Have public meetings in the evenings-around 6 p.m. Thanks for choosing Princeton as a sight today.

Suggested Improvements

- Lighting is needed at all interchanges.
- US 62 should be 4-laned east to the Industrial Park for Eddyville to have adequate access.
- Rest stops are needed along the existing routes.
- ROW space should be provided for fiber cables to provide connectivity among the cities along the I-69 route. Need to include in design easy access to airports to enhance economic development.
- It would be better to plan for an 88' median, especially since the state of KY already has some in place. Pay now or pay later.
- Land banking right-of-way should be considered for this project.
- Use of existing 4-lane road rights-of-way is the only sensitive approach to creating new interchange routes. Other options are far too expensive and would likely not be built at all. Commodities along the US HWY 60-641 corridor could have access spurs to I-69 plus an improvement of those roads in the future. 60 and 641 must be improved if there is to be economic development in this region.
- Should use maximum right of way alternate for future lane additions.


N
W
E
S
HENDERSON
END PE
MP 76.258
OHIO R.
Audubon Parkway
Daviess County
Henderson County
Union County
McLean County
SEBREE
I-69 Corridor
Edward T. Breathitt Parkway
Webster County
SLAUGHTER
HANSON
PROVIDENCE
MADISONVILLE
Crittenden County
EARLINGTON
Caldwell County
MORTONS GAP
Hopkins County
I-69 Corridor
DAWSON SPRINGS
NORTONVILLE
SAINT CHARLES
Wendell H. Ford Parkway
Lyon County
EDDYVILLE
PRINCETON
END WKY
MP 38.332
BEGIN PE
MP 34.271
BEGIN WKY
MP 0.000
LAKE BARKLEY
Christian County
LEGEND
- Interstates
- Parkways
- US Highways
- KY Highways
- Local Roads
4 0 4 8 12 Miles
Location Map
EDUCATION PAYS
KENTUCKY TRANSPORTATION CABINET
Wilbur Smith Associates
Project Study Area
I-69 Corridor
Henderson, Webster, Hopkins
Caldwell, and Lyon Counties,
Kentucky
Item No. 2-69.10



10 0 10 20 Miles

Legend

- Normal Segment
- High Accident Segment
- 1.04 Critical Rate Factor

EDUCATION PAYS

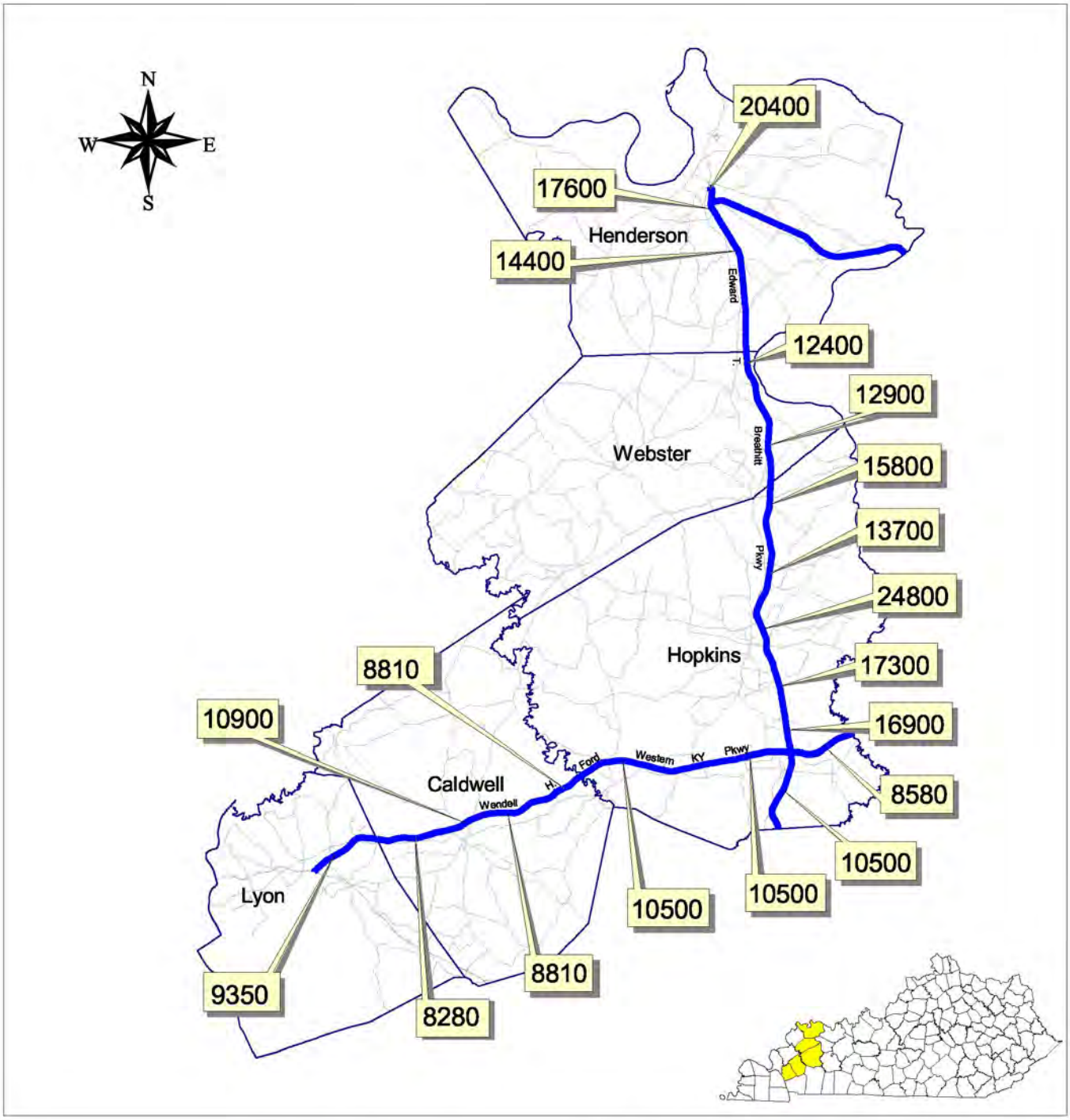
KENTUCKY TRANSPORTATION CABINET

ENGINEERS PLANNERS ECONOMISTS
Wilbur Smith Associates

Accident Information

I-69 Strategic Corridor Planning Study

2002 Parkway Network in W. Kentucky



10 0 10 20 Miles

Legend

Level of Service (LOS)

LOS C or better

9350 Average Daily Traffic (ADT)

EDUCATION PAYS

KENTUCKY TRANSPORTATION CABINET

Wilbur Smith Associates

Traffic Volume and LOS (Base Year)

I-69 Strategic Corridor Planning Study

Eddyville to Henderson

Item No. 2-69.10

Legend

Level of Service (LOS)

- LOS C or better
- LOS D
- 25500 Average Daily Traffic (ADT)

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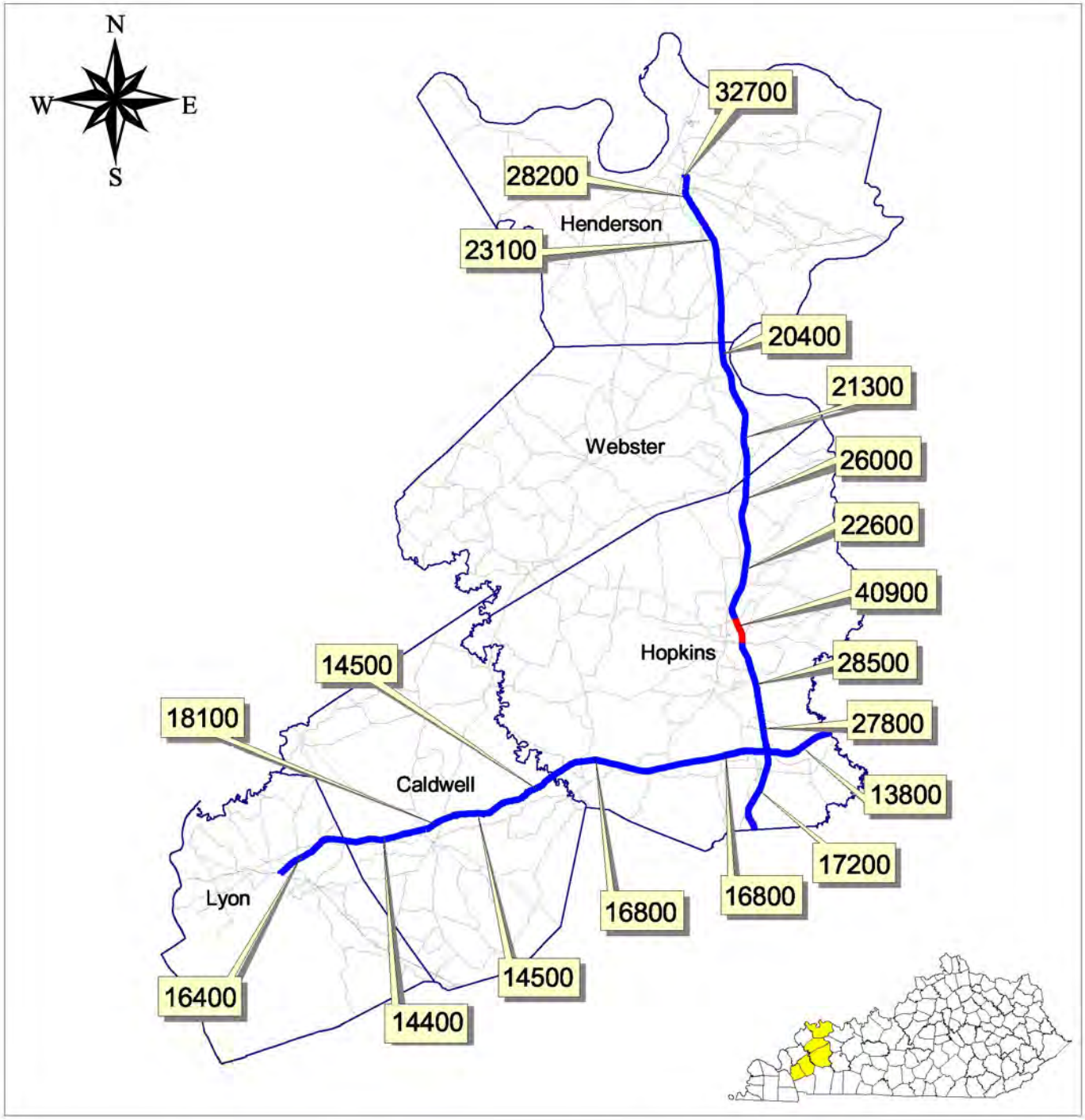
Wilbur Smith Associates

Traffic Volume and LOS with I-69/I-66 Projects (Year 2030)

I-69 Strategic Corridor Planning Study

Eddyville to Henderson

Item No. 2-69.10



10 0 10 20 Miles

Legend

Level of Service (LOS)

- LOS C or better
- LOS D

EDUCATION PAYS

KENTUCKY TRANSPORTATION CABINET

Wilbur Smith Associates

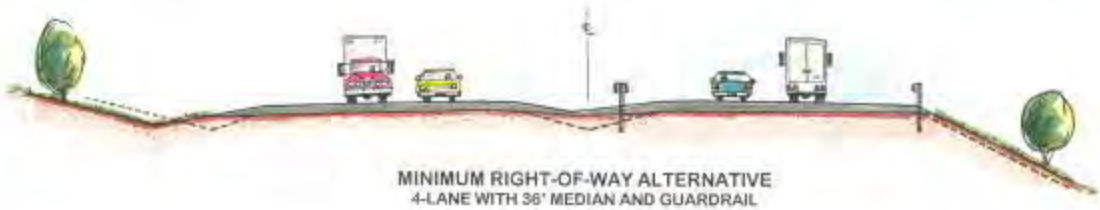
Traffic Volume and LOS Information (Year 2030) without I-69 Project

I-69 Strategic Corridor Planning Study

2002 Parkway Network in W. Kentucky

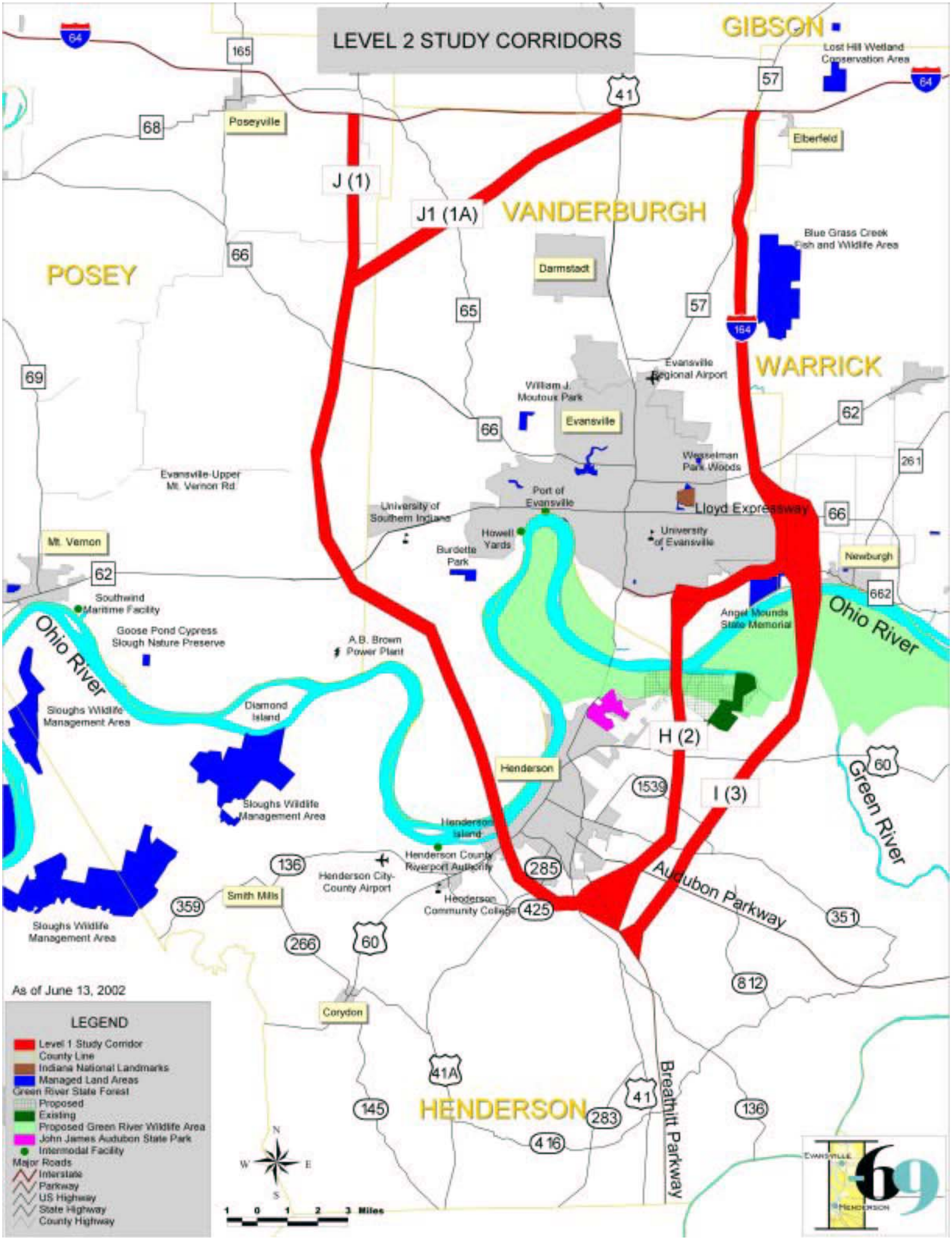
TYPICAL SECTIONS
I-69 STRATEGIC CORRIDOR PLANNING STUDY

EXISTING PARKWAY SECTION
4-LANE WITH 36' MEDIAN



MINIMUM RIGHT-OF-WAY ALTERNATIVE
4-LANE WITH 36' MEDIAN AND GUARDRAIL

MAXIMUM RIGHT-OF-WAY ALTERNATIVE
4-LANE WITH 88' MEDIAN
(FUTURE 6-LANE WITH 64' MEDIAN)


LEVEL 2 STUDY CORRIDORS
GIBSON
VANDERBURGH
POSEY
WARRICK
HENDERSON
J (1)
J1 (1A)
H (2)
I (3)
Poseyville
Elberfeld
Darmstadt
Evansville
Mt. Vernon
Newburgh
Henderson
Smith Mills
Corydon
Lost Hill Wetland Conservation Area
Blue Grass Creek Fish and Wildlife Area
Evansville Regional Airport
William J. Moutoux Park
Wesselman Park Woods
Port of Evansville
Lloyd Expressway
University of Southern Indiana
University of Evansville
Howell Yards
Burdette Park
Evansville-Upper Mt. Vernon Rd.
Southwind Maritime Facility
Goose Pond Cypress Slough Nature Preserve
A.B. Brown Power Plant
Angel Mounds State Memorial
Ohio River
Diamond Island
Sloughs Wildlife Management Area
Henderson Island
Henderson County Riverport Authority
Henderson City-County Airport
Henderson Community College
Audubon Parkway
Green River
Breathitt Parkway
As of June 13, 2002
LEGEND
Level 1 Study Corridor
County Line
Indiana National Landmarks
Managed Land Areas
Green River State Forest
Proposed
Existing
Proposed Green River Wildlife Area
John James Audubon State Park
Intermodal Facility
Major Roads
Interstate
Parkway
US Highway
State Highway
County Highway
1 0 1 2 3 Miles
EVANSVILLE
HENDERSON

N
W
E
S

Caldwell County

Hopkins County

Lyon County

PRINCETON

Wendell H. Ford Parkway
(Western Kentucky Parkway)

Jones-Keeney W.M.A

Trawwater R.

MP 11.787
EB: 15'-9"
WB: 17'-7"
B0037

MP 12.204
EB: 15'-6"
WB: 16'-3"
B0007

MP 17.308
EB: 14'-9"
WB: 15'-3"
B0060

MP 18.622
EB: 22'-1"
WB: 22'-1"
B0061

MP 20.891
EB: 15'-0"
WB: 15'-3"
B0048

WHF
MP 21.764
COUNTY LINE

WHF
MP 5.610
COUNTY LINE

91
139
293
62
2619
2613
2614
672
278

LEGEND

MP: 16.450
EB: 15'-3"
WB: 16'-3"
B0087

- Mile-Point Distance
- East Bound Clearance
- West Bound Clearance
- Bridge Number

- Bridge Location

(Note: Red text indicates a clearance deficiency, while green text is acceptable)

Location Map

1 0 1 2 3 4 Miles

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KENTUCKY TRANSPORTATION CABINET

ENGINEERS PLANNERS ECONOMISTS
Wilbur Smith Associates

Bridge Deficiencies

Vertical Clearance
I-69 Corridor

Caldwell County, Kentucky
Item No. 2-69.10

Appendix C – Public Meeting Minutes and Materials

1. Public Involvement Meeting, Henderson County, September 23, 2002
2. Public Involvement Meeting, Hopkins County, September 24, 2002
3. Public Involvement Meeting, Caldwell County, September 30, 2002
4. Public Involvement Meeting, Lyon County, October 1, 2002
5. Public Meeting Questionnaire Summary
6. Public Meeting Exhibits, September and October 2002

Public Involvement Meeting

I-69 Corridor Planning Study, Eddyville to Henderson
Lyon, Caldwell, Hopkins, Webster, and Henderson Counties
Item No. 2-69.10
Henderson County High School
Henderson, Kentucky
4:00 p.m. to 7:00 p.m. (CST), September 23, 2002

A public involvement open house was held on Monday, September 23, 2002 from 4:00 p.m. to 7:00 p.m. (CST) at Henderson County High School (2424 Zion Road) in Henderson, Kentucky. The following Kentucky Transportation Cabinet (KYTC) District 2, KYTC Central Office, Green River Area Development District and consultant staff were in attendance:

Gina Boaz	Green River Area Development District
Keith Harpole	Green River Area Development District
Nick Hall	KYTC District 2
Kevin McClearn	KYTC District 2
Joe Plunk	KYTC District 2
Doug Taylor	KYTC District 2
Stephen C. Hoefler	KYTC Central Office, Division of Highway Design
Danny Jasper	KYTC Central Office, Division of Planning
Jimmy Wilson	KYTC Central Office, Division of Planning
Brad Johnson	Wilbur Smith Associates
Marc Williams	Wilbur Smith Associates

The public involvement open house was arranged with several project information stations, with KYTC staff and consultants available to answer questions and discuss issues. As attendees entered the meeting room, they were invited to participate in the following areas:

- Sign-In

  Upon arrival, attendees were greeted at the door and asked to sign the attendance list. At this station, attendees were given a survey questionnaire, project brochure, and information regarding KYTC roadway projects. Kentucky state highway maps were also available for interested parties. Media packets, including copies of the exhibits and presentation slides, were available for members of the local newspapers, radio stations and news channels.

  Attendees were asked to complete the survey questionnaire prior to leaving the meeting, or return it to the KYTC at a later date in the postage-paid envelope provided. Attendees were encouraged to view the project video and slide presentation prior to walking through the project exhibits.

- Project Video: I-69 the National Perspective

  This 7-minute video provides an overview of the national I-69 corridor, from Michigan to the Texas/Mexico border. The video was played repeatedly during the public involvement session.

- I-69 Strategic Corridor Planning Study Presentation

  A PowerPoint slide presentation was prepared for the public involvement meeting, providing information on the current I-69 study between Eddyville and Henderson, Kentucky. The presentation included information such as the study area; preliminary project goals; traffic, design and environmental considerations; public involvement opportunities; and contact information. This 17-slide show was played continuously during the public involvement session.

- Exhibit Boards

  This section of the room was set up with a semi-circular arrangement of project exhibits, including the following titles:

  - Study Area
  - Where else will I-69 go?
  - How many cars and trucks are on the Parkways today?
  - How many cars and trucks will be on the Parkways in 30 years?
  - Where are the most accidents occurring?
  - Parkway Conditions and Options for I-69
  - Examples of Highway Design Issues
  - Examples of Traffic and Access Issues
  - Examples of Environmental Issues
  - Environmental Issues Need Special Consideration

  Attendees were invited to view the project exhibits and discuss any questions or concerns with KYTC staff and consultants.

- Survey Area with Refreshments

  Tables, chairs, refreshments, and kids' activities were provided in this area so that attendees could comfortably complete the public comment survey provided in the handout packet. Comments made during the public involvement meeting could also be recorded on a large display in this area of the room.

A total of 75 persons registered their attendance at the three-hour public session (this number does not include the above 11 staff members). Several media representatives were on-hand to cover the event. This included at least three local TV stations, a radio station and the local newspaper. A total of nine individuals completed the public comment survey at the meeting, while others made oral comments to staff members. The majority of attendees took pre-addressed envelopes to mail in at a later date.

General comments and questions at the meeting consisted of the following:

- A number of citizens attended the meeting with interests/concerns relative to the Henderson to Evansville segment for the corridor to the north of this study corridor. These individuals were advised of the public meeting scheduled for Thursday, September 25, 2002 that would provide information on this segment of the corridor.
- Several citizens asked about the time-frame/schedule for project implementation. They were advised that this was currently a planning study effort and that should the project move forward to the implementation phase, it would take time and be influenced by the available funding. It will likely take 10 to 20 years for project implementation to begin.
- A few citizens asked about the location of the I-69 corridor (i.e. whether it would stay on the Parkways or follow new alignment). These individuals were advised that the current proposal for the I-69 corridor would be to upgrade or reconstruct the existing Parkways. The

current planning study will identify the amount of any additional right-of-way that would be needed to upgrade the Parkways.

- One citizen suggested that bridge supports for overpasses should be widened/strengthened to withstand earthquake conditions.
- Several citizens asked if the Parkways were upgraded, how much additional right-of-way would be needed along the roadway? They were advised that approximately one hundred feet of additional right-of-way could be needed in some locations.
- One couple asked if interchanges along the Parkways were upgraded, what types of improvements are required and how much additional right-of-way would be needed at each?
- It was suggested that fences along the existing Parkway should be higher to prevent deer from crossing the road.
- A couple of individuals asked how the Evansville to Henderson corridor will impact the northern terminus of the Eddyville to Henderson segment and where would the tie-in to the Edward T. Breathitt Parkway most likely occur?
- One group of individuals expressed their dissatisfaction with the format of the open-house style meeting, favoring a meeting that would allow them an opportunity to have their comments heard by a larger group of citizens.

Other comments and identified issues are anticipated through the public comment surveys, which were distributed at the meeting to be returned by mail to the KYTC through October 31, 2002. Once the questionnaires are received by the KYTC, these comments will also be included in the official meeting record.

The meeting closed at 7:00 p.m. (CST).

Public Involvement Meeting

I-69 Corridor Planning Study, Eddyville to Henderson
Lyon, Caldwell, Hopkins, Webster, and Henderson Counties
Item No. 2-69.10
Parkway Plaza Mall
Madisonville, Kentucky
4:00 p.m. to 7:00 p.m. (CST), September 24, 2002

A public involvement open house was held on Tuesday, September 24, 2002 from 4:00 p.m. to 7:00 p.m. (CST) at the Parkway Plaza Mall (401 Madison Square Avenue) in Madisonville, Kentucky. The following Kentucky Transportation Cabinet (KYTC) District 2, KYTC Central Office, Pennyrile Area Development District and consultant staff were in attendance:

Craig Morris	Pennyrile Area Development District
Pam Kolze	KYTC District 2
Kevin McClearn	KYTC District 2
Steve Nicholson	KYTC District 2
Joe Plunk	KYTC District 2
Doug Taylor	KYTC District 2
Stephen C. Hoefler	KYTC Central Office, Division of Highway Design
Danny Jasper	KYTC Central Office, Division of Planning
Jimmy Wilson	KYTC Central Office, Division of Planning
Brad Johnson	Wilbur Smith Associates
Marc Williams	Wilbur Smith Associates

The public involvement open house was arranged with several project information stations, with KYTC staff and consultants available to answer questions and discuss issues. As attendees entered the meeting room, they were invited to participate in the following areas:

- Sign-In

  Upon arrival, attendees were greeted at the door and asked to sign the attendance list. At this station, attendees were given a survey questionnaire, project brochure, and information regarding KYTC roadway projects. Kentucky state highway maps were also available for interested parties. Media packets, including copies of the exhibits and presentation slides, were available for members of the local newspapers, radio stations and news channels.

  Attendees were asked to complete the survey questionnaire prior to leaving the meeting, or return it to the KYTC at a later date in the postage-paid envelope provided. Attendees were encouraged to view the project video and slide presentation prior to walking through the project exhibits.

- Project Video: I-69 the National Perspective

  This 7-minute video provides an overview of the national I-69 corridor, from Michigan to the Texas/Mexico border. The video was played repeatedly during the public involvement session, with a seating area provided nearby for viewers.

- I-69 Strategic Corridor Planning Study Presentation

  A PowerPoint slide presentation was prepared for the public involvement meeting, providing information on the current I-69 study between Eddyville and Henderson, Kentucky. The presentation included information such as the study area; preliminary project goals; traffic, design and environmental considerations; public involvement opportunities; and contact information. This 17-slide show was played continuously during the public involvement session, with a seating area provided nearby for viewers.

- Exhibit Boards

  This section of the room was set up with a semi-circular arrangement of project exhibits, including the following titles:

  - Study Area
  - Where else will I-69 go?
  - How many cars and trucks are on the Parkways today?
  - How many cars and trucks will be on the Parkways in 30 years?
  - Where are the most accidents occurring?
  - Parkway Conditions and Options for I-69
  - Examples of Highway Design Issues
  - Examples of Traffic and Access Issues
  - Examples of Environmental Issues
  - Environmental Issues Need Special Consideration

  Attendees were invited to view the project exhibits and discuss any questions or concerns with KYTC staff and consultants.

- Survey Area with Refreshments

  Tables, chairs, refreshments, and kids' activities were provided in this area so that attendees could comfortably complete the public comment survey provided in the handout packet. Comments made during the public involvement meeting could also be recorded on a large display in this area of the room.

A total of 62 persons registered their attendance at the three-hour public session (this number does not include the above 11 staff members). A total of 16 individuals completed the public comment survey at the meeting, while others made oral comments to staff members. The majority of attendees took pre-addressed envelopes to mail in at a later date.

General comments and questions at the meeting consisted of the following:

- Several citizens asked about the time-frame/schedule for project implementation. They were advised that this was currently a planning study effort and that should the project move forward to the implementation phase, it would take time and be influenced by the available funding. It will likely take 10 to 20 years for project implementation to begin.
- A few citizens asked about the location of the I-69 corridor (i.e. whether it would stay on the Parkways or follow new alignment). These individuals were advised that the current proposal for the I-69 corridor would be to upgrade or reconstruct the existing Parkways. The current planning study will identify the amount of any additional right-of-way that would be needed to upgrade the Parkways.
- Improvements to the interchange at Morton's Gap were recommended.
- Mayor Liebe from the city of Hopkinsville expressed his concern that his community was not being served by the proposed I-69 route. He noted that the population and economic activity of his community warranted service to I-69.

- Mayor Cunningham from Madisonville noted her support for the project and mentioned that she was anxious for signs to be placed to help denote the corridor.
- A few citizens expressed concern that emergency vehicles may be delayed when responding to urgent situations if arriving from the opposite direction if improvements to the Parkways include continuous guardrails or barrier walls in the median.
- A couple of individuals suggested that the national Interstate 69 corridor would provide Kentuckians with another alternative when traveling south to Arkansas and Texas, most likely offering shorter driving times.
- Several citizens asked if the Parkways were upgraded, how much additional right-of-way would be needed along the roadway? They were advised that approximately one hundred feet of additional right-of-way could be needed in some locations.

Other comments and identified issues are anticipated through the public comment surveys, which were distributed at the meeting to be returned by mail to the KYTC through October 31, 2002. Once the questionnaires are received by the KYTC, these comments will also be included in the official meeting record.

The meeting closed at 7:00 p.m. (CST).

Public Involvement Meeting

I-69 Corridor Planning Study, Eddyville to Henderson
Lyon, Caldwell, Hopkins, Webster, and Henderson Counties
Item No. 2-69.10
City Hall Chambers
Princeton, Kentucky
4:00 p.m. to 7:00 p.m. (CST), September 30, 2002

A public involvement open house was held on Monday, September 30, 2002 from 4:00 p.m. to 7:00 p.m. (CST) at the City Hall Chambers (206 North Jefferson Street) in Princeton, Kentucky. The following Kentucky Transportation Cabinet (KYTC) District 2, KYTC Central Office, and consultant staff were in attendance:

Charlotte M. Cotton	KYTC District 2
Nick Hall	KYTC District 2
Kevin McClearn	KYTC District 2
Stephen Nicholson	KYTC District 2
Doug Taylor	KYTC District 2
Phillip Whitmer	KYTC District 2
Stephen C. Hoefler	KYTC Central Office, Division of Highway Design
Steve Ross	KYTC Central Office, Division of Planning
Jimmy C. Wilson	KYTC Central Office, Division of Planning
Bradley S. Black	Wilbur Smith Associates
Samantha J. Wright	Wilbur Smith Associates

The public involvement open house was arranged with several project information stations, with KYTC staff and consultants available to answer questions and discuss issues. As attendees entered the meeting room, they were invited to participate in the following areas:

- Sign-In

  Upon arrival, attendees were greeted at the door and asked to sign the attendance list. At this station, attendees were given a survey questionnaire, project brochure, and information regarding KYTC roadway projects. Kentucky state highway maps were also available for interested parties. Media packets, including copies of the exhibits and presentation slides, were available for members of the local newspapers, radio stations and news channels.

  Attendees were asked to complete the survey questionnaire prior to leaving the meeting, or return it to the KYTC at a later date in the postage-paid envelope provided. Attendees were encouraged to view the project and slide presentation prior to walking through the project exhibits.

- Project Video: I-69 the National Perspective

  This 7-minute video provided an overview of the national I-69 corridor, from Michigan to the Texas/Mexico border. The video was played repeatedly during the public involvement session, with a seating area provided nearby for viewers.

- I-69 Strategic Corridor Planning Study Presentation

  A PowerPoint slide presentation was prepared for the public involvement meeting, providing information on the current I-69 study between Eddyville and Henderson, Kentucky. The presentation included information such as the study area; preliminary project goals; traffic, design and environmental considerations; public involvement opportunities; and contact information. This 17-slide show was played continuously during the public involvement session, with a seating area provided nearby for viewers.

- Exhibit Boards

  This section of the room was set up with a semi-circular arrangement of project exhibits, including the following titles:

  - Study Area
  - Where else will I-69 go?
  - How many cars and trucks are on the Parkways today?
  - How many cars and trucks will be on the Parkways in 30 years?
  - Where are the most accidents occurring?
  - Parkway Conditions and Options for I-69
  - Examples of Highway Design Issues
  - Examples of Traffic and Access Issues
  - Examples of Environmental Issues
  - Environmental Issues Need Special Consideration

  Attendees were invited to view the project exhibits and discuss any questions or concerns with KYTC staff and consultants.

- Survey Area with Refreshments

  Tables, chairs, refreshments, and kids' activities were provided in this area so that attendees could comfortably complete the public comment survey provided in the handout packet. Comments made during the public involvement meeting could also be recorded on a large display in this area of the room.

A total of 29 persons registered their attendance at the three-hour public session (this number does not include the 11 staff members listed above). A total of 10 individuals completed the public comment survey at the meeting, while others made oral comments to staff members. The majority of attendees took pre-addressed envelopes to mail in at a later date.

General comments at the meeting consisted of the following:

- Completion of I-69 may assist the local economy.
- The existing Parkways should be upgraded before considering a new interstate through the area. Improving the existing route would be less expensive when compared to building a new route.
- There are other roads in the area that need improvement more than the Parkways. Highway funds and tax dollars should be spent elsewhere.
- There is potentially an old slave cemetery at the top of the hill just east of the Wendell H. Ford/Edward T. Breathitt Parkway interchange. Any improvements planned for the interchange should avoid this area.
- Residents in the area should be contacted as the project proceeds. Property owners should be involved in discussions of right-of-way needs and fair property values.

- All interchanges along the Parkways should be upgraded before construction on the existing Parkways begins.
- The existing Parkway routes do not provide for adequate run-off, resulting in standing water which causes hydroplaning.
- This project will be an important improvement for Caldwell County as well as surrounding counties.
- The Wendell H. Ford Parkway needs an interchange at KY 93 to support the new golf course and Lyon Riverport.

Other comments and identified issues are anticipated through the public comment surveys, which were distributed at the meeting to be returned by mail to the KYTC through October 31, 2002. Once the questionnaires are received by the KYTC, these comments will also be included in the official meeting record.

The meeting closed at 7:00 p.m. (CST).

Public Involvement Meeting

I-69 Corridor Planning Study, Eddyville to Henderson
Lyon, Caldwell, Hopkins, Webster, and Henderson Counties
Item No. 2-69.10
Old Courthouse Building
Eddyville, Kentucky
4:00 p.m. to 7:00 p.m. (CST), October 1, 2002

A public involvement open house was held on Tuesday, October 1, 2002 from 4:00 p.m. to 7:00 p.m. (CST) at the Old Courthouse Building in Eddyville, Kentucky. The following Kentucky Transportation Cabinet (KYTC) District 1, KYTC District 2, KYTC Central Office, and consultant staff were in attendance:

Allen W. Thomas	KYTC District 1
Jeff Thompson	KYTC District 1
Doug Taylor	KYTC District 2
Stephen C. Hoefler	KYTC Central Office, Division of Highway Design
Steve Ross	KYTC Central Office, Division of Planning
Jimmy C. Wilson	KYTC Central Office, Division of Planning
Bradley S. Black	Wilbur Smith Associates
Samantha J. Wright	Wilbur Smith Associates

The public involvement open house was arranged with several project information stations, with KYTC staff and consultants available to answer questions and discuss issues. As attendees entered the meeting room, they were invited to participate in the following areas:

- Sign-In

  Upon arrival, attendees were greeted at the door and asked to sign the attendance list. At this station, attendees were given a survey questionnaire, project brochure, and information regarding KYTC roadway projects. Kentucky state highway maps were also available for interested parties. Media packets, including copies of the exhibits and presentation slides, were available for members of the local newspapers, radio stations and news channels.

  Attendees were asked to complete the survey questionnaire prior to leaving the meeting, or return it to the KYTC at a later date in the postage-paid envelope provided. Attendees were encouraged to view the project and slide presentation prior to walking through the project exhibits.

- Project Video: I-69 the National Perspective

  This 7-minute video provides an overview of the national I-69 corridor, from Michigan to the Texas/Mexico border. The video was played repeatedly during the public involvement session, with a seating area provided nearby for viewers.

- I-69 Strategic Corridor Planning Study Presentation

  A PowerPoint slide presentation was prepared for the public involvement meeting, providing information on the current I-69 study between Eddyville and Henderson, Kentucky. The presentation included information such as the study area; preliminary project goals; traffic, design and environmental considerations; public involvement opportunities; and contact

information. This 17-slide show was played continuously during the public involvement session, with a seating area provided nearby for viewers.

- Exhibit Boards

  This section of the room was set up with a semi-circular arrangement of project exhibits, including the following titles:

  - Study Area
  - Where else will I-69 go?
  - How many cars and trucks are on the Parkways today?
  - How many cars and trucks will be on the Parkways in 30 years?
  - Where are the most accidents occurring?
  - Parkway Conditions and Options for I-69
  - Examples of Highway Design Issues
  - Examples of Traffic and Access Issues
  - Examples of Environmental Issues
  - Environmental Issues Need Special Consideration

  Attendees were invited to view the project exhibits and discuss any questions or concerns with KYTC staff and consultants. Comments made during the public involvement meeting could also be recorded on a large display in this area of the room.

- Survey Area with Refreshments

  Meeting attendees used the courtroom bench seating for filling out surveys and reviewing project materials. Refreshments and kids' activities were also provided.

A total of 45 persons registered their attendance at the three-hour public session (this number does not include the 8 staff members listed above). A total of 13 individuals completed the public comment survey at the meeting, while others made oral comments to staff members. The majority of attendees took pre-addressed envelopes to mail in at a later date.

A number of attendees came to the meeting seeking information regarding future plans for the US 641 corridor. KYTC staff members discussed these issues with interested parties. General comments at the meeting regarding the I-69 project between Eddyville and Henderson consisted of the following:

- Planned improvements to US 641 should be considered when final decisions regarding I-69 are made.
- The I-24 interchange with the future I-69 corridor should be reconstructed. The current ramps are too short to handle high traffic volumes.
- The lakes and natural areas around the I-24 interchange should be considered and avoided as much as possible.
- The existing interchange between the Wendell H. Ford (Western Kentucky) Parkway and the Edward T. Breathitt (Pennyrile) Parkway should also be improved.
- There is a golf course located near the existing I-24 interchange with the Wendell H. Ford (Western Kentucky) Parkway. This area should be avoided if possible.
- Traffic volumes along the Wendell H. Ford (Western Kentucky) Parkway are not a problem at this time; however, adding I-66 and I-69 in this area may cause problems in the future.
- There is nothing wrong with the existing Parkways. Improvements should not be made just so we can call it an interstate. Highway money can be better spent.

- Deer and other animals in the roadway are the biggest safety issues along the Parkways.
- Improving I-69 may help the local economy.
- Property values may increase along and near the existing Parkways.
- The least expensive and disruptive alternates should be pursued. Right-of-way needs along the route should be minimized wherever possible.

Other comments and identified issues are anticipated through the public comment surveys, which were distributed at the meeting to be returned by mail to the KYTC through October 31, 2002. Once the questionnaires are received by the KYTC, these comments will also be included in the official meeting record.

The meeting closed at 7:00 p.m. (CST).

Project Survey Questionnaire Summary – Public Meetings

A total of 83 completed surveys were returned.

1. Do you think this project would (check one):

Response Options	Number of Responses
Be beneficial to the region	76
Not be beneficial to the region	3
Have little or not impact on the region	1
Did not respond	3

2. Do you know of any problems along the existing parkways between Eddyville and Henderson? Please rate the severity of current problems by circling a number between 1 (no problems) to 5 (serious problems):

Existing Issues	Number of Responses	Average Rating (1-5)
Traffic Congestion	72	1.9
High Speeds	74	2.3
Large Trucks	75	2.5
Poor Sight Distance	69	1.8
Dangerous Curves	68	1.8
Narrow Lanes	70	2.0
Narrow Shoulders	69	2.5
Stopped Vehicles	71	1.9
Other – Surface Repair	14	4.7
Other – Rough Roads	2	5.0
Other – Breaks and Potholes	1	3.0
Other – Short Ramps	1	4.0
Other – Drainage	2	3.5
Other – More Access Needed	1	4.0
Other – Narrow Medians	1	4.0
Other – Low Bridges	2	4.5
Other – Coal Trucks	1	3.0
Other – Sharp Curves on Ramps	1	5.0
Other – Pennrile & WK Interchange	1	4.0
Other – Ramps	5	4.0
Other – Noise	1	3.0
Other – Travel Time	1	4.0
Other – Shoulders	1	5.0

3. Are there any specific safety issues along the existing Parkways? Where and what problems exist?

Safety Issues	Number of Responses	Location
Interchange/ramp issues	17	WF and EB Parkways
Surface condition	15	WF and EB Parkways
Standing water	6	WF and EB Parkways
Narrow/raised medians	4	WF and EB Parkways
Narrow/soft shoulders	6	WF and EB Parkways
High traffic volumes	1	WF and EB Parkways
Large/coal truck traffic	4	WF and EB Parkways
Old toll booth access lanes	3	WF and EB Parkways
Bridge width/weight/clearance	1	WF and EB Parkways
Guardrails	1	WF and EB Parkways

4. Are there locations along the existing Parkways where additional access (interchanges) may be needed or where the existing access needs to be improved?

Access Issues	Number of Responses	Location
Need New Interchange	1	West of Princeton/Princeton Industrial Park
Need New Interchange	3	Between Henderson and Madisonville
Need New Interchange	1	KY 814 and EB Parkway
Need New Interchange	1	Nortonville
Need New Interchange	1	East of KY 293 and WK Parkway
Need New Interchange	1	KY 93 and WK Parkway
Need New Interchange	2	WK Parkway in Lyon County to serve the Riverport Authority and Mineral Mound State Park.
Need Additional Interchange Ramps	2	KY416 and EB Parkway
Interchange improvements	8	WK and EB Parkway
Interchange improvements	1	EB Parkway in Madisonville
Interchange Improvements	3	Exit 37 on EB Parkway (Mortons Gap)
Interchange Improvements	1	Exit 63 on EB Parkway
Interchange Improvements	3	WK Parkway (Dawson Springs)
Interchange Improvements	2	I-24 and WK Parkway
Need Additional Access	5	EB Parkway
Need Additional Access	4	WK Parkway
Better Signs and Markings	1	WK Parkway (Princeton Exit)
Better Signs and Markings	1	KY 24 and WK Parkway

5. Are there areas that should be avoided if improvements are made to the existing Parkways? Please check a box for areas to avoid and identify any specific locations:

Existing Issues	Number of Responses	Identified Locations
Personal properties or homes	10	
Business/commercial property	8	
Natural areas or habitats	9	
Recreational areas	5	
Historic or cultural sites	16	
Hazardous or monitored sites	4	
Scenic areas or viewsheds	4	
Other	2	Cemeteries, KY 293

Additional Survey Comments:

Opinions

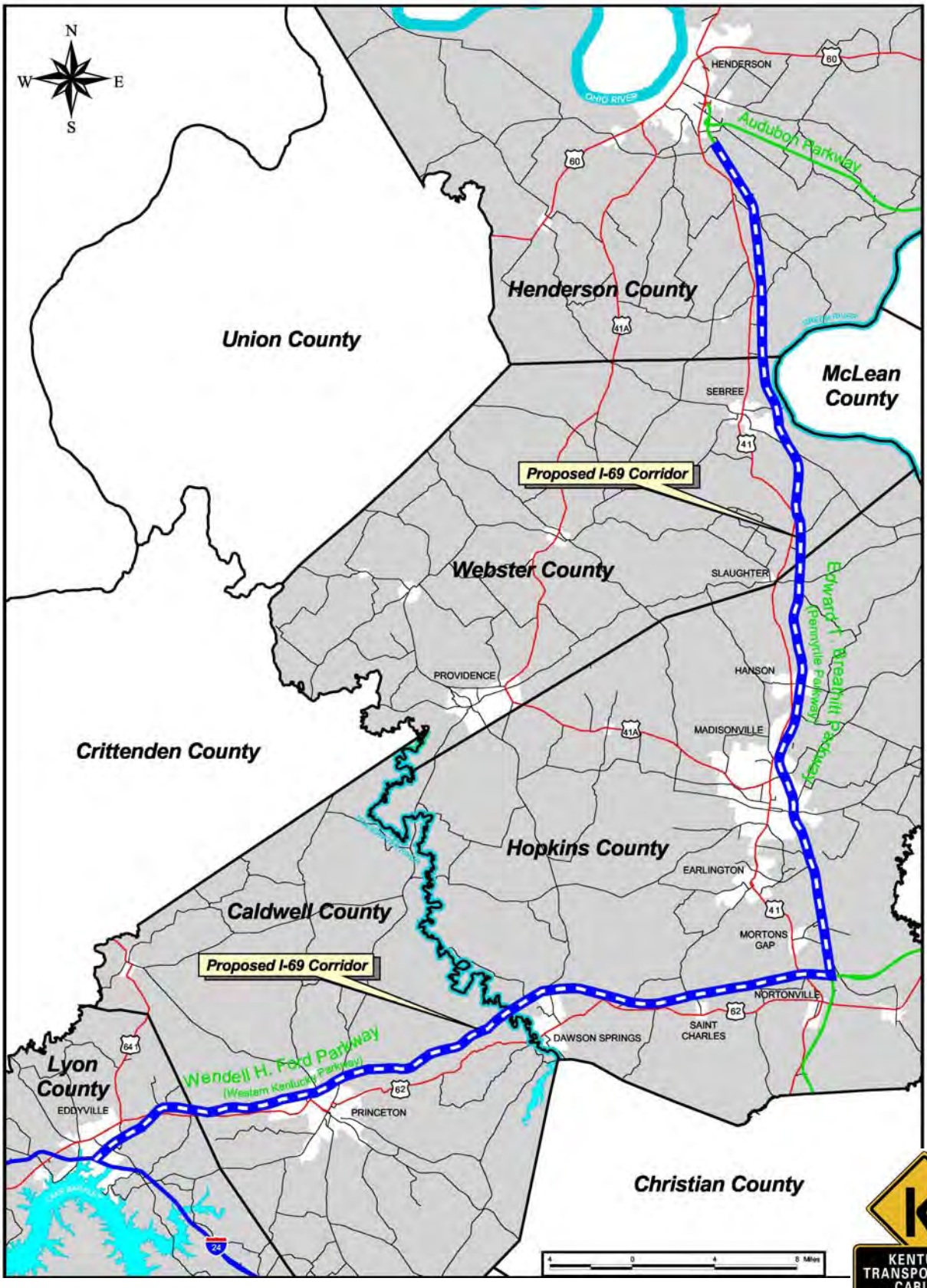
- The proposed route of I-69 is the most economical and feasible.
- The proposed route is most sensible with less disruption to existing farmland and businesses.
- Western Kentucky needs this improvement.
- Henderson needs I-69 access, but it should be done without disruption to homes and businesses.
- This improvement will be beneficial to the community, but should not disturb any homes or businesses.
- It will be hard to avoid many sensitive areas while improving the parkways, but I-69 is needed through this area.
- If funding is available, this project should include welcome centers and truck havens.
- This I-69 alternative will save the Commonwealth maintenance money for years to come.

- The proposed I-69 route is the preferred alternative by the Madisonville-Hopkins County Chamber of Commerce and the local businesses it represents. This also seems to be the best way to avoid natural habitats, historic sites, personal properties and commercial properties.
- There are too many designated routes over one roadway.
- Using the parkways for I-69 will be less disruptive.
- Upgrading the parkways is a cost effective approach and will greatly benefit Hopkins County.
- The reconstruction of the existing roadways would be a great enhancement rather than complete rebuilding.
- The proposed project is very important to Hopkins County. It should bring more traffic and increased economic potential to our area. I see no negatives to the I-69 proposal and look forward to its construction.
- Go ahead and expand to desired corridor conditions in case more lanes need to be added in the future. The economic costs would be cheaper now than in the future.
- This would be a very welcome economic boost to our community. It would be a great aid in economic development and industrial recruiting and a great benefit to existing business and industry.
- A more direct route from Henderson to Eddyville would make sense. If all states to this approach the road would look like a snake.
- Great idea to utilize existing Parkways. I-69 should be a long awaited economic catapult for West Kentucky. Kentucky needs to make I-69 and the improvements to its Parkways to meet interstate standards it's #1 transportation priority because of the significant impact it will have on future economic growth.
- This project needs to be started soon.
- We fully support the I-69 corridor and see the connection with the I-24 as a huge boost for economic development in WK Parkway.
- This would be an exciting new addition to our community.
- I-69 is needed in this area for economic development.
- This project will be an important improvement to the economy of Lyon County, especially Kuttawa and Eddyville.
- Using existing four lanes will reduce the amount of personal homes and properties being disturbed.

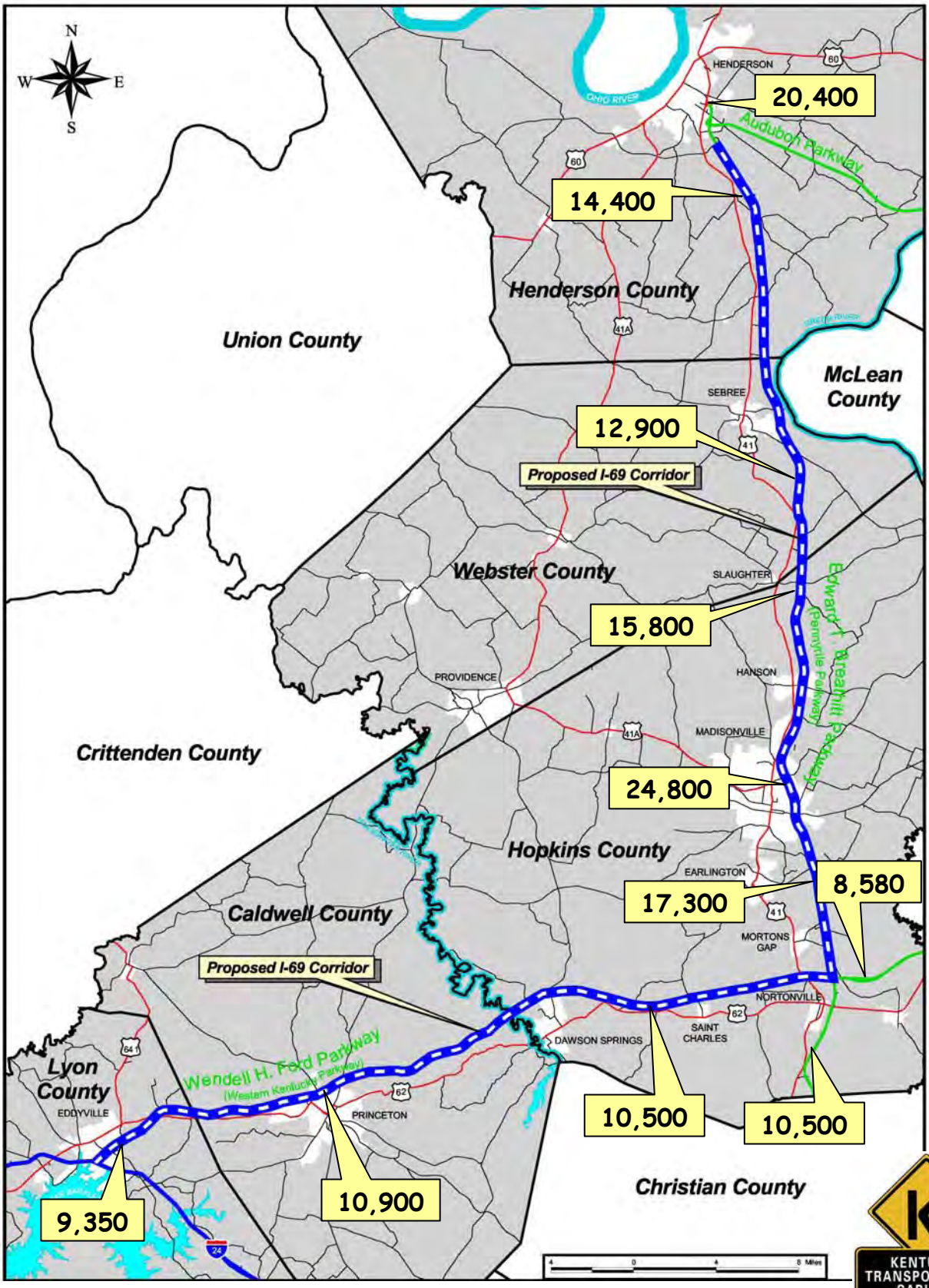
Suggested Improvements

- Under earthquake conditions overpass overhangs on supports are inadequate.
- The Parkways should be paved regularly and kept in top shape.
- I have just returned from southern Oklahoma and north Texas and believe their concrete barriers are the best solution where lanes are closer each way. I seem to commute these routes regularly and have tried all routes both at day and at night. These barriers are especially helpful at night.
- Should the interstate be routed through Crittenden and Union Counties, every effort should be given to making the connection east of Eddyville around the US 641 route.
- There are some rough spots in the existing road bed of the WK Pkwy. Several repairs have been done, more repairs are needed, but the underlying cause of these failures needs to be determined and resolved.
- Interchanges should be improved and others added.

Study Area

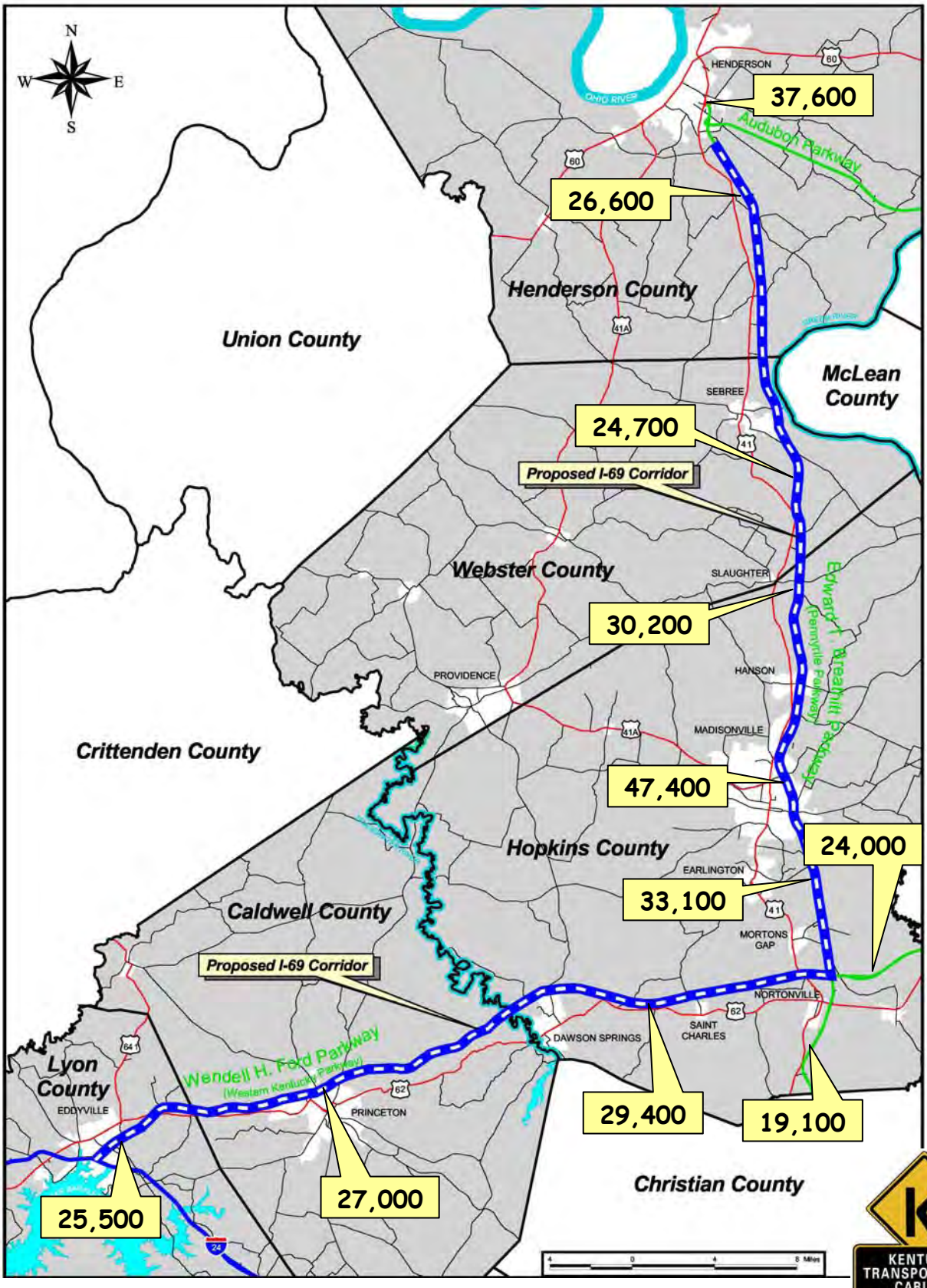

N
W
E
S
HENDERSON
60
OHIO RIVER
Audubon Parkway
Henderson County
Union County
McLean County
SEBREE
41
Proposed I-69 Corridor
Webster County
SLAUGHTER
Edward T. Breathitt Parkway
(Pennyrile Parkway)
PROVIDENCE
HANSON
41A
MADISONVILLE
Crittenden County
Hopkins County
EARLINGTON
Caldwell County
MORTONS GAP
NORTONVILLE
62
SAINT CHARLES
DAWSON SPRINGS
Proposed I-69 Corridor
64
Lyon County
EDDYVILLE
Wendell H. Ford Parkway
(Western Kentucky Parkway)
PRINCETON
Christian County
24
KENTUCKY TRANSPORTATION CABINET

How many cars and trucks are on the Parkway today?



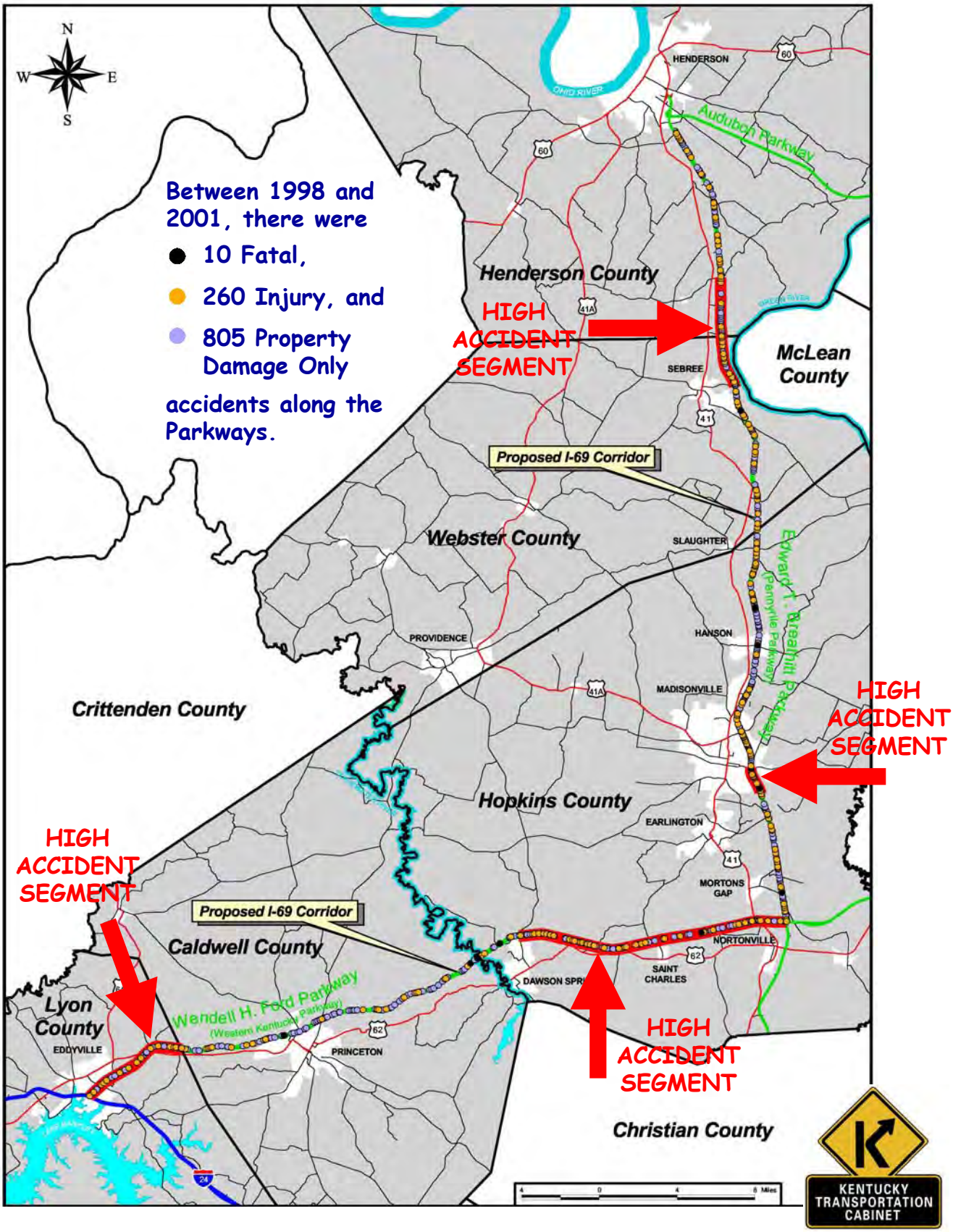
Yellow boxes show daily cars and trucks for year 2001.

How many cars and trucks will be on the Parkway in 30 years?



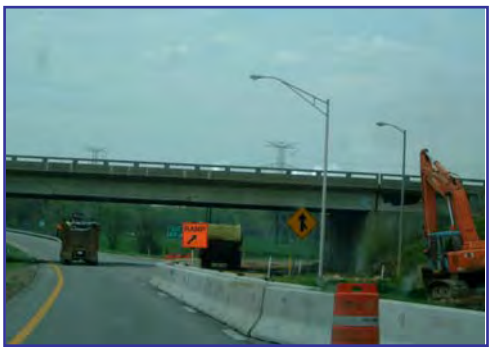
Yellow boxes show daily cars and trucks for year 2030.

Where are the most accidents occurring?



Examples of Traffic and Access Issues

Are there areas where there is too much traffic today or there might be too much traffic in the future?



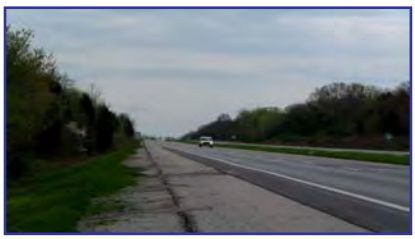
Do existing interchanges need to be rebuilt to handle more traffic? Should new interchanges be planned?

What might be done to help highway and truck traffic? (New Weigh Stations, Rest Areas, etc.)

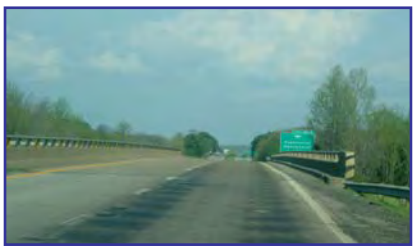
KENTUCKY TRANSPORTATION CABINET

Examples of Highway Design Issues

What changes need to be made to the parkways to allow them to meet Interstate Highway Standards?



Where might shoulders need to be widened or repaved?



Where might bridges be too narrow or need to be strengthened?

Where are bridges that pass over the roadways not high enough to allow adequate clearance for taller trucks?

Should medians (the grass area in the middle of the highway) be widened or have barriers installed to improve safety?

Where might areas off the edge of the roadway be too steep or need to be widened?

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Examples of Environmental Issues

Natural Areas, Wildlife Habitats

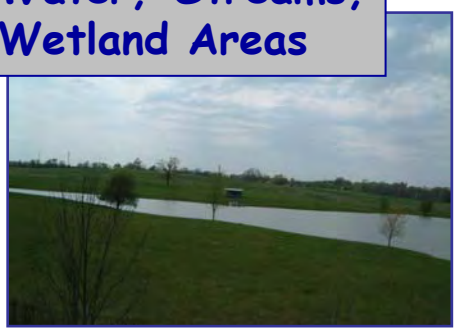
Parks and Recreational Areas

Homes and Businesses

Farms

Schools, Churches

Water, Streams, Wetland Areas



Mining, Oil & Gas

Some Other Issues Might Include: Historic Properties, Archaeological Sites, Low Income or Minority Neighborhoods, Air Quality, Noise, Cemeteries, etc.

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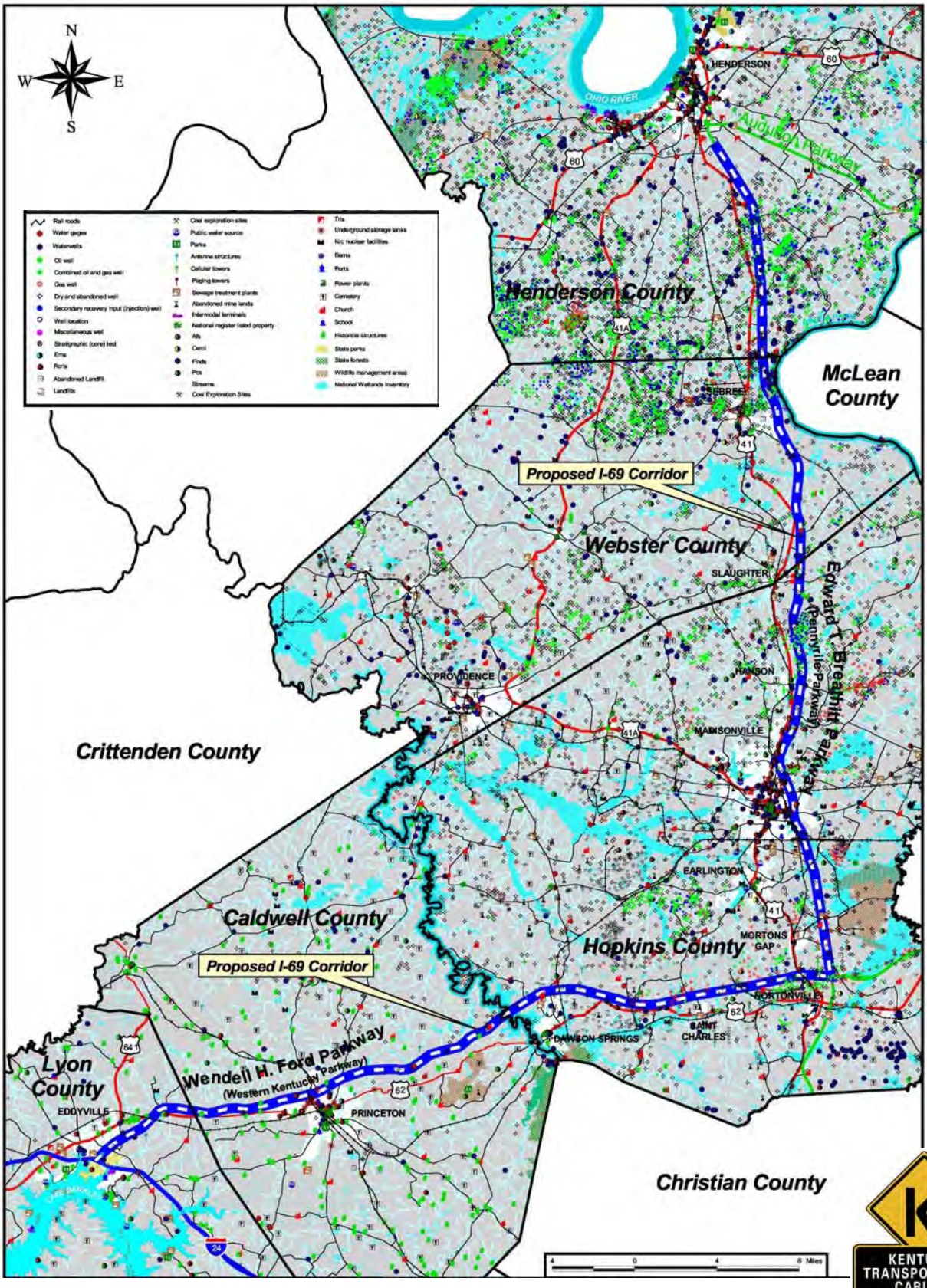
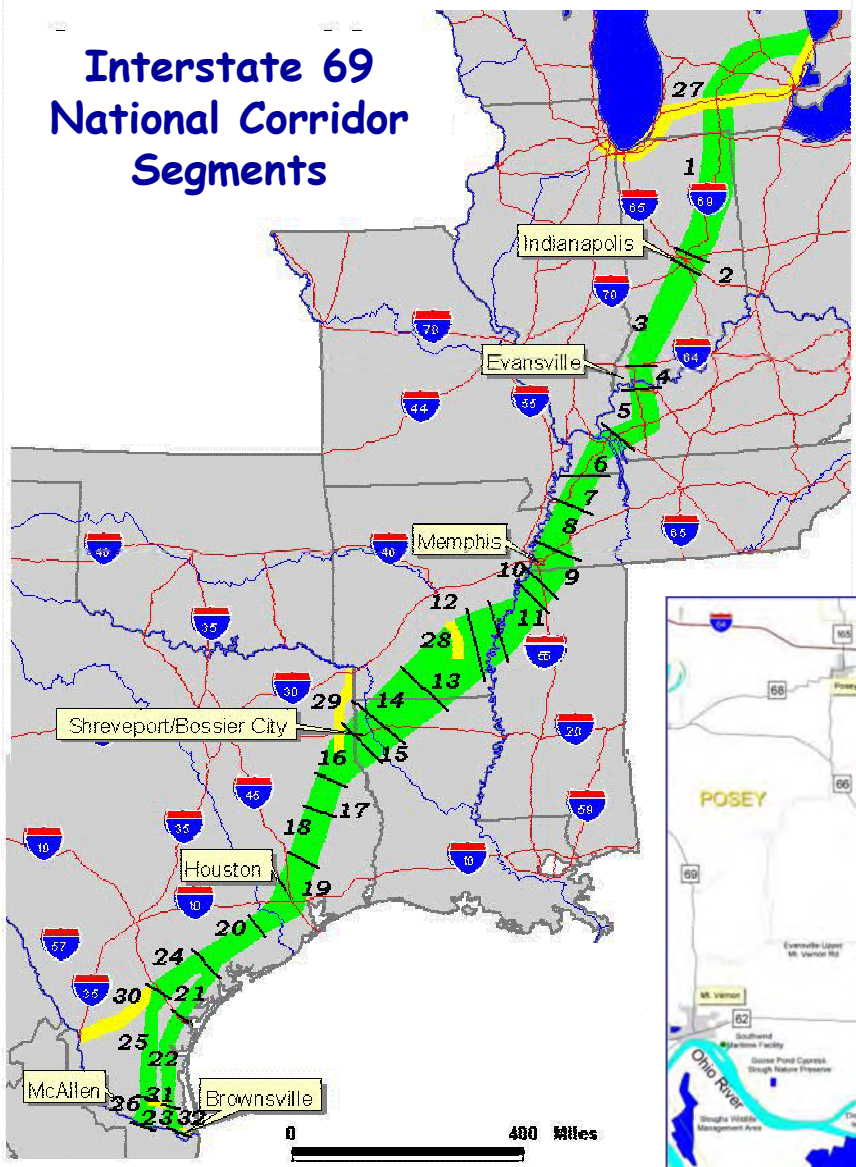
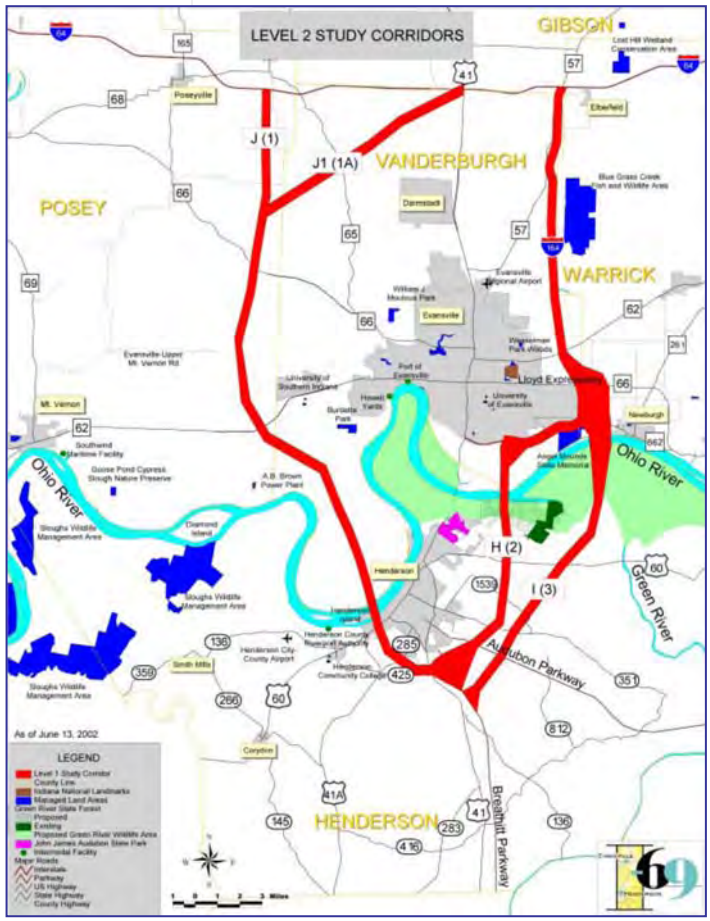
Environmental Issues Need Special Consideration



Where else will I-69 go?





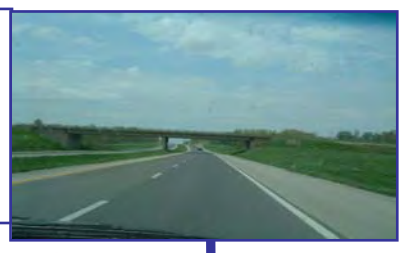
Several Other I-69 Segments are currently being studied. The Evansville to Henderson Segment is one example.

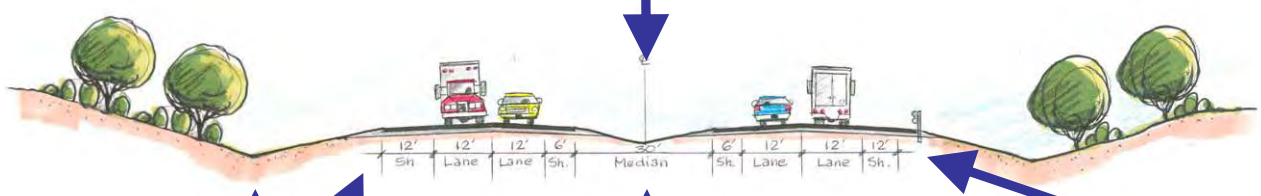
KENTUCKY TRANSPORTATION CABINET

Parkway Conditions and Options for I-69

Parkway Existing Conditions

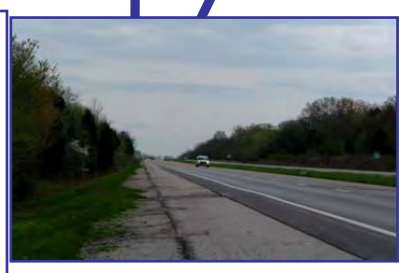
Currently, the parkways are divided, four-lane highways with fully-controlled access. However, in some areas the parkways do not meet interstate highway standards.





Guardrail is placed at some locations along the parkways to protect vehicles from roadside obstructions.

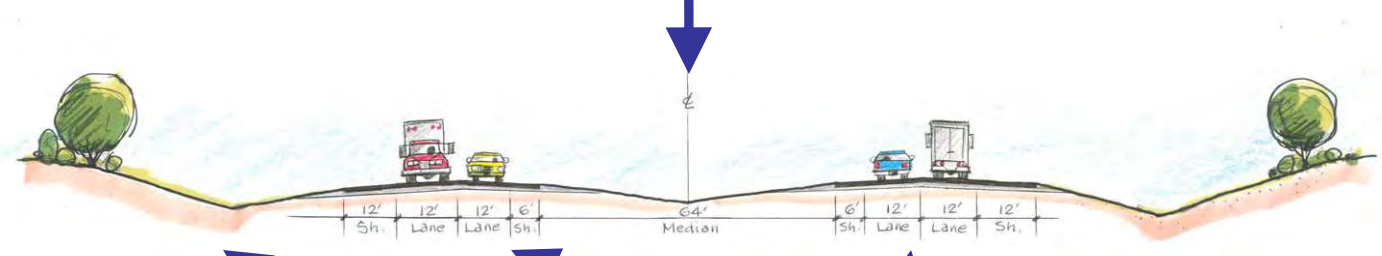
In some locations, shoulders along the parkways are not fully paved and slopes off the edge of the roadway can be steep with roadside obstructions existing close-by.



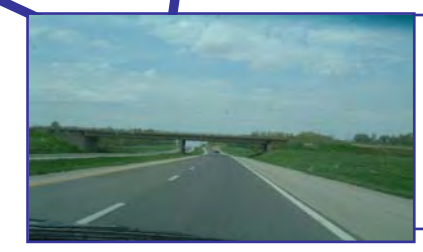
Existing medians along the parkway are generally depressed and approximately 30 feet in width.

I-69 Corridor Desired Conditions

Current interstate design standards call for a median width of 64 feet.



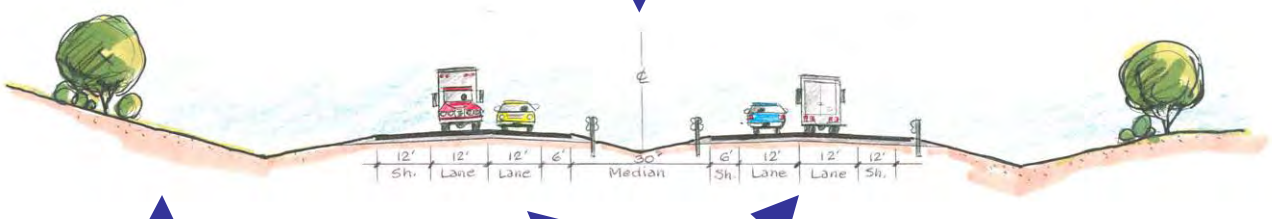
Clear zones shall be at least 30 feet according to interstate design standards.



Existing conditions along the parkways provide for 12-foot lanes, 12-foot outside shoulder, and 6-foot inside shoulders.

I-69 Corridor Acceptable Conditions

With a narrow median, guardrail or some other barrier should be used to help protect traffic.



Clear zones of 28 feet are acceptable but not preferred.

Acceptable conditions according to interstate design standards provide for 12-foot lanes, 12-foot outside shoulder, and 6-foot inside shoulders.

KENTUCKY TRANSPORTATION CABINET

Appendix D – Resource Agency Materials

Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

James C. Codell, III
Secretary of Transportation

Clifford C. Linkes, P.E.
Deputy Secretary

Paul E. Patton
Governor

December 6, 2002

(See Attached List)
«Letter_Title» «First_Name» «Last_Name» «Suffix»
«Title»
«Organization»
«Address1»
«Address2»
«City» «State» «Zip»

Dear «Letter_Title» «Last_Name»:

Subject: Planning Study
Lyon, Caldwell, Hopkins, Webster and Henderson Counties
I-69 Eddyville to Henderson
Item No. 2 – 69.10

We are requesting your agency's input on a planning study to determine the need and potential impacts for a proposed highway project. The Kentucky Transportation Cabinet has assembled a study team to evaluate the proposed reconstruction of the Wendell H. Ford (Western Kentucky) Parkway and the Edward T. Breathitt (Pennyrile) Parkway between Eddyville and Henderson to become part of the national Interstate 69 (I-69) corridor. This is Section of Independent Utility (SIU) No. 5 of the national I-69 corridor which connects Port Huron, Michigan at the Canadian border to the Lower Rio Grande Valley of Texas at the Mexican border. The study is currently in the initial data gathering stage.

We ask that you identify specific issues or concerns of your agency that could affect the development of the project. This planning study will include a scoping process for the early identification of potential alternatives, environmental issues, and impacts related to the proposed project. We believe that early identification of issues or concerns can help us develop highway project alternatives to avoid or minimize negative impacts.

We respectfully ask that you provide us with your comments by January 30, 2003 to ensure timely progress in this planning effort.

During the development of this planning study, comments will be solicited from Federal, state, and local agencies, as well as other interested persons and the general public, in accordance with principles set forth in the National Environmental Policy Act (NEPA) of 1969. The Federal Highway Administration is partnering with us in these efforts. A copy of a public notice placed in state and local newspapers concerning this project is attached.

Other Transportation Cabinet offices or consultants working on behalf of the Transportation Cabinet may also contact you seeking more detailed data or information to assist them in completing their environmental studies for this phase of the project.

We have enclosed the following project information for your review and comment:

- A summary overview for the study including a project location map.
- Year 2001 Traffic
- Year 2030 Traffic
- Accident Information by Accident Severity Issues
- Environmental Issues
- Existing Parkway Conditions and Options for I-69

We appreciate any input you can provide concerning this project. Please direct any comments, questions, or requests for additional information to Jim Wilson of the Division of Planning at 502/564-7183 or jimmy.wilson@mail.state.ky.us. Please address all written correspondence to Annette Coffey, P.E., Director, Division of Planning, Kentucky Transportation Cabinet, 125 Holmes Street, Frankfort, KY 40622

Sincerely,

Annette Coffey

Annette Coffey, P.E.
Director
Division of Planning

AC:JCW:RC

Enclosures

c: Jose Sepulveda (w/a)
Glenn Jilek (w/a)
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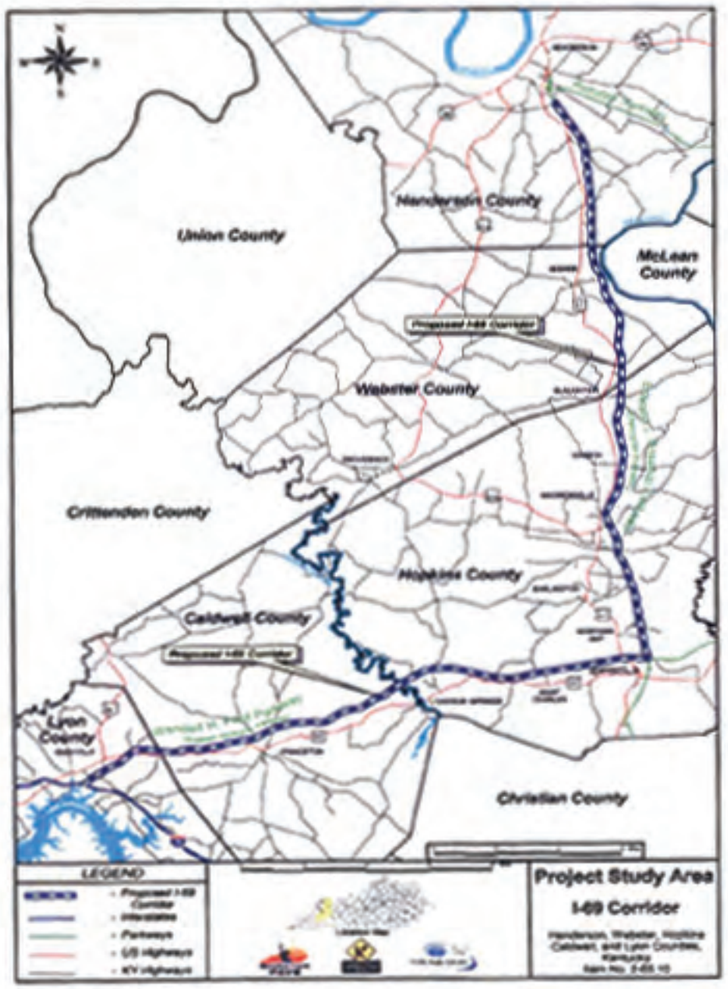
Project Study Area

Strategic Corridor Planning Study for I-69



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http://www.kytc.state.ky.us/planning/index.shtm.

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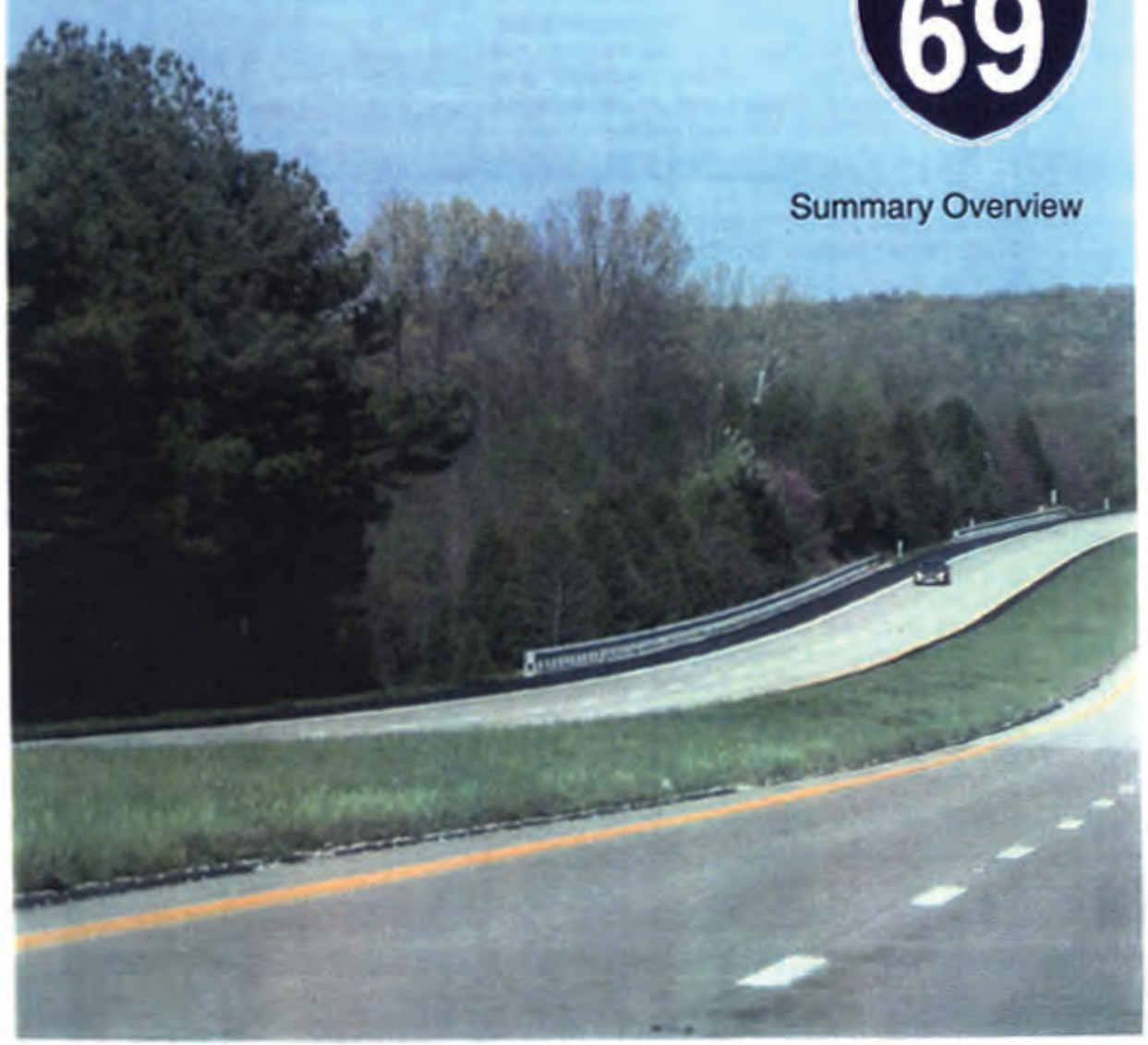
KENTUCKY TRANSPORTATION CABINET

Strategic Corridor Planning Study for I-69

Eddyville to Henderson, Kentucky

INTERSTATE 69

Summary Overview



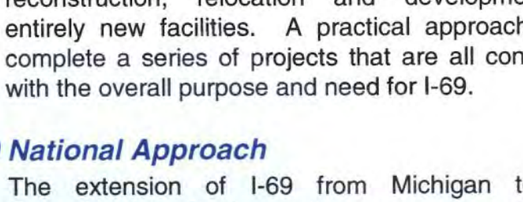
I-69 Project Background

A national study was completed in 1993 which determined that construction of I-69 from Canada to Mexico was a worthwhile project to pursue. The I-69 Corridor (Corridor 18) consists of an extension of existing I-69 from Port Huron, Michigan to the Texas/Mexico border. With a total length of over 1600 miles, the added sections of I-69 will require many years to construct. This length makes it impossible to approach the project as a single construction effort. The types of work to be done vary from location to location and include widening, reconstruction, relocation and development of entirely new facilities. A practical approach is to complete a series of projects that are all consistent with the overall purpose and need for I-69.

I-69 National Approach

The extension of I-69 from Michigan to the Texas/Mexico Border will require a series of individual linking projects. The segment between Eddyville and Henderson is one of 32 such projects. This planning study will help to identify where and how this link should be created.

In order to approach this in a realistic manner, the I-69 corridor is broken into workable segments, each of which can be constructed in a reasonable time frame by the state or states involved. If improved, each of these Sections of Independent Utility (SIU) must be able to stand on its own, whether adjacent sections are completed or not. A given section may be in place for several years before an adjacent section is completed and open to traffic; hence the concept of having independent utility. The process of defining these sections involves identifying a highway project that meets a number of principles and criteria.



The extension of I-69 from Michigan to the Texas/Mexico Border will require a series of individual linking projects. The segment between Eddyville and Henderson is one of 32 such projects. This planning study will help to identify where and how this link should be created.

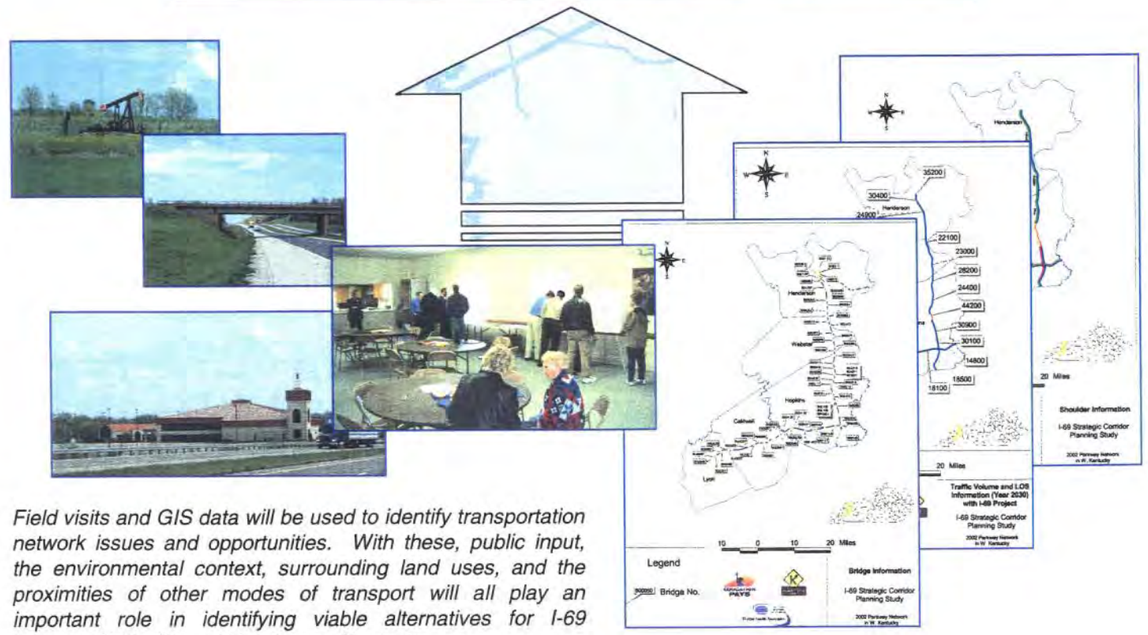
Comparing Alternates

The comparing of alternatives will be based on all gathered information, as well as input received throughout the planning process. Using GIS and an array of data sources, information on the current network can be gathered and used to identify potential alternates for the Eddyville to Henderson I-69 segment. After selecting a set of potential alternatives, they can be evaluated in terms of cost, potential impacts, potential benefits and public desires.

Evaluation

The alternative improvements will be evaluated relative to environmental issues, travel/economic benefits, public and resource agency comments, costs and engineering feasibility. Current design standards along the parkways do not meet typical interstate design standards. In particular, major bridges and interchanges will need to be considered and cost estimates developed for expanding or replacing these features. These structures are of special concern due to the funding required to bring the structures up to interstate design standards. More specifically, the widening and increasing of vertical clearance create major concerns.

Identification of Alternative Improvements



Field visits and GIS data will be used to identify transportation network issues and opportunities. With these, public input, the environmental context, surrounding land uses, and the proximities of other modes of transport will all play an important role in identifying viable alternatives for I-69 between Eddyville and Henderson, Kentucky.

Current Corridor Data

Logical Termini

The termini, or beginning and ending, of this section were selected to permit consideration of alternative alignments south of Henderson while connecting with I-24 near the end of the Wendell H. Ford (Western Kentucky) Parkway. Options will be considered for improvement of the Edward T. Breathitt (Pennyrile) Parkway and the Wendell H. Ford (Western Kentucky) Parkway to I-24 near the Tennessee River and the Land Between-the-Lakes.

Independent Utility

This section has independent utility because it permits analysis of a southwest-to-northeast interstate routing across western Kentucky connecting I-24 and the Henderson Bypass (KY 425). It would provide a usable section of interstate-type roadway even if other sections of I-69 were not completed.

Other Planned Improvements

This study will also consider how improvements along the parkways become part of the I-69 Corridor and other highway projects in the region.

Preliminary Goals and Objectives

The initial set of national goals for I-69 include:

1. The movement of goods;
2. Provide more job opportunities to local communities; and
3. System linkage.

Consideration will be given to integrating these national goals with the local needs and concerns identified for the Eddyville to Henderson segment. At the first project team meeting, preliminary project goals considered included:

1. Maximize the use of existing parkways;
2. Serve local industry; and
3. Provide an improved facility for increasing truck traffic.

Strategic Corridor Planning Study for I-69
Eddyville to Henderson, Kentucky

Public and Agency Input

A series of meetings and coordination activities will occur through the course of this study to inform and obtain input from local officials, public agency representatives, other stakeholders and the general public. It is anticipated that two full rounds of meetings will occur through the course of the project. The first round of meetings will take place at the beginning of the project and seek to obtain input on options and issues.

The second round of meetings will likely occur after the corridor has been studied and evaluated, but prior to the finalization of corridor recommendations. A final wrap-up meeting may be held at the conclusion of the study to present the final recommendations and next steps in the project development process. Input opportunities include:

- KYTC Project Team Meetings;
- Local Officials/Local Interest Meetings;
- Public Meetings; and
- Outreach to the general public as well as low-income and minority populations.

Project status reports will be given at these meetings, as well as posted on the KYTC project website.

Through the public involvement process, a set of project goals will be identified that can serve as an evaluation measure throughout the development of the project.

Environmental Research and Analysis

The environmental overview seeks to identify known environmental issues based upon publicly available data sources that can be obtained and developed for analysis purposes. Study team members will conduct a cursory field review (windshield survey) along the existing corridor and connecting side roads as needed. In addition, information relating to potential environmental issues will be obtained from the public via public questionnaires as well as federal, state and local databases. Results of the environmental overview are then mapped using Geographic Information System (GIS) software.

The Environmental Overview of the corridor will be documented in a separate technical report. Where appropriate, generalized recommendations will be offered on future measures that can be taken to avoid, minimize, mitigate and/or enhance the potential effects of corridor development on known environmental issues. Environmental concerns should be reduced since the majority of corridor improvements will be made within the existing right-of-way or immediately adjacent to the existing parkways.

Environmental Factors to be Identified and Analyzed

- *Social, Economic and Environmental Justice*
- *Historic and Archaeological Sites*
- *Natural Features and Waterways*
- *Prime and Unique Farmland*
- *Floral and Faunal Communities*
- *Threatened and Endangered Species*
- *Hazardous Materials, UST's, Oil and Gas Wells*
- *Geotechnical, Karst and Mining*
- *Air Quality*
- *Noise*
- *Others, as appropriate*

Eddyville To Henderson Planning Study

The Kentucky Transportation Cabinet (KYTC) is undertaking this planning study for the I-69 corridor from Eddyville, Kentucky to Henderson, Kentucky to determine more definite and detailed alternatives for this segment of the new I-69 corridor. This study will identify and evaluate potential alternatives for improving the Wendell H. Ford (Western Kentucky) and Edward T. Breathitt (Pennyrile) Parkways from I-24 near Eddyville to KY 425 at Henderson. It will identify and evaluate environmental factors, and social and economic constraints, as well as document and consider public and official comments, suggestions, and insight.

The planning study area passes through portions of Lyon, Caldwell, Hopkins, Webster and Henderson Counties in Kentucky. This study will coordinate with the on-going study of a proposed I-69 corridor in the Evansville-Henderson area. The Evansville-Henderson I-69 study will identify the proposed location for the Ohio River Crossing and will likely have a southern terminus at the Edward T. Breathitt (Pennyrile) Parkway south of Henderson, Kentucky. The Eddyville to Henderson study will consider and address the connections to other major roadways in the project area.

The anticipated analysis will involve consideration of all viable alternatives for the improving the existing parkways.

Local Segment

This particular section is denoted as SIU No. 5 in the I-69 (Corridor 18) Special Environmental Report. SIU No. 5 spans between Eddyville, Kentucky and Henderson, Kentucky. When complete, this project will provide a connecting link in the multi-state I-69 corridor on the National level.

Components of the Planning Study

Transportation Network – Information on highways and traffic conditions within the corridor will be collected and analyzed. This includes obtaining highway system data available from the KYTC, collecting aerial photography from available sources, and assembling United States Geological Survey (USGS) topographic Global Information System (GIS) files and digital orthophotography for the study area.

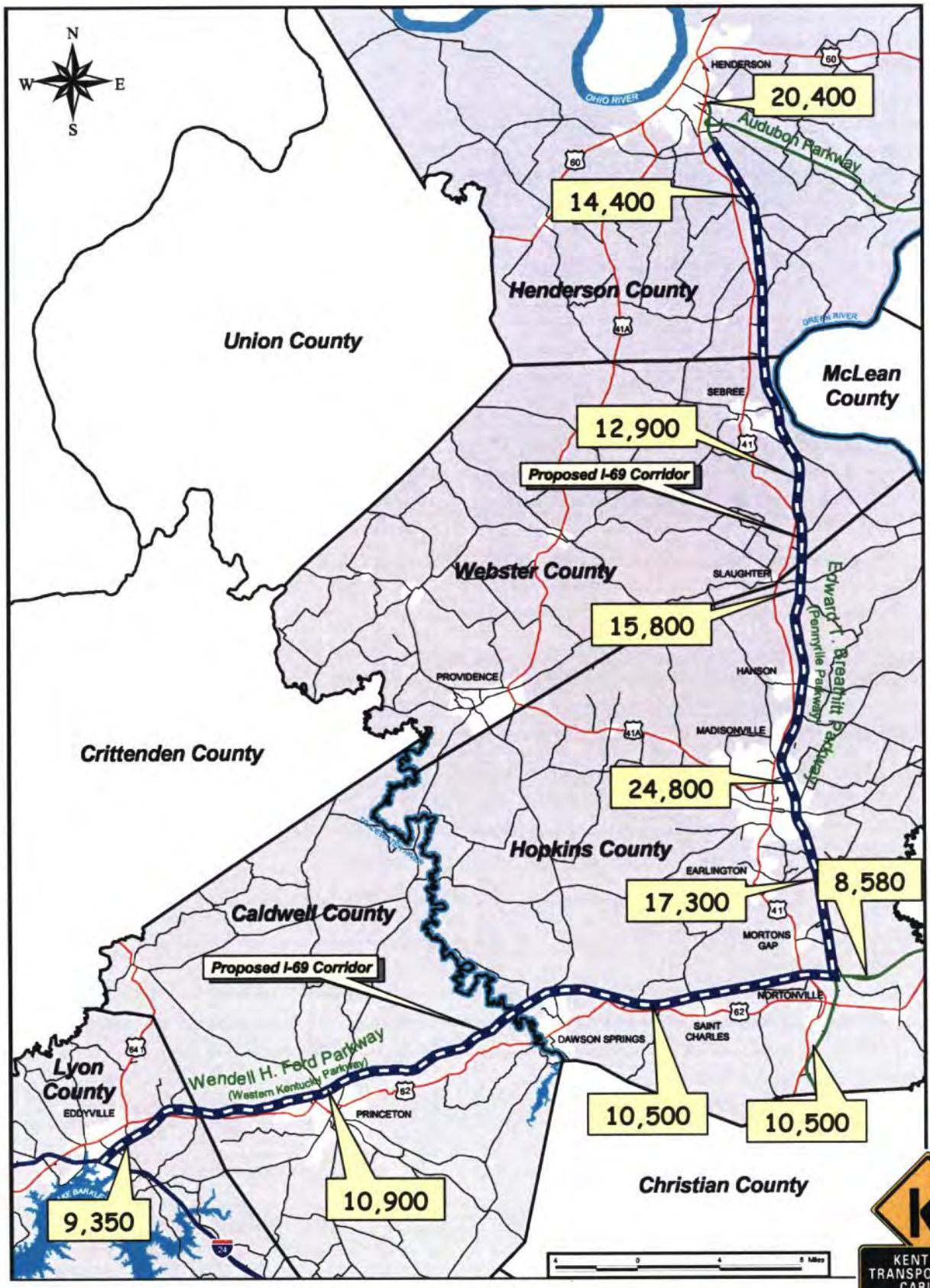
Public and Agency Input – Throughout the study, there will be meetings with both the public and other stakeholders and resource agencies. These meetings will be used to gather necessary information and input and to keep interested parties up to date on the study's findings and progress. To assist in keeping the public and agencies informed, information will be added to the KYTC's Division of Planning website: http://www.kytc.state.ky.us/planning/index.shtm. This website will be updated on a regular basis as new information becomes available.

Environmental Overview – Using an array of data sources including field surveys and agency input, a preliminary environmental overview of the project corridor shall be completed. This overview will identify major social and natural factors that could affect the location of the potential routes.

Development and Analysis of Alternatives – Using the gathered input from all sources, a series of I-69 alternative improvements for upgrading the parkways will be identified. These will be evaluated on their merits in each of the study components (transportation network, public and agency input, environmental issues, etc.), as well as on total cost and constructability.

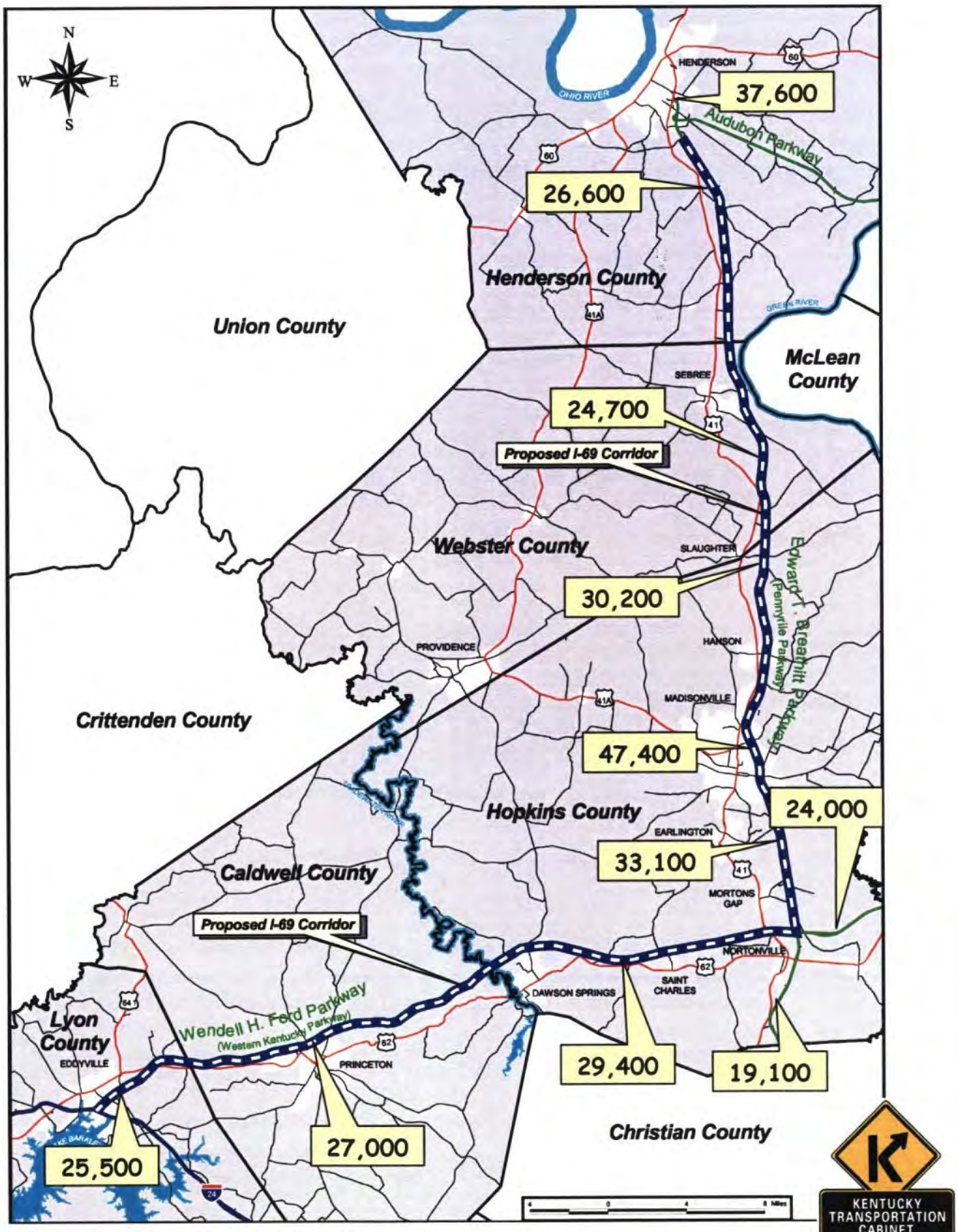
INTERSTATE 69

How many cars and trucks are on the Parkway today?



Yellow boxes show daily cars and trucks for year 2001.

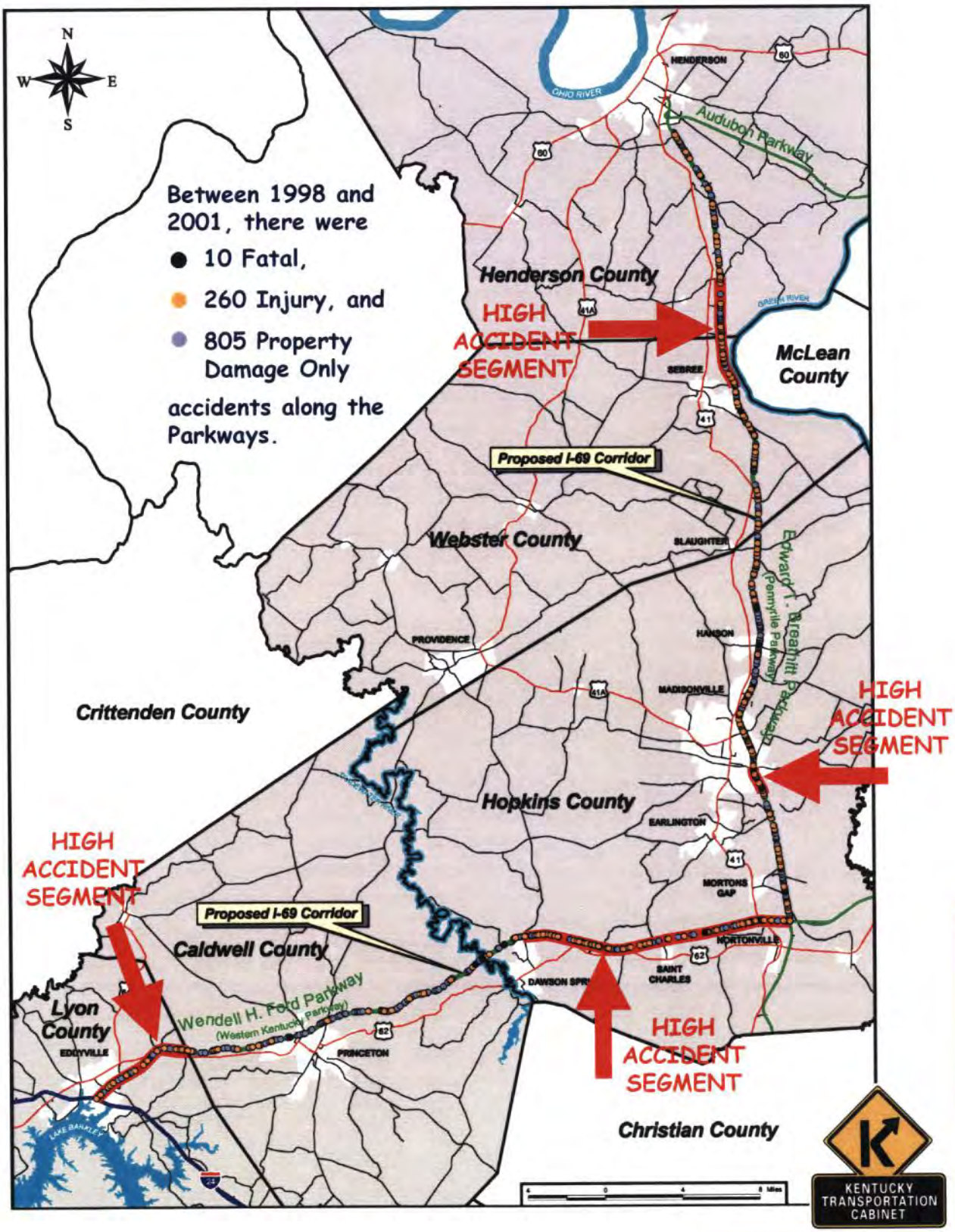
How many cars and trucks will be on the Parkway in 30 years?



Yellow boxes show daily cars and trucks for year 2030.

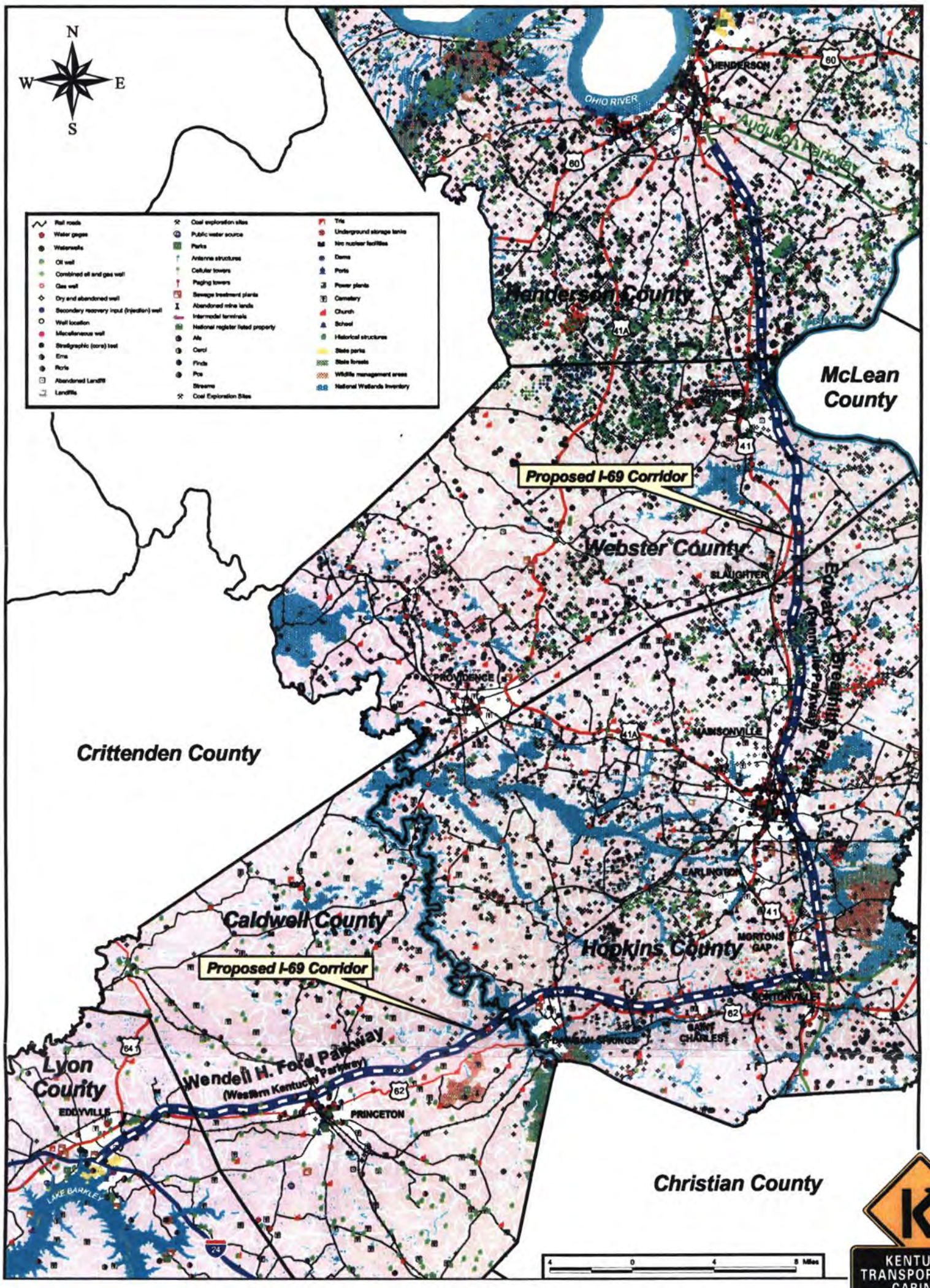
INTERSTATE 69

Where are the most accidents occurring?



INTERSTATE 69

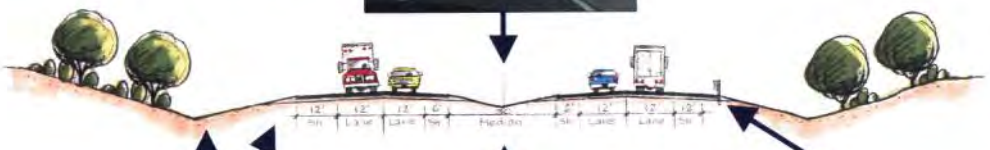
Environmental Issues Need Special Consideration



Parkway Conditions and Options for I-69

Parkway Existing Conditions

Currently, the parkways are divided, four-lane highways with fully-controlled access. However, in some areas the parkways do not meet interstate highway standards.



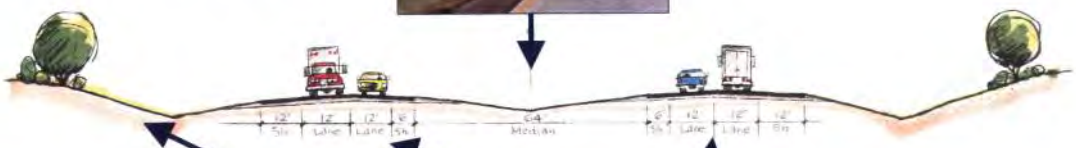
Guardrail is placed at some locations along the parkways to protect vehicles from roadside obstructions.

In some locations, shoulders along the parkways are not fully paved and slopes off the edge of the roadway can be steep with roadside obstructions existing close-by.

Existing medians along the parkway are generally depressed and approximately 30 feet in width.

I-69 Corridor Desired Conditions

Current interstate design standards call for a median width of 64 feet.

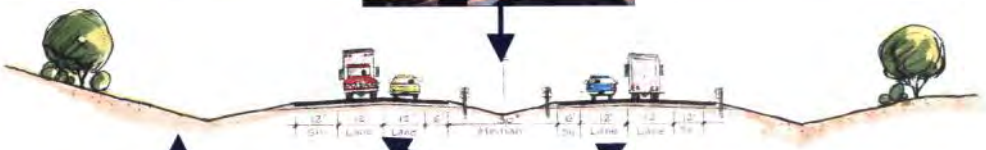


Existing conditions along the parkways provide for 12-foot lanes, 12-foot outside shoulder, and 6-foot inside shoulders.

Clear zones shall be at least 30 feet according to interstate design standards.

I-69 Corridor Acceptable Conditions

With a narrow median, guardrail or some other barrier should be used to help protect traffic.



Acceptable conditions according to interstate design standards provide for 12-foot lanes, 12-foot outside shoulder, and 6-foot inside shoulders.

Clear zones of 28 feet are acceptable but not preferred.

KENTUCKY TRANSPORTATION CABINET

PUBLIC NOTICE

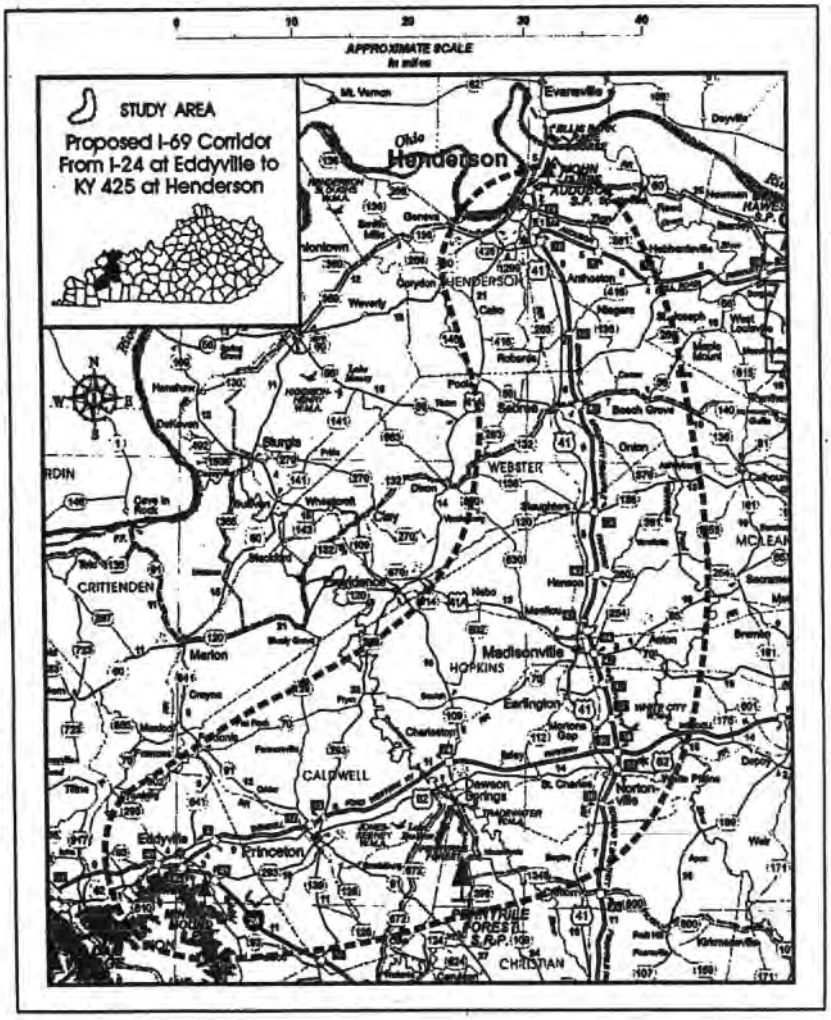
The Kentucky Transportation Cabinet (KYTC), in cooperation with the Federal Highway Administration (FHWA), is issuing this notice to advise the public that the KYTC is initiating a study for the following proposed highway project:

Interstate 69 (I-69)
from I-24 at Eddyville to KY 425 at Henderson
(Section of Independent Utility No. 5)
In
Lyon, Caldwell, Hopkins, Webster, and Henderson Counties, Kentucky
KYTC Item #2-69.10

The I-69 project is part of a proposed "High Priority Corridor" of national significance (Corridor 18) that extends from the Canadian border at Port Huron, Michigan, to the Mexican border in the Lower Rio Grande Valley of Texas, in accordance with the legislative intent of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and subsequent federal transportation legislation. Segments of the corridor across Kentucky are in various stages of project development. This study will address alternatives and issues related to the development of an interstate highway between Eddyville and Henderson that will improve travel within the study area and become a segment of the national I-69 corridor.

During this study, comments will be gathered from appropriate federal, state, and local agencies, as well as other interested persons and the general public, in accordance with requirements set forth in the National Environmental Policy Act (NEPA) of 1969 and subsequent federal regulations and guidelines developed by the Executive Office of the President's Council on Environmental Quality and the United States Department of Transportation for the implementation of the NEPA process.

This study will include a scoping process for the early identification of potential alternatives for and environmental issues related to the proposed project. At this time, the level of environmental documentation that will ultimately be prepared is not known. However, if an Environmental Impact Statement (EIS) is prepared for the proposed project in the future, the information gained through the scoping process in this planning study may be used as input to the scoping process for the development of that EIS. If an EIS is prepared in the future, written comments on the scope of alternatives and impacts will still be considered at that time, after the filing of the Notice of Intent (NOI).



Comments, questions, or expressions of interest for the proposed project should be directed in writing to Annette Coffey, P.E., Director, Division of Planning (A-2), Kentucky Transportation Cabinet, 125 Holmes Street, Frankfort, KY 40622 or Evan Wisniewski, Federal Highway Administration, 330 West Broadway, Frankfort, KY 40601.

City of Mortons Gap

Mortons Gap, Kentucky
42440

December 13, 2002

Annette Coffey, P.E.
Director
Division of Planning, Ky Trans. Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Annette Coffey,

The City of Mortons Gap supports the project of 1-69 coming through the Hopkins County area.

Sincerely,

Frank Stafford

Frank Stafford, Mayor

Coalfield Comments
WTTL AM 1310
WYMV Y-107 FM

1095 Nebo Road Madisonville Kentucky 42431

January 20, 2003

Ms. Annette Coffey, P.E.
Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

Dear Ms. Coffee:

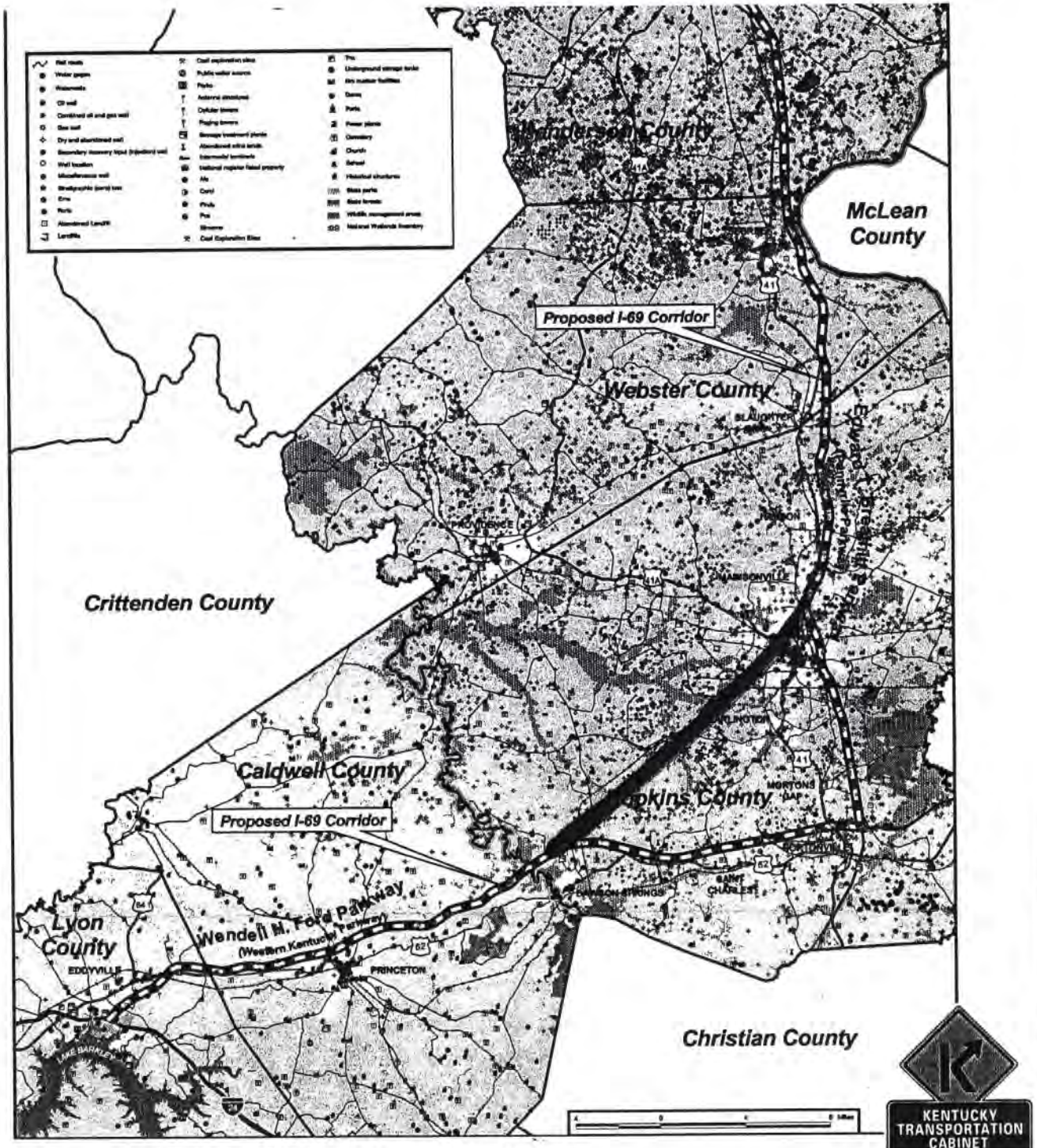
I have thoroughly reviewed the documents provided. I found the information to be comprehensive and your plans well thought out. By following the existing parkway system a tremendous savings in land acquisition and lower environmental impact will be realized. Furthermore, had the proposed interstate followed another route; substantial traffic would have been diverted from the existing parkways thereby lowering their efficiency.

I am sure you have considered the alternatives. However, I will toss the suggestion anyway. See the attached copy of your map. The red marker line approximates a "short cut" of approximately nine miles. Such a routing would also provide most of a much-needed western by-pass for Madisonville. The land along this route would be fairly inexpensive. Regardless of the final selection across Western Kentucky, old surface and underground mining activity will cause problems.

Thank you for affording me the opportunity to offer my observations.

Sincerely,

Ronald L. Sanders
Producer/Host


Henderson County
McLean County
Proposed I-69 Corridor
Webster County
Crittenden County
Caldwell County
Proposed I-69 Corridor
Lyon County
Wendell H. Ford Parkway
(Western Kentucky Parkway)
EDDYVILLE
PRINCETON
Christian County
KENTUCKY TRANSPORTATION CABINET

ECONOMIC DEVELOPMENT CORPORATION
OF MADISONVILLE-HOPKINS CO.
Serving The Needs Of Tomorrow Today

January 29, 2003

Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
501 High St.
Frankfort, KY 40622

VIA FACSIMILE: 502-564-9540

Dear Ms. Coffey:

First and foremost, on behalf of the Madisonville/Hopkins County Economic Development Corporation, I would like to take this opportunity to again express our appreciation to you and members of your staff who have worked so diligently in past months on the Interstate 69 and 66 projects.

The designation of the Pennyrile and Western Kentucky Parkways as Interstate routes is of great benefit to our community and region, leading to increased economic and commercial development opportunities locally, more jobs and higher traffic and visitor levels to our area as a result of the safer, more modern transportation infrastructure that will result from these projects.

Given your request for input on these projects as outlined in your letter dated December 6, 2002, the Infrastructure Committee for our corporation has met and we are pleased to offer the following comments:

1. The most critical need is for signage along the current Parkway routes showing their designation as future interstates, in keeping with the designations that are currently displayed on the Kentucky Highway Maps. This will be very helpful to those traveling along the parkways, who are often finding the discrepancy between the highway map and the lack of signage confusing.

2. High priority should be given to engineering and design work for those areas with high accident and fatality rates along the current parkway routes.

755 Industrial Road
Madisonville, KY 42431

For more information see our Homepage on the World Wide Web
http://www.kymtec.org

270 821 1939
800 821 1939
FAX: 270 821 1945

3. Another item of concern, which I'm sure will be addressed in the Interstate 69 and 66 design process, is bridge clearances, entrance and exit ramp distances and median widths to ensure adherence to acceptable interstate standards.

Thank you for your consideration of these issues. Please do not hesitate to contact me if you have questions or if I can be of further assistance to you as you continue to move forward with these projects.

Sincerely,

James A. (Jim) Miner, Jr., P.E.
Chair, Infrastructure Committee
Madisonville/Hopkins County
Economic Development Corporation

HENDERSON COUNTY
Riverport Authority

6200 Riverport Road • Henderson, Kentucky 42420 • Ohio River Mile 808
Phone (270) 826-1636 • Fax (270) 827-4523
Email: email@hendersonport.com • Web Site: www.hendersonport.com

December 11, 2002

Jim Wilson
Division of Planning
Kentucky Transportation Cabinet

Dear Mr. Wilson:

I recently received your agency's packet on the I-69 project from Eddyville to Henderson. I would like to submit the Riverport's opinion about this project for the public record.

We view this project as a great economic opportunity, not only for the Henderson County Riverport, but also for the entire county and the people who live here. This link in the I-69 project connects with the 425 by-pass around Henderson and the Riverport is at the other end of that by-pass. This could prove to be a very good advantage for our Industrial Park and also provide a safer truck route to it.

The Henderson County Riverport is in full support of this project and is willing to cooperate with you to help this project succeed.

Sincerely,

David Hatchett
Executive Director

DH/ln

Henderson
Economic Development Council

1990 Barrett Ct. • P.O. Box 674 • Henderson, KY 42419-0674
Phone: 270.826.7505 • Fax: 270.827.2969
Toll Free: 1-877-434-3766
email: results@hendersonedc.com • www.hendersonedc.com

December 17, 2002

Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey:

Thank you for your recent correspondence concerning the Planning Study for I-69. The Henderson Economic Development Council (EDC) is enthusiastic about this project and wants to assist in any way we can in expediting the construction of Section 5 from Henderson to Eddyville.

For the EDC, one of the most important issues regarding the project is the need for easy north/south access to I-69 for the industries locating in our state funded, 600-acre, 4 Star Industrial Park. The park is located in both Henderson and Webster Counties. It is adjacent to U.S. Highway 41 and is less than one mile west of the existing Natcher Parkway.

The 4 Star Park's development plans provide for an entrance into the park where Hwy 2097 intersects U.S. Hwy 41. A full I-69 interchange at Kentucky Highway 2097 will allow easy access into the park shortly after exiting the interstate.

Our community is currently a finalist in the site selection decision of a large distribution company that will employ 450 people. As a distribution company, they will obviously have a large volume of truck traffic. They have expressed concerns about the existing roads connecting the Natcher Parkway and U.S. Hwy 41. Our proposed interchange would greatly benefit this company as well as other companies considering locating in the 4 Star Park.

Please let me know if I can be of further assistance in this matter.

James H. Jones
Executive Director

JOHN JAMES AUDUBON came to Henderson in 1810. The John James Audubon Museum showcases one of the most extensive collections of Audubon's work in the world.

Post Office Box 376

Henderson, KY
42419-0376

Tel: (270) 826-9531

Fax: (270) 827-4461

Email:
info@hendersonchamber.org

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Bridging Roads To Success!

Henderson Henderson County
Chamber of Commerce

January 15, 2003

Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

Dear Ms. Coffey:

The Transportation Committee of the Henderson-Henderson County Chamber of Commerce has recommended the Edward T. Breathitt and the Wendell H. Ford Parkways as the route for that portion of I-69.

Certainly there are obvious reasons. First, the fact that the largest population base will be served using this route. Second, the cost savings of using the existing roadway with some improvements.

We anticipate that a decision to use an Eastern route for the Ohio River crossing will be forthcoming. This will allow for an easy access from that segment to the Breathitt Parkway.

Should you have additional questions, please do not hesitate to contact me at your earliest convenience. I can be reached via email geohwarren@hendersonchamber.org.

Sincerely,

George H. Warren, President
Henderson-Henderson County
Chamber of Commerce

2003 JAN 21 A 10:37
DIV OF PLANNING

85 Years of Service – Since 1916

HOPKINS COUNTY
JOINT PLANNING COMMISSION
Hopkins County Government Center • 56 North Main Street
Madisonville, KY 42431 • 270-825-4457 • FAX• 270-825-5019

January 28, 2003

Annette Coffey, P.E., Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

Dear Ms. Coffey,

Thank you for the involvement of localities in identifying issues or concerns that could affect the development of the I-69 project. In reviewing materials available and consulting with the Planning Commission, I submit the following for your information purposes. These issues have been identified as transportation needs by various groups around Hopkins County.

1. Our current Comprehensive Plan identifies the need to re-design the interchange at the Wendell H. Ford (Western Kentucky) Parkway and Highway 109;
2. A new interchange with the Wendell H. Ford (Western Kentucky) Parkway at Highway 41 – by Southside Elementary School;
3. The widening and reconfiguring of Highway 336 from the southbound off-ramp of the Edward T. Breathitt (Pennyrile) Parkway to Highway 481 – this is the "backdoor" into Madisonville.

As I mentioned, these are identified as transportation needs, therefore, I offer them as additional information. Other than the usual under-mined areas near the Parkways, the concentrated animal feeding operations, the wildlife refuges, etc., we have no additional issues or concerns to offer at this time.

Once again, thank you for seeking local input. If we may be of assistance in any manner, please do not hesitate to ask.

Sincerely,

Paula J. Dennison, AICP
Director

Madisonville Community College
2000 College Drive
Madisonville, KY 42431
(270) 821-2250

December 16, 2002

Annette Coffey, P.E.
Director - Division of Planning
Kentucky Transportation Cabinet
125 Holmes St.
Frankfort, KY 40622

Dear Ms. Coffey:

On behalf of faculty, staff and the administration of Madisonville Community College, I want to express to you our support of the reconstruction of the Wendell H. Ford Parkway and the Edward T. Breathitt Parkway between Eddyville and Henderson to become part of the national Interstate 69 (I-69) corridor. The concern of the college would be the fact that many, many students use the Breathitt Parkway and some students use the Ford Parkway. It is important that the students have routes to travel that would not delay them in getting to the college. I am sure you would publish alternate routes for folks traveling on those roads when there would be the potential for delays. The number of vehicles traveling the Breathitt Parkway near Madisonville as listed on your handout is 24, 800. Many of that number are students enrolled at Madisonville Community College. Also noted on a handout is the high accident segment near Madisonville.

I think the potential for future economic development for our area of Kentucky will greatly increase as a result of the I-69 corridor. Being that near an interstate highway that connects Canada and Mexico would certainly benefit Hopkins County and all of Kentucky. I am in full support of the project. If you questions or need to reach me, please feel free to do so. Thank you for the opportunity to express our concerns.

Sincerely,

Judith L. Rhoads, Ed.D.
President

JLR/ja

UNIVERSITY OF KENTUCKY

DIV OF PLANNING

2003 JUN 13 A 10:06

Kentucky Geological Survey
Research and Graduate Studies
228 Mining and Mineral Resources Building
Lexington, KY 40506-0107
Phone: (859) 257-5500
Fax: (859) 257-1147
www.uky.edu/kgs

June 11, 2003

Annette Coffey, P.E.
Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey:

This letter is to summarize geologic concerns for the Planning Study:
Lyon, Caldwell, Hopkins, Webster, and Henderson Counties
I-69, Eddyville to Henderson, Ky.
Item No. 2-69.10
This project occurs in two physiographic regions and will be discussed in two parts:

PART 1

(I-69 from Eddyville, Lyon County, through Caldwell County up to the East Fork in the Olney quadrangle).

Physiographic Region

This portion of the project is in the Mississippian Plateau (Pennyroyal or Pennyrile) Physiographic Region, which is underlain by limestone, sandstone, siltstone, gravel, sand, and silt.

Karst Potential

This portion of the project area would encounter karst features, such as sinkholes and caves.

Landslide Potential

This portion of the project area would encounter minimal pre- or post-landslide hazards.

Unconsolidated Sediments

This portion of the project area would encounter unconsolidated sediments at or near stream drainage, such as gravel, sand, and silt.

KGS

Resource Conflicts
This portion of the project area might encounter some resource conflicts, such as prior ownership of property for limestone quarrying or mining. There are gas wells in this portion of the project.

Materials Suitability
The gravel of the Tuscaloosa Formation found in the Princeton West quadrangle might be suitable for secondary road beds. It would not be suitable for aggregate for concrete because of its chert content. Many of the limestone units have been quarried for aggregate and may be suitable for road metal; however, the St. Louis would not be suitable for road metal as it may contain expansive material.

Fault Potential
This portion of the project area would encounter numerous faulted areas; with the mineralization (fluorite and calcite) may be associated with these areas.

Earthquake Ground Motions
This portion of the project area has probable peak ground acceleration (PGA) due to earthquake ground motion of 0.19g. There would be a low potential for liquefication or slope failure in the unconsolidated sediments at or near streams caused by earthquake bedrock ground motion.

PART 2

(I-69 from East Fork in the Olney quadrangle in Caldwell County through Hopkins County and Webster County, ending at Henderson in Henderson County).

Physiographic Region
This portion of the project area is in the Western Kentucky Coal Field. It is underlain by sandstone, siltstone, shale, limestone, coal, clay, underclay, gravel, sand, and silt.

Karst Potential
This portion of the project areawould encounter minimal karst features, such as sinkholes and caves.

Landslide Potential
This portion of the project area would encounter moderate pre- or post-landslide hazards because of the number of different rock units with different weathering potential.

Subsidence Potential
This portion of the project area might encounter areas of abandoned underground coal mines that might be subject to subsidence.

Unconsolidated Sediments
This portion of the project area would encounter unconsolidated sediments at or near stream drainage, such as gravel, sand, and silt.

Resource Conflicts
This portion of the project area might encounter a few resource conflicts such as prior ownership of property for coal mining.

Materials Suitability
This portion of the project area would not encounter any material for use as road aggregate.

Fault Potential
This portion of the project area would encounter numerous faulted areas.

Earthquake Ground Motions
This portion of the project area has probable peak ground acceleration (PGA) due to earthquake ground motion of 0.15g. There would be a low potential for liquefication or slope failure in the unconsolidated sediments at or near streams caused by earthquake bedrock ground motion.

Sincerely,

Richard A. Smath
Geologist

cc: Richard Wilson

Wilson, Jimmy (KYTC)

From: Greer, Daryl (KYTC)
Sent: Tuesday, January 07, 2003 2:21 PM
To: Wilson, Jimmy
Subject: FW: I-69, Item # 2-69.10, Agency Comments

-----Original Message-----
From: Combs, Kelvin (KYTC)
Sent: Tuesday, January 07, 2003 2:01 PM
To: Greer, Daryl (KYTC)
Subject:

Daryl,
The Division of Aeronautics has reviewed the planning study for: I-69 Eddyville to Henderson (Item # 2-69.10) and we have no negative comments pertaining to this study.

Kelvin Combs
Kentucky Airport Zoning Administrator
Division of Aeronautics
(502) 564-4480

C-17 Geotech
Wilson

A-2

MEMORANDUM DIV OF PLANNING **(P-1-2003)**

2003 JAN 23 P 1:53

TO: Annette Coffey, PE
Director, Division of Planning

FROM: William Broyles, PE
Branch Manager
Geotechnical Engineering
Division of Materials

BY: R. T. Wilson, P.G. R. T. Wilson
Geotechnical Branch

DATE: January 22, 2003

SUBJECT: Lyon, Caldwell, Hopkins, Webster and Henderson Counties
FD52 C121, Mars No. 6974401D
Eddyville to Henderson (I-69)
Preliminary Geotechnical Review
Item 2-69.10

At your request, a review of the geologic formations and geotechnical problems to be encountered by the subject project is completed. This project begins on the Mississippian plateau ends in the Western Kentucky Coal Fields region.

It is situated in three drainage basins. Drainage west of Princeton flows into the Cumberland River system; between Princeton and approximately a mile east of St. Charles on the WK, drainage flows into the Tradewater River and all drainage east St. Charles flows into the Green River system.

Rock formations along the proposed route are part of the Quaternary, Pennsylvanian, Mississippian, Systems.

Quaternary alluvium is detrital material consisting of clays, silts, sands, gravels and boulders. A thickness of approximately 20 feet is estimated.

Pennsylvanian age rocks consists of the Sturgis, Carbondale Tradewater and Caseyville Formations. These formations contain sandstones, shales, limestones and coals. Sandstones are generally characterized as brown in color, medium to coarse-grained size, friable and not suitable where durable rock is required in construction applications. Shales consist of small amounts of Durable Shale or siltstone. Most shales will be classified as non-durable shale or clay shales and will require special shale compaction techniques. This project encounters numerous Coal seams; they are from the Kentucky Number 1 in the Caseyville through the Kentucky Number 18 in the. Sturgis. Pennsylvanian limestones are generally less than 10 feet, discontinuous and will not generate significant quantities of limestone for highway uses.

Beneath the Pennsylvanian is the Mississippian Age rocks consisting of Kinkaid Limestone, Palestine Sandstone, Menard Limestone, Waltersburg Sandstone, Vienna Limestone, Tar Springs Sandstone, Glen Dean Limestone, Hardinsburg Sandstone, Golconda Formation, Cypress Sandstone, Paint Creek Limestone, Bethel Sandstone, Renault Formation, Ste. Genevieve, St. Louis, Salem, Warsaw and Fort Payne Formations.

The Kinkaid Limestone consists of interbedded red gray or green non-durable shales make up 50 percent of the unit with intermittent sandstone and limestone ledges composing the remainder; the Kinkaid Limestone is approximately 55 -150 feet thick. Palestine Sandstone is dominantly a gray siltstone (durable shale) 35-70 feet thick. Menard Limestone is an argillaceous limestone with red to gray non-durable shale beds and a unit thickness of 115- 135 feet thick. This limestone is suitable all highway uses. Waltersburg Sandstone is 80 percent a non-durable shale 60-70 feet thick.. Vienna Limestone medium crystalline limestone 15-25 feet thick suitable for all highway uses. Tar Springs Sandstone is 80 to 175 feet thick, the upper third is non-durable gray shale, and the middle third interbedded sandstone and shale and bottom third sandstone. Glen Dean Limestone is a medium to coarse crystalline limestone 0-100 thick and is suitable for all highway uses. Hardinsburg Sandstone is interbedded sandstone and shale non-durable shale with a unit thickness of 80-100 feet thick. Golconda Formation is dominantly gray non-durable shale with small amounts of limestone and sandstone. It has a unit thickness of 110- 130 feet thick. Cypress Sandstone is a gray to red non-durable shale 40 –60 feet thick.. Paint Creek Limestone is 90-145 feet thick and suitable for all highway uses, with minor shale and sandstone partings. The Bethel Sandstone is 10-210 feet thick, durable and

gray in color. Renault Formation is 0-100 feet thick limestone suitable for all highway uses. Ste. Genevieve is 180-200 feet thick, fine to medium grained limestone. Sinkholes, lapies, and caverns are associated with this formation. Rock from this formation is suitable for all roadway uses. St. Louis, Salem, Warsaw is 530 – 635 feet thick with chert beds and numerous calcareous shale parts prevalent. Fine to coarse crystalline limestone occurs throughout, solution features are not common with these formations. Rock from this formation is suitable for all roadway uses. Fort Payne Formations is a 600 feet thick limestone unit containing a large percent of chert. However, it is still suitable for most highway uses.

Vertical displacement faults trending northeast to southwest generally parallel the Western Kentucky Parkway and cross the Pennyrile. Construction problems associated with these faults are not anticipated to be insurmountable problems but will be addressed on a case by case basis.

Springlines can be anticipated at the base of the many limestone units, faults and on out crops of the coal seams.

Coal Mining Considerations

Numerous commercial coal seams are present within the corridor. A review of available mine maps indicates the proposed corridor has both strip-mines and abandon underground mines along both Parkways, with the highest concentrations in the Henderson, Madisonville and St. Charles areas. Mining by underground methods has occurred in the Kentucky No. 4, 9 & 11. Strip mines are present in the 4, 7, 9, 11, 12 & 14. The present road alignment can not avoid the underground mines and numerous subsidence problems have occurred though out the study area. The Madisonville area is of special concern due to abandon multiple seam-mines with a history of sudden highway subsidence on the Parkway. Therefore, stabilization of the mine voids is recommended. Methods to be used include over excavating to remove the mine void, pneumatic backstowing, reinforced embankment slopes, flatter cut slopes and embankment slopes. Structures utilizing yielding foundations or footers located below the void will be required to minimize subsidence problems.

A mineral evaluation study will be required after a preferred alignment is selected. If alignments are away from the existing Parkways

the mineral evaluation will be needed to assist in determining the cost of new alignments verses existing alignments.

If active underground coal mines are present at the time of construction, special safety regulations will be necessary for construction activities when crossing mains or active sections of coal mines. These can include temporary suspension of mine production and evacuation of personnel from the mine. The mining companies may request compensation for reduced production during roadway construction blasting activities.

The proposed road alignments are crossing both reclaimed and unreclaimed strip mines. Unreclaimed strip mines generally predate 1977 and foundation materials have consolidated making settlement problems less severe. Strip mines completed after 1977 are generally reclaimed and contain unconsolidated materials, making settlement in the foundation of fills very likely. In order to minimize fill settlement removal of the top 5 feet of strip mine waste and recompaction in 1.0-foot lifts is recommended. Dynamic compaction may be considered as another alternate. Cut slopes in strip mine wastes will generally be 3:1 extending to the disturbed limit.

Numerous oil and gas extraction wells are located on this project. Maps also indicate water and gas injection wells are present as part of water floods and natural gas storage. It appears that the widening has the potential for negatively impacting some wells. Costs associated with impacting the wells will be required to better determine if buying the wells or avoiding them is the best solution.

Environmental Considerations . . .

1. Encasing embankments with 2' minimum of soil and lining drainage ditches with limestone should minimize acid produced from the black carbonaceous shale.

2. The roadway widening is anticipated to encroach on wetlands. Alternate construction techniques may be necessary to minimize the impact in the environmentally sensitive area.

3. I-69 crosses 24 blueline streams where additional disturbance may be required and attempts will be made to minimize the

impacts by appropriate methods such as limited channel changing, erosion control and fish habitat improvement structures.

4. Friable sandstones are associated Pennsylvanian age formations. Where exposed, erosion control methods such as silt fences, straw bales and settling ponds will be needed to prevent stream siltation.

5. Most coal seams projected to be present on the route contain levels of acid producing materials, which require treatment. Acidic shales and coal waste sites should be buried or encased with 4' of soil and/or non-durable shale.

6. Karst drainage systems are present in the Princeton area. Treatment of sinkholes that are not to be used for drainage treatment should follow "Treatment of Sinkholes". Sinkholes, which are to be utilized for drainage, should be investigated to determine if it may adversely impact others.

Geotechnical Considerations . . .

1. Soil overburden depths may vary from 10' to 30'.

2. The average soil strippage depth is estimated to be 3" and a soil shrinkage factor of 2 percent is suggested in accordance with the Design Guidance Manual Section.

3. Rock Swell Factors for this project are estimated to be as follows: 0% to 10% for Non-Durable Shales; and 15% for Sandstone, Limestone and Durable Shales.

4. A CBR value of 3 is recommended if soil subgrade or nondurable shales are utilized. Therefore, chemical stabilization of the subgrade is likely. If limestone and sandstone or durable shales are available in sufficient quantities for subgrade a CBR of 11 – 9 respectfully is anticipated.

5. Cut slopes in the durable shales, limestone, dolomites, and sandstones will be stable on 1:20 – ½:1 presplit slopes with 18' – 20' benches and 10'-15' overburden bench at the bottom of the overburden and rock disintegration depth. Back slopes will be depended on the joint angles and the lift heights depend on lithology. The RDZ extends approximately 10' – 30' below groundline in cut section.

6. Cut slopes in nondurable shales should be 1.5:1 or flatter. Side hill conditions should be avoided in these formations where possible.

7. Special shale compaction procedures may be required where nondurable shales are utilized.

8. Limestone, siltstones, or durable sandstones should be placed in bottom of fills to the maximum high water elevation at all streams.

9. Rock flowlines are not anticipated at any of the stream crossings. Therefore, yield foundations will be required.

10. Embankment benches will be necessary in sidehill conditions. Limestone rock or free draining materials (2 feet minimum) should be placed on the benches for drainage.

11. For estimating right of way requirements and quantities an overall 3:1 slope is recommended for embankment slopes and 2:1 for cut slopes.

12. Spring boxes and underdrains will be necessary when springs, caves and water bearing coal seams are encountered in the embankment areas and undercuts.

13. Limestone, Durable Sandstone & Durable Shale are suitable for all roadway uses.

14. Friable Sandstone is suitable for free draining fill & embankments, however it shall be constructed in 1' lifts.

15. Non-Durable Shales are suitable for embankment constructed in 8" lifts and compacted in accordance with shale compaction procedures.

16. This project is in a classified Seismic Risk Zone 3, which is defined as an area of major damage due to earthquake activity.

If there are questions or comments, please advise.

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

WESTERN KENTUCKY

SYSTEM	SERIES	FORMATION, MEMBER, AND BED	THICKNESS, IN FEET	THICKNESS, IN METERS
QUATERNARY	Holocene	Alluvium	0-200	0-60
	Pleistocene	Lacustrine deposits	0-185	0-55
		Loess	0-80	0-25
		Continental deposits and fluvial deposits	0-120	0-35
TERTIARY	Pliocene	[1]Jackson Formation	0-220	0-65
	Oligocene	Claiborne Formation	75-320	22-100
	Eocene	Wilcox Formation	0-200	0-60
	Paleocene	Porters Creek Clay	65-230	20-70
		Clayton and McNairy Formations	125-275	40-85
CRETACEOUS	Upper Cretaceous	Tuscaloosa Formation	0-180	0-55
PERMIAN	Lower Permian	[2]Mauzy Formation	390+	120+
PENNSYLVANIAN	Upper Pennsylvanian	Sulphur Springs coal bed		
		Sturgis Formation	2260	678
		Geiger Lake coal bed		
		Dixon Sandstone of Glenn (1912)		
		Lisman coal bed		
		No. 18 coal bed		
		Carthage Limestone Member		
		No. 17 coal bed		
		No. 16 coal bed		
		No. 15 coal bed		
		Madisonville Limestone Member		
		No. 14 coal bed		
		No. 13 coal zone		
		Providence Limestone Member		
		No. 11 coal bed		
		No. 9 coal bed		
		Carbondale Formation	300-420	90-125
		No. 8b coal bed		
		No. 8 coal bed		
		No. 7 coal bed		
		No. 6 coal bed		

WEST—CENTRAL KENTUCKY

SYSTEM	SERIES	FORMATION, MEMBER, AND BED	THICKNESS, IN FEET	THICKNESS, IN METERS
PENNSYLVANIAN	Middle Pennsylvanian	No. 14 coal bed		
		No. 13 coal zone		
		Providence Limestone Member		
		No. 11 coal bed		
		No. 9 coal bed		
		Carbondale Formation	300-420	90-125
		No. 8b coal bed		
		No. 8 coal bed		
		No. 7 coal bed		
		No. 6 coal bed		
		Curlew Limestone Member		
		No. 4 coal bed		
		Tradewater Formation	570-620	175-190
		No. 3 coal bed		
		No. 2 coal bed		
		No. 1b (Bell) coal bed		
	Lower Pennsylvanian	Battery Rock coal bed		
		Caseyville Formation	190-500	55-150
MISSISSIPPIAN	Upper Mississippian	Kinkaid Limestone	0-210	0-65
		Degonia Sandstone	5-40	1.5-12
		Clore Limestone	70-130	20-40
		Palestine Sandstone	30-75	9-22
		Menard Limestone	50-145	15-45
		Waltersburg Sandstone	20-80	6-25
		Vienna Limestone	0-40	0-12
		Tar Springs Sandstone	70-120	20-35
		Glen Dean Limestone	20-95	6-30
		Hardinsburg Sandstone	80-150	25-45
		Haney Limestone Member	0-40	0-12
		Golconda Formation	90-165	25-50
		Cypress Sandstone	0-140	0-40
		Paint Creek Limestone	5-100	15-30
		Bethel Sandstone	20-120	6-35
		Renault Limestone	70-125	20-40
		Levias Limestone Member	0-35	0-10
		Rosiclaire Sandstone Member	0-25	0-8
		Ste. Genevieve Limestone: Fredonia Limestone Member	140-270	40-80
		St. Louis Limestone: Upper member	130-255	40-75
		St. Louis Limestone: Lower member	180-335	55-100
		Salem Limestone	110-160	35-50
		Warsaw Limestone	150-300	45-90
		Fort		

END PROJECT

BEGIN PROJECT

I-69
Eddieville to Henderson
Geologic Map
Scale = 1 : 250,000

Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

James C. Codell, III
Secretary of Transportation

Clifford C. Linkes, P.E.
Deputy Secretary

Paul E. Patton
Governor

MEMORANDUM

TO: Annette Coffey, Director
Division of Planning

FROM: Michael L. Hill, Director
Division of Multimodal Programs

DATE: February 11, 2003

SUBJECT: Interstate 69 (I-69) Planning Study
Item No. 2-69.10

Thank you for the opportunity to comment on this significant project.

The proposed I-69 corridor passes through one Metropolitan Planning Organization (MPO), EUTS for Henderson, KY, and one Small Urban Area (SUA), Madisonville, KY. The MPO will need to be informed about the progress of the project, and be provided opportunities for comments, when appropriate. In addition, a SUA study of Madisonville was completed at the end of 2002. This Division suggests incorporating the results of this study into the I-69 Planning Study. The impact of the I-69 corridor through Madisonville should be thoroughly evaluated. If any additional copies of the Madisonville SUA study are required, please contact Amy Thomas of this Division, at 502.564.7686.

The coordination and connectivity of bicycle and pedestrian facilities is important in the early planning and design stages of projects. Design Guidance from the United States Department of Transportation released in February, 2000, states "bicycling and walking facilities will be incorporated into all transportation projects unless exceptional circumstances exist."

The proposed I-69 corridor only intersects one designated bicycle route – the TransAmerica Trail east of Sebree, in Webster County. Any changes to the Sebree interchange should incorporate incorporate bicycle facilities in order to maintain connectivity and the stability of the TransAmerica Trail. In addition, although bicycles and pedestrians are not allowed on Interstates, any new

bridges along the corridor should be evaluated to provide pedestrian and bicycle facilities for non-motorized connectivity when necessary.

Please contact Paula Nye of this Division for any questions about bicycle and pedestrian concerns.

We look forward to working with your Division to facilitate your study efforts in our air quality nonattainment and maintenance areas, SUA and MPO areas, and by increasing awareness of bicycle and pedestrian issues.

MLH/LJS/CPS/PEN/AJT

A-2

Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

James C. Codell, III
Secretary of Transportation

Clifford C. Linkes, P.E.
Deputy Secretary

Paul E. Patton
Governor

MEMO TO: Annette Coffey
Engineer Director
Division of Planning

FROM: Charles A. Knowles
Engineer Director
Division of Operations

DATE: January 17, 2003

SUBJECT: Planning Study
Lyon, Caldwell, Hopkins, Webster, and Henderson Counties
I-69 Eddyville to Henderson
Item No. 2-69.10

The Division of Operations prefers reconstruction of the Wendell H. Ford (Western Kentucky) Parkway and the Edward T. Breathitt (Pennyrile) Parkway in lieu of the construction of a parallel route.

CAK/WEN/mp

DIV OF PLANNING
2003 JAN 17 P 2:11

EDUCATION PAYS

Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

James C. Codell, III
Secretary of Transportation

Clifford C. Linkes, P.E.
Deputy Secretary

Paul E. Patton
Governor

MEMORANDUM

TO: **Annette Coffey, P.E.**
Director
Division of Planning

FROM: **Edward Sue Perkins, P.E.**
Branch Manager
Permits Branch

Sue
by: ESP

DATE: **January 27, 2003**

RE: **Planning Study**
Lyon, Caldwell, Hopkins, Webster and Henderson Counties
I-69 Eddyville to Henderson
Item No. 2 - 69.10

The Permits Branch has reviewed the data provided for subject study site and wish to offer the following.

1. **Since the proposed roadway is to be on the N. H. S., early notification of the final line and grade is needed. This enables us to monitor outdoor advertising devices prior to road construction being completed.**

2. **Full Access Control should be extended along cross roads from ends of ramps to insure that future entrances proposed on cross roads will be in accordance spacing requirements and 603 KAR 5:120.**

Thank you for the opportunity to verbalize our concerns.

ESP/elc

U.S. Department
of Transportation
**Federal Aviation
Administration**

Airports District Office, FAA
3385 Airways Blvd., Suite 302
Memphis, Tennessee 38116-3841
(901) 544-3495 FAX: (901) 544-4243
Email: 9.aso-mem-ado@faa.gov

December 10, 2002

Ms. Annette Coffey, P. E., Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

Dear Ms. Coffey:

This is in response to your letter to Ms. LaVerne Reid dated December 6, 2002 requesting information on any impacts concerning the proposed national Interstate 69 corridor.

There are some public airports in the vicinity of this proposed project as follows:

Henderson City – County Airport	Henderson, KY
Madisonville Municipal Airport	Madisonville, KY
Tradewater Airport	Dawson Springs, KY
Princeton – Caldwell Co. Airport	Princeton, KY

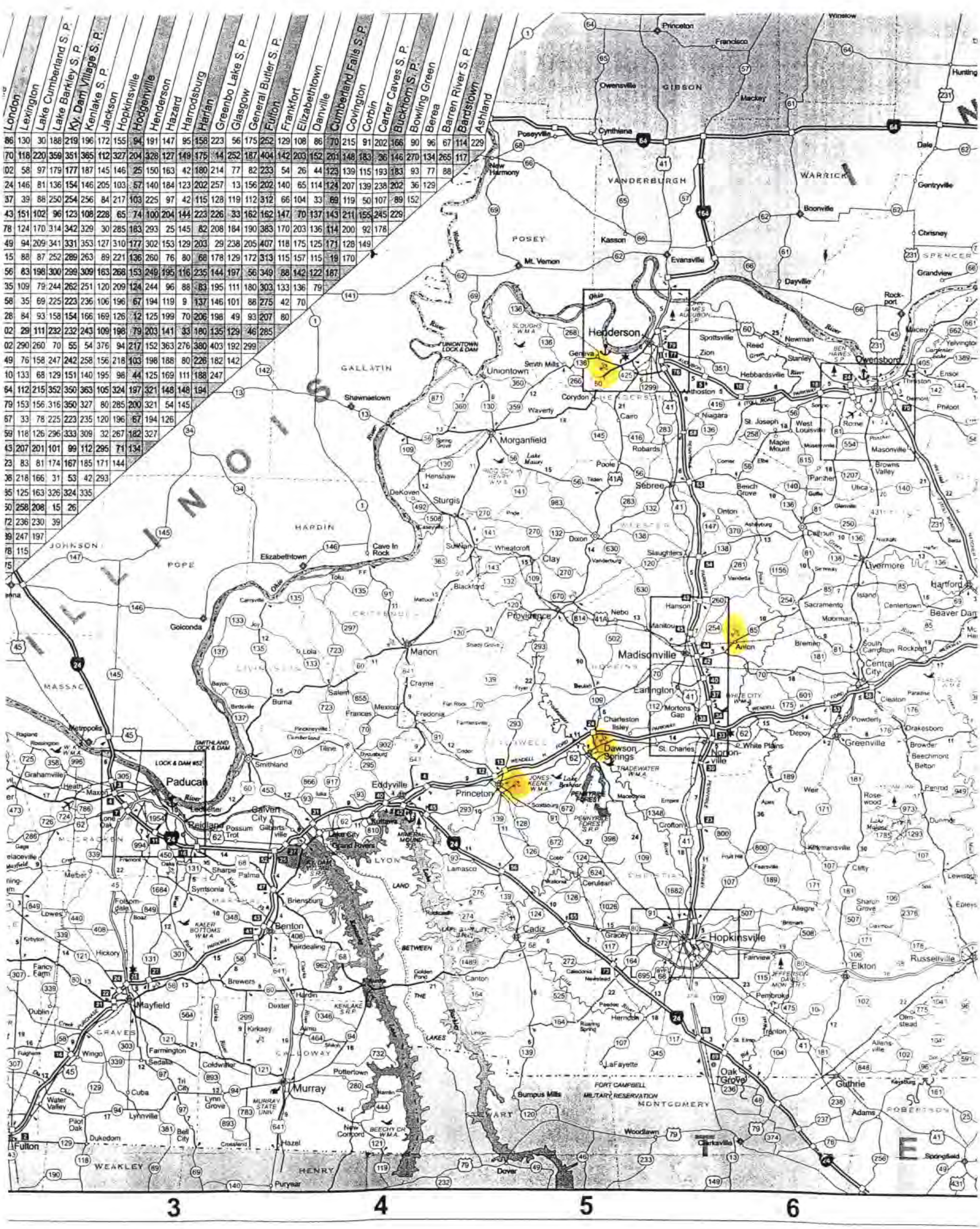
I have enclosed a map showing the airport locations. Please notify this office if the proposed I-69 will be within 3 miles of the listed airports via the enclosed FAA Form 7460-1, "Notice of Proposed Construction".

Thank you for the opportunity to review the proposal.

Sincerely,

Michael L. Thompson
Program Manager

enclosures



London
Lexington
Lake Cumberland S. P.
Lake Barkley S. P.
Ky. Dam Village S. P.
Kenlake S. P.
Jackson
Hopkinsville
Hodgenville
Henderson
Hazard
Harrodsburg
Harlan
Greenbo Lake S. P.
Glasgow
General Butler S. P.
Fulton
Frankfort
Elizabethtown
Danville
Cumberland Falls S. P.
Covington
Corbin
Carter Caves S. P.
Buckhorn S. P.
Bowling Green
Berea
Barren River S. P.
Bardstown
Ashland
Princeton
Francisco
Owensville
GIBSON
Poseyville
Cynthiana
New Harmony
VANDERBURGH
WARRICK
Boonville
POSEY
Mt. Vernon
Evansville
Henderson
Owensboro
Uniontown
GALLATIN
Shawneetown
Morganfield
Sturgis
HARDIN
Elizabethtown
Cave In Rock
Clay
Dixon
Sebree
Calhoun
Livermore
Hartford
POPE
JOHNSON
Golconda
Providence
Madisonville
Marion
Earlington
Dawson Springs
Nortonville
Greenville
Central City
MASSAC
Metropolis
Paducah
Smithland
Eddyville
Princeton
Calvert City
Benton
Mayfield
Murray
Cadiz
Hopkinsville
Elkton
Russellville
Oak Grove
Guthrie
Clarksville
Fulton
WEAKLEY
HENRY
Dover
MONTGOMERY
FORT CAMPBELL MILITARY RESERVATION
3
4
5
6

Please Type or Print on This Form

Form Approved OMB No. 2120-0001

U.S. Department of Transportation
Federal Aviation Administration

Failure To Provide All Requested Information May Delay Processing of Your Notice

Notice of Proposed Construction or Alteration

FOR FAA USE ONLY
Aeronautical Study Number
- - -

1. Sponsor *(person, company, etc. proposing this action) :*
Attn. of: _____
Name: _____
Address: _____
_____
City: _____ State: _____ Zip: _____
Telephone: _____ Fax: _____

2. Sponsor's Representative *(if other than #1) :*
Attn. of: _____
Name: _____
Address: _____
_____
City: _____ State: _____ Zip: _____
Telephone: _____ Fax: _____

3. Notice of: ☐ New Construction ☐ Alteration ☐ Existing

4. Duration: ☐ Permanent ☐ Temporary (months, days)

5. Work Schedule: Beginning _____ End _____

6. Type: ☐ Antenna Tower ☐ Crane ☐ Building ☐ Power Line
☐ Landfill ☐ Water Tank ☐ Other _____

7. Marking/Painting and/or Lighting Preferred:
☐ Red Lights and Paint ☐ Dual - Red and Medium Intensity White
☐ White - Medium Intensity ☐ Dual - Red and High Intensity White
☐ White - High Intensity ☐ Other _____

8. FCC Antenna Structure Registration Number *(if applicable):*
_____

9. Latitude: _____ ° _____ ' _____ . _____ "

10. Longitude: _____ ° _____ ' _____ . _____ "

11. Datum: ☐ NAD 83 ☐ NAD 27 ☐ Other _____

12. Nearest: City: _____ State: _____

13. Nearest Public-use (not private-use) or Military Airport or Heliport:
_____

14. Distance from #13. to Structure: _____

15. Direction from #13. to Structure: _____

16. Site Elevation *(AMSL):* _____ **ft.**

17. Total Structure Height *(AGL):* _____ **ft.**

18. Overall height (#16. + #17.) *(AMSL):* _____ **ft.**

19. Previous FAA Aeronautical Study Number (if applicable):
_____ - OE

20. Description of Location: (Attach a USGS 7.5 minute Quadrangle Map with the precise site marked and any certified survey.)

21. Complete Description of Proposal:

Frequency/Power (kW)	

Notice is required by 14 Code of Federal Regulations, part 77 pursuant to 49 U.S.C., Section 44718. Persons who knowingly and willingly violate the notice requirements of part 77 are subject to a civil penalty of $1,000 per day until the notice is received, pursuant to 49 U.S.C., section 46301 (a).

I hereby certify that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to mark and/or light the structure in accordance with established marking and lighting standards as necessary.

Date	Typed or Printed name and Title of Person Filing Notice	Signature

INSTRUCTIONS
FOR
NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION
(FAA Form 7460-1)

PLEASE TYPE or PRINT

ITEM #1. Please include the name, address, and phone number of a personal contact point as well as the company name.

ITEM #2. Please include the name, address, and phone number of a personal contact point as well as the company name.

ITEM #3. New Construction would be a structure that has not yet been built.
Alteration is a change to an existing structure such as the addition of a side mounted antenna, a change to the marking and lighting, a change to power and/or frequency, or a change to the height. The nature of the alternation shall be included in ITEM #21 "Complete Description of Proposal".

Existing would be a correction to the latitude and/or longitude, a correction to the height, or if filing on an existing structure which has never been studied by the FAA. The reason for the notice shall be included in ITEM #21 "Complete Description of Proposal".

ITEM #4. If Permanent, so indicate. If Temporary, such as a crane or drilling derrick, enter the estimated length of time the temporary structure will be up.

ITEM #5. Enter the date that construction is expected to start and the date that construction should be completed.

ITEM #6. Please indicate the type of structure. DO NOT LEAVE BLANK.

ITEM #7. In the event that obstruction marking and lighting is required, please indicate type desired. If no preference, check "other' and indicate "no preference'. DO NOT LEAVE BLANK. NOTE: High intensity lighting shall be used only for structures over 500'AGL. In the absence of high intensity lighting for structures over 500' AGL, marking is also required.

ITEM #8. If this is an existing tower that has been registered with the FCC, enter the FCC Antenna Structure Registration number here.

ITEM #9. and **#10.** Latitude and longitude must be geographic coordinates, accurate to within the nearest second or to the nearest hundredth of a second if known. Latitude and longitude derived solely from a hand-held GPS instrument is NOT acceptable. A hand-held GPS is only accurate to within 100 meters (328 feet) 95 per cent of the time. This data, when plotted, should match the site depiction submitted under ITEM #20.

ITEM #11. NAD 83 is preferred; however, latitude/longitude may be submitted in NAD 27. Also, in some geographic areas where NAD 27 and NAD 83 are not available other datums may be used. It is important to know which datum is used. DO NOT LEAVE BLANK.

ITEM #12. Enter the name of the nearest city/state to the site. If the structure is or will be in a city, enter the name of that city/state.

ITEM #13. Enter the full name of the nearest public-use (not private-use) airport (or heliport) or military airport (or heliport) to the site.

ITEM #14. Enter the distance from the airport or heliport listed in #13 to the structure.

ITEM #15. Enter the direction from the airport or heliport listed in #13 to the structure.

ITEM #16. Enter the site elevation above mean sea level and expressed in whole feet rounded to the nearest foot (e.g. 17' 3" rounds to 17', 17'6" rounds to 18'). This data should match the ground contour elevations for site depiction submitted under ITEM #20.

ITEM #17. Enter the total structure height above ground level in whole feet rounded to the next highest foot (e.g. 17'3" rounds to 18'). The total structure height shall include anything mounted on top of the structure, such as antennas, obstruction lights, lightning rods, etc.

ITEM #18. Enter the overall height above mean sea level and expressed in whole feet. This will be the total of ITEM #16 + ITEM #17.

ITEM #19. If an FAA aeronautical study was previously conducted, enter the previous study number.

ITEM #20. Enter the relationship of the structure to roads, airports, prominent terrain, existing structures, etc. Attach an 8-1/2" X 11" non-reduced copy of the appropriate 7.5 minute U.S. Geological Survey (USGS) Quadrangle Map MARKED WITH A PRECISE INDICATION OF THE SITE LOCATION. To obtain maps, Contact USGC at 1-800-435-7627 or via Internet at "http://mapping.usgs.gov". If available, attach a copy of a documented site survey with the surveyor's certification stating the amount of vertical and horizontal accuracy in feet.

ITEM #21.

- For transmitting stations, include maximum effective radiated power (ERP) and all frequencies.
- For antennas, include the type of antenna and center of radiation (Attach the antenna pattern, if available).
- For microwave, include azimuth relative to true north.
- For overhead wires or transmission lines, include size and configuration of wires and their supporting structures (Attach depiction).
- For each pole/support, include coordinates, site elevation, and structure height above ground level or water.
- For buildings, include site orientation, coordinates of each corner, dimensions, and construction materials,
- For alterations, explain the alteration thoroughly,
- For existing structures, thoroughly explain the reason for notifying the FAA (e.g. corrections, no record of previous study, etc.).

Filing this information with the FAA does not relieve the sponsor of this construction or alteration from complying with any other federal state or local rules or regulations. If you are not sure what other rules or regulations apply to your proposal, contact local/state aviation and zoning authorities.

Submit the 7460-1 form to the appropriate office.

Agency Display Of Estimated Burden For Notice of Landing Area Proposal

Paperwork Reduction Work Act Statement: This information is collected to evaluate the effect of proposed construction or alteration on air navigation and is not confidential. Providing this information is mandatory for anyone proposing construction or alteration that meets or exceeds the criteria contained in 14 CFR , part 77. We estimate that the burden of this collection is an average 19 minutes per response. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless R displays a currently valid OMB control number. The OMB control number for this collection is 2120-0001.

If you wish to comment on the accuracy of the estimate or make suggestions for reducing this burden, please direct your comments to OMB and the FAA at the following addresses:

Office of Management and Budget
Paperwork Reduction Project 2120-0036
Washington, D.C. 20503

-and-

U.S. Department of Transportation, Federal Aviation Administration
Airspace and Obstruction Evaluation Branch, ATP-240
800 Independence Avenue, S.W.
Washington, D.C. 20591

Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

James C. Codell, III
Secretary of Transportation

Clifford C. Linkes, P.E.
Deputy Secretary

Paul E. Patton
Governor

DIV OF PLANNING
2002 DEC 23 A 10:31

December 6, 2002

RECEIVED
DEC - 9 2002
8th COAST GUARD DISTRICT
BRIDGE BRANCH

Mr. Roger Wiebusch
Bridge Administrator
United States Coast Guard, Bridge Branch
1222 Spruce Street
St. Louis MO 63103

Dear Mr. Wiebusch:

Subject: Planning Study
Lyon, Caldwell, Hopkins, Webster and Henderson Counties
I-69 Eddyville to Henderson
Item No. 2 – 69.10

We are requesting your agency's input on a planning study to determine the need and potential impacts for a proposed highway project. The Kentucky Transportation Cabinet has assembled a study team to evaluate the proposed reconstruction of the Wendell H. Ford (Western Kentucky) Parkway and the Edward T. Breathitt (Pennyrile) Parkway between Eddyville and Henderson to become part of the national Interstate 69 (I-69) corridor. This is Section of Independent Utility (SIU) No. 5 of the national I-69 corridor which connects Port Huron, Michigan at the Canadian border to the Lower Rio Grande Valley of Texas at the Mexican border. The study is currently in the initial data gathering stage.

Pursuant to the Coast Guard Authorization Act of 1982, it has been determined this is not a waterway over which the Coast Guard exercises jurisdiction for bridge administration purposes. A Coast Guard bridge permit is not required.

12/20/02
ROGER K WIEBUSCH (Date)
Bridge Administrator
Eighth Coast Guard District (obr)

EDUCATION PAYS

We ask that you identify specific issues or concerns of your agency that could affect the development of the project. This planning study will include a scoping process for the early identification of potential alternatives, environmental issues, and impacts related to the proposed project. We believe that early identification of issues or concerns can help us develop highway project alternatives to avoid or minimize negative impacts.

We respectfully ask that you provide us with your comments by January 30, 2003 to ensure timely progress in this planning effort.

During the development of this planning study, comments will be solicited from Federal, state, and local agencies, as well as other interested persons and the general public, in accordance with principles set forth in the National Environmental Policy Act (NEPA) of 1969. The Federal Highway Administration is partnering with us in these efforts. A copy of a public notice placed in state and local newspapers concerning this project is attached.

Other Transportation Cabinet offices or consultants working on behalf of the Transportation Cabinet may also contact you seeking more detailed data or information to assist them in completing their environmental studies for this phase of the project.

We have enclosed the following project information for your review and comment:

- A summary overview for the study including a project location map.
- Year 2001 Traffic
- Year 2030 Traffic
- Accident Information by Accident Severity Issues
- Environmental Issues
- Existing Parkway Conditions and Options for I-69

We appreciate any input you can provide concerning this project. Please direct any comments, questions, or requests for additional information to Jim Wilson of the Division of Planning at 502/564-7183 or jimmy.wilson@mail.state.ky.us. Please address all written correspondence to Annette Coffey, P.E., Director, Division of Planning, Kentucky Transportation Cabinet, 125 Holmes Street, Frankfort, KY 40622

Sincerely,

Annette Coffey

Annette Coffey, P.E.
Director
Division of Planning

AC:JCW:RC

Enclosures

c: Jose Sepulveda (w/a)
Glenn Jilek (w/a)
Mary Murray (w/a)
Marc Williams – WSA
Gina Boaz
Craig Morris
Mike Hancock
Wayne Mosley
Ted Merryman
Tim Choate
Everett Green
Allen Thomas
Kevin McClearn
Steve Hoefler
David Waldner
Richard Davis
Doug Taylor

United States Department of Agriculture | Forest Service | Daniel Boone National Forest | 1700 Bypass Road Winchester, KY 40391 859-745-3100

File Code: 1950-5
Date: JAN. 29 2003

Annette Coffey, P.E.
Director
Division of Planning, KY Transportation Cabinet
125 Holmes St.
Frankfort, KY 40622

Dear Ms. Coffey:

I am writing in regards to your letter of December 6, 2002, in which you asked for our input on a planning study to evaluate the proposed reconstruction of the Wendell H. Ford Parkway and the Edward T. Breathitt Parkway between Eddyville and Henderson to become part of the proposed highway project along I-69 Eddyville to Henderson.

You asked us to notify you of specific issues or concerns that we may have that could affect the development of the project described in the information enclosed with the letter.

Because this project is located in the western part of Kentucky, it is well outside the proclamation boundary for the Daniel Boone National Forest. It is also not located upstream from the National Forest in any watersheds that drain into or through the National Forest. For these reasons we have no issues or concerns specific to this project.

Thank you for providing this information and giving us the opportunity to comment on your proposed project.

Sincerely,

KEVIN W LAWRENCE
Planning Staff Officer

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention

January 22, 2003

Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey:

This is in response to your letter of December 6, 2002 requesting our agency's input and comments on specific issues or concerns that might affect project alternative development for Planning Studies in Lyon County, Caldwell, Hopkins, Webster and Henderson Counties, and I-69 Eddyville to Henderson. We are responding on behalf of the Department of Health and Human Services (DHHS), U.S. Public Health Service.

While we have no project specific comments to offer at this time, we do recommend that the topics listed below be considered during the NEPA process along with other necessary topics, and addressed if appropriate. Mitigation plans which are protective of the environment and public health should be described in the DEIS wherever warranted.

AREAS OF POTENTIAL PUBLIC HEALTH CONCERN:

I. Air Quality
- dust control measures during project construction, and potential releases of air toxins potential process air emissions after project completion
- compliance with air quality standards

II. Water Quality/Quantity
- special consideration to private and public potable water supply, including ground and surface water resources
- compliance with water quality and waste water treatment standards
- ground and surface water contamination (e.g. runoff and erosion control)
- body contact recreation

III. Wetlands and Flood Plains
- potential contamination of underlying aquifers
- construction within flood plains which may endanger human health
- contamination of the food chain

IV. Hazardous Materials/Wastes
- identification and characterization of hazardous/contaminated sites
- safety plans/procedures, including use of pesticides/herbicides; worker training
- spill prevention, containment, and countermeasures plan

V. Non-Hazardous Solid Waste/Other Materials
- any unusual effects associated with solid waste disposal should be considered

VI. Noise
- identify projected elevated noise levels and sensitive receptors (i.e. residential, schools, hospitals) and appropriate mitigation plans during and after construction

VII. Occupational Health and Safety
- compliance with appropriate criteria and guidelines to ensure worker safety and health

VIII. Land Use and Housing
- special consideration and appropriate mitigation for necessary relocation and other potential adverse impacts to residential areas, community cohesion, community services
- demographic special considerations (e.g. hospitals, nursing homes, day care centers, schools
- consideration of beneficial and adverse long-term land use impacts, including the potential influx of people into the area as a result of a project and associated impacts
- potential impacts upon vector control should be considered

IX. Environmental Justice
- federal requirements emphasize the issue of environmental justice to ensure equitable environmental protection regardless of race, ethnicity, economic status or community, so that no segment of the population bears a disproportionate share of the consequences of environmental pollution attributable to a proposed project. (Executive Order 12898)

While this is not intended to be an exhaustive list of possible impact topics, it provides a guide for typical areas of potential public health concern which may be applicable to this project. Any health related topic which may be associated with the proposed project should receive consideration when developing the draft and final EISs. Please furnish us with one copy of the draft document when it becomes available for review.

Sincerely yours,

Paul Joe

Paul Joe, DO, MPH
Medical Officer
National Center for Environmental Health (F16)
Centers for Disease Control & Prevention

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

January 27, 2003

Ms. Annette Coffey, P.E., Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

RE: **Planning Study for I-69 Eddyville to Henderson, KY**
Section of Independent Utility No. 5

Dear Ms. Coffey:

Thank you for your letter of December 6, 2002 regarding the I-69 Eddyville to Henderson project. We reviewed the Summary Overview and maps you sent, in accordance with Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. The purpose of this letter is to provide you with early coordination regarding the project.

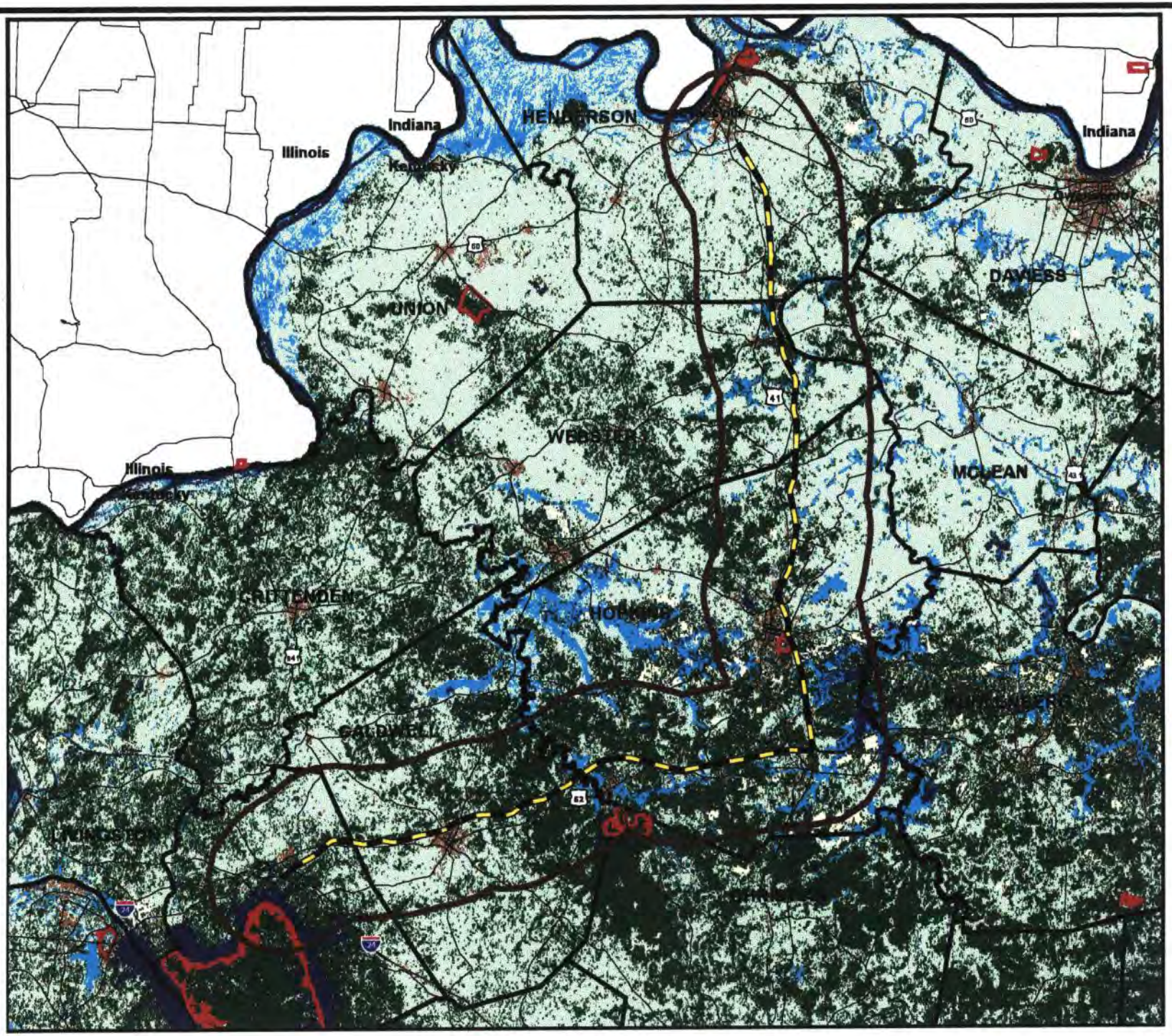
The U.S. Environmental Protection Agency (EPA) Regions 4, 5 and 6 cooperatively developed an EPA review approach for the proposed Interstate 69 (I-69) project. EPA's letter and attachments dated February 22, 2002 outlined this approach. Specifically, the package identifies review and technical criteria, upon which EPA will base our review of I-69 NEPA documentation. This package was developed in a coordinated fashion by all three EPA Regional Offices (Regions 4, 5, and 6) involved with I-69. Region 4 hopes that this coordination package will clarify our expectations on the technical analyses and content of I-69 NEPA documents. Please refer to this package (enclosed) when preparing your NEPA documents for this project.

The Summary Overview of the project you provided was helpful, and your map of Environmental Issues Needing Special Consideration is well-detailed. To assist you, we are providing the enclosed maps for your use: Potential Environmental Justice Areas, Sensitive Environmental Areas, and General Landcover Types.

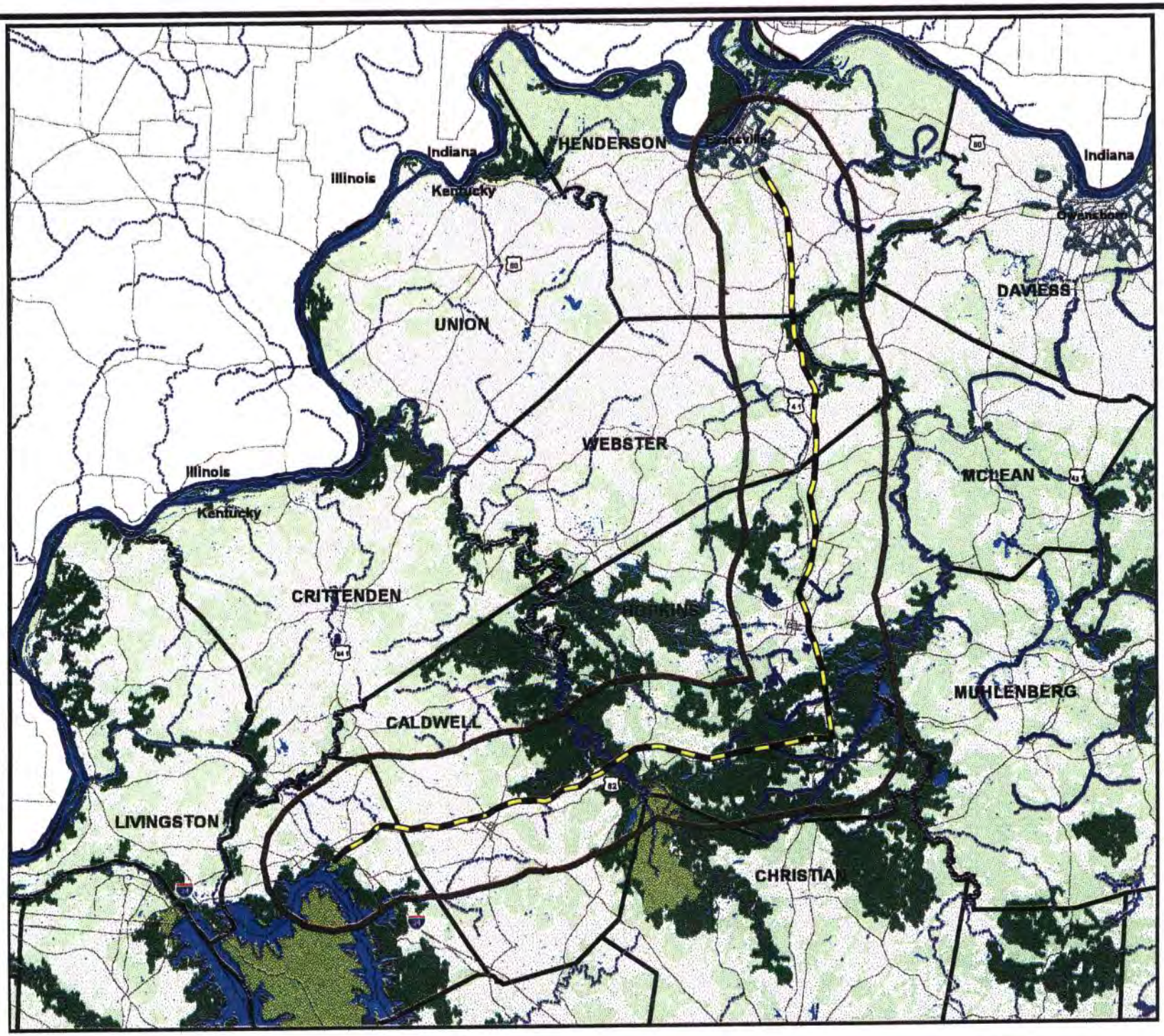
We look forward to reviewing the forthcoming NEPA documents for this project, and a continued productive working relationship with you. If you have any questions or need more information, please contact Ramona McConney of my staff at (404) 562-9615.

Sincerely,

Heinz J. Mueller, Chief
Office of Environmental Assessment



EPA REGION 4
ENVIRONMENTAL ACCOUNTABILITY DIVISION



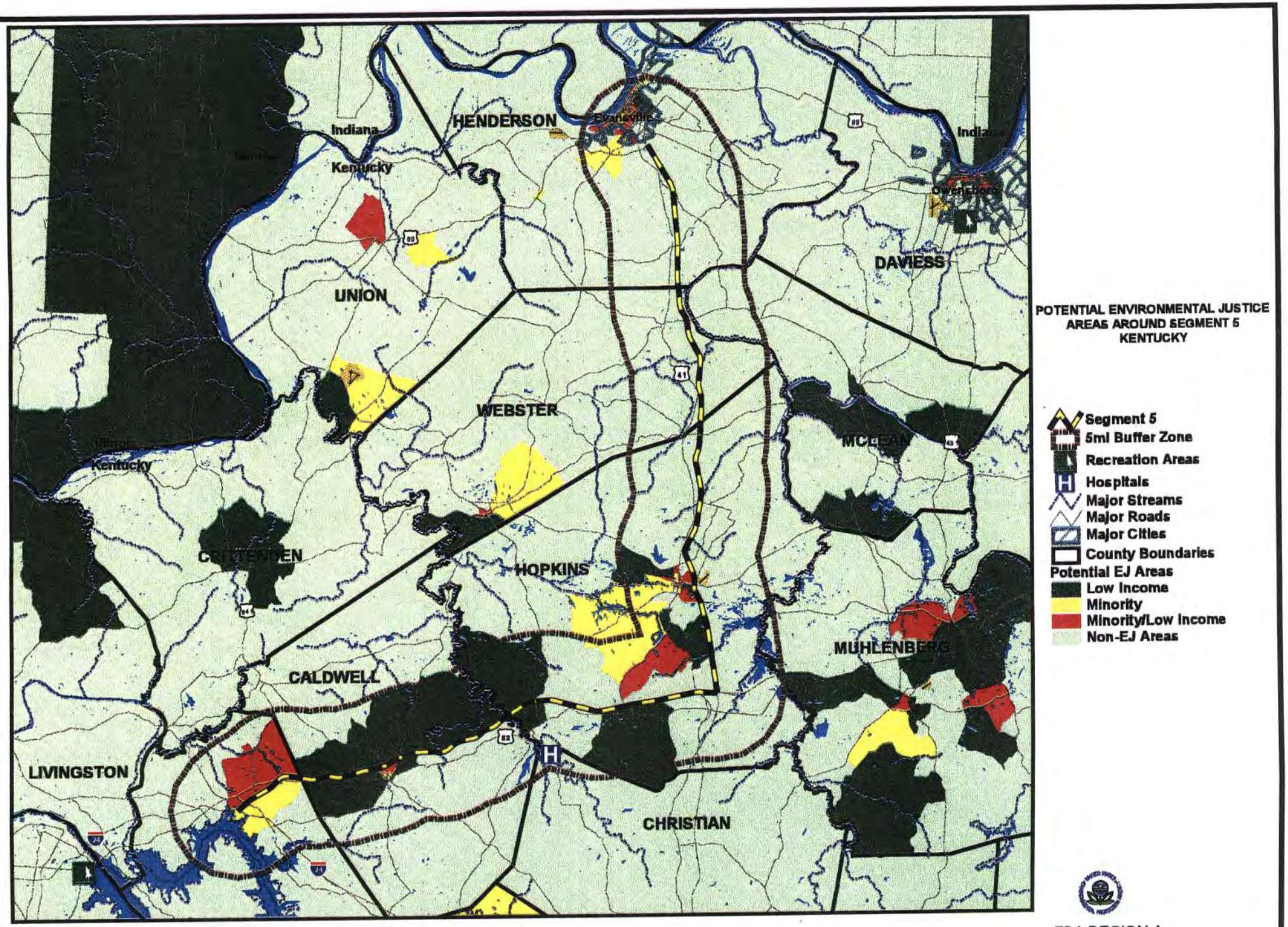
SENSITIVE ENVIRONMENTAL AREAS
AROUND SEGMENT 5
KENTUCKY

- Segment 5
- 5mi Buffer Zone
- 303d Listed Waters
- Major Roads
- Major Streams
- Major Cities

Conservation Lands

- Priority Areas
- Significant Areas

EPA REGION 4
ENVIRONMENTAL ACCOUNTABILITY DIVISION



Source: 2000 U.S. Census Population and Housing Summary Tape File 3.

EPA REGION 4
ENVIRONMENTAL ACCOUNTABILITY DIVISION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

FEB 22 2002

Mr. Eugene Cleckley
National I-69 Coordinator
Director, Southern Resource Center
Federal Highway Administration
Suite 17T26
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

SUBJECT: U.S. EPA's Scoping and Streamlining Coordination Package for Interstate 69 National Environmental Policy Act (NEPA) Documentation

Dear Mr. Cleckley:

The U.S. Environmental Protection Agency (EPA) Regions 4, 5 and 6 agreed to cooperatively develop an EPA review approach for the proposed Interstate 69 (I-69) project. This systematic approach is consistent with the environmental streamlining provisions set forth in the Transportation Equity Act for the 21st Century (TEA-21). In subsequent discussions you welcomed this effort and requested that we share the completed approach with the Federal Highway Administration (FHWA). In our opinion, a streamlined approach for I-69 should focus on improving communication and coordination among environmental and transportation agencies, increasing the efficiency of the transportation project development process through concurrent environmental reviews, and providing a mechanism for avoiding or resolving interagency disputes. EPA is suggesting a streamlined approach for I-69 environmental review that includes two basic areas of emphasis: 1) establishment of consistent, integrated review processes, and 2) development of EPA's technical expectations for NEPA documentation content and analysis.

The enclosed streamlining coordination package is the result of our inter-regional effort and represents the first step in furthering these objectives. Specifically, the package identifies review and technical criteria upon which EPA will base our review of I-69 NEPA documentation. This package has been developed in a coordinated fashion by all three EPA Regional Offices (Regions 4, 5, and 6) involved with I-69. By sharing this coordination package with you, EPA anticipates that this should avoid future issues related to the technical analysis and content of future I-69 NEPA documents and therefore help expedite FHWA's program delivery.

Further, we believe this approach can become a model for interagency involvement. We also recommend the use of the NEPA/404 Merger Process to ensure concurrent reviews and to streamline the permitting process for the individual project segments. Use of the Merger Process would result in regular interagency meetings, coordination efforts, and concurrence points with established timelines.

In addition, as has been discussed with you, the three EPA Regions involved with the project have information and expertise that may be of benefit to the process such as the Region 6 Cumulative Risk Model, Region 5 Critical Ecosystems database, and Region 4 Southeast Ecological Framework database. Regional staff have already provided some of this information and would be interested in exploring further applications if resource constraints can be addressed.

A streamlined approach for I-69 will mutually benefit both EPA and FHWA. One benefit of streamlining will be to further the dialogue on the inter-relationship of growth, sustainable development, and transportation infrastructure and to identify opportunities for environmental protection, community enhancement, and economic development throughout the entire length of the proposed I-69 corridor. With that in mind, EPA Regions 4, 5, and 6 are committed to assist in achieving these objectives. Specific EPA regional contacts are included at the end of the enclosed package.

We would like to discuss with you how we can best advance EPA's and FHWA's mutual objectives for this important national project.

Sincerely,

Phyllis P. Harris
Environmental Accountability Division
Region 4

Jerri-Anne Garl
Office of Strategic Environmental Analysis
Region 5

Samuel Coleman
Compliance Assurance and Enforcement Division
Region 6

Enclosure

cc: Federal Highway Administration – Arkansas Division
Federal Highway Administration – Kentucky Division
Federal Highway Administration – Indiana Division
Federal Highway Administration – Louisiana Division
Federal Highway Administration – Mississippi Division
Federal Highway Administration – Tennessee Division
Federal Highway Administration – Texas Division
U.S. Army Corps of Engineers – Great Lakes and Ohio River Division
U.S. Army Corps of Engineers – Mississippi Valley Division
U.S. Army Corps of Engineers – Southwestern Division
U.S. Fish & Wildlife Service – Great Lakes and Ohio Rivers Region

U.S. Fish & Wildlife Service – Southeast Region
U.S. Fish & Wildlife Service – Southwest Region
Arkansas State Highway and Transportation Department
Kentucky Transportation Cabinet
Indiana Department of Transportation
Louisiana Department of Transportation and Development
Mississippi Department of Transportation
Tennessee Department of Transportation
Texas Department of Transportation

Federal Highway Administration
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700 W Capitol Avenue
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Federal Highway Administration
Indiana Division
575 N Pennsylvania Street
Room 254
Indianapolis, IN 46204-1576

Federal Highway Administration
Kentucky Division
John C Watts Federal Building
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Frankfort, KY 40601-1922

Federal Highway Administration
Louisiana Division
5304 Flanders Drive, Suite A
Baton Rouge, LA 70808-4348

Federal Highway Administration
Mississippi Division
666 North Street
Suite 105
Jackson, MS 39202-3199

Federal Highway Administration
Tennessee Division
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Nashville, TN 37211-3568

Federal Highway Administration
Texas Division
Federal Office Building
300 East Eighth Street
Room 826
Austin, TX 78701-3233

U.S. Army Corps of Engineers
Great Lakes and Ohio River Division
CELRD-ET-CO-F

550 Main Street
Cincinnati, OH 45201-1159

U.S. Army Corps of Engineers
Mississippi Valley Division
CEMVD-ET-CO
1400 West Walnut Street
Vicksburg, MS 39181

U.S. Army Corps of Engineers
Southwestern Division
CESWD-ETO-R
Earl Cabell Federal Building
1100 Commerce Street
Dallas, TX 75242-0216

U.S. Fish and Wildlife Service - Region 3
Great Lakes and Ohio Rivers Region
Bishop Henry Whipple Federal Building
1 Federal Drive
Fort Snelling, MN 55111

U.S. Fish and Wildlife Service - Region 4
Southeast Region
1875 Century Boulevard
Suite 200
Atlanta, Georgia 30345-3301

U.S. Fish and Wildlife Service - Region 7
Southwest Region
P.O. Box 1306
Albuquerque, NM 87103-1306

Arkansas State Highway and Transportation Department
P.O. Box 2261
Little Rock, Arkansas 72203

Kentucky Transportation Cabinet
501 High Street
Frankfort, KY 40622

Indiana Department of Transportation
100 N. Senate Ave.
Room IGCN 755
Indianapolis, IN 46204

Louisiana Department of Transportation and Development
P.O. Box 94245
Baton Rouge, Louisiana 70804

Mississippi Department of Transportation
P. O. Box 1850
Jackson, MS 39215-1850

Tennessee Department of Transportation
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243-0334

Texas Department of Transportation
125 E. 11th Street
Austin, Texas 78701-2483

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

STREAMLINING COORDINATION PACKAGE FOR INTERSTATE 69 NATIONAL ENVIRONMENTAL POLICY ACT DOCUMENTATION

Introduction

To address the environmental streamlining provisions set forth in the Transportation Equity Act for the 21st Century (TEA-21), the U.S. Environmental Protection Agency (EPA) agreed to cooperatively set goals and develop a systematic review approach for all EPA Regional Offices involved with the proposed Interstate 69 (I-69). This approach is meant to improve communication and cooperation within EPA and among EPA and other agencies involved with this important national priority project.

This streamlining coordination package represents a comprehensive inter-regional approach related to EPA involvement with the I-69 project. Specifically, the package identifies review and technical criteria upon which EPA will base our review of documentation prepared in compliance with the National Environmental Policy Act of 1969 (NEPA) for the I-69 project. This document has been developed in a coordinated fashion by all three EPA Regional Offices (Regions 4, 5, and 6) involved with I-69 with detailed input from other EPA programs (i.e., air, water, wetlands). Major NEPA topics have been addressed (e.g., purpose and need, alternatives, wetlands impacts/mitigation, and secondary and cumulative impacts).

This coordination package identifies a number of state and federal environmental programs with regulatory requirements which will likely apply to various segments of the I-69 project. The information is intended for use as a general framework that EPA intends to apply across all segments of I-69, yet allows for consideration of segment-specific project development processes or environmental issues into its framework. This information is intended to identify EPA's basic information needs and analytical expectations for NEPA documentation related to I-69.

Purpose and Need

The NEPA document for each Segment of Independent Utility (SIU) should include a summarized version of the National I-69 Purpose and Need documentation along with any information specifically referring to the SIU in question (e.g., route definition, logical termini, etc.). This should include a discussion of logical termini that are specified in the Transportation Equity Act for the 21st Century (TEA-21), as part of the proposed National Corridor 18/I-69, as well as any other legislative mandates that would influence the route definition and the timing of this project. The international trade goals in accordance with the North American Free Trade Agreement (NAFTA) should be stated. Documentation that identifies how the new interstate would accomplish these goals should be provided.

In order for EPA to fully evaluate the alternatives, the document should identify the basic underlying transportation problems (deficiencies) or needs between the two logical termini for the SIU under consideration. Traditional traffic data or analysis should be presented to substantiate each identified need. For example: if the problem is congestion, then Level of Service (LOS) data should be presented to support this need. In addition, traffic numbers [e.g., LOS, vehicle miles of travel (VMT), vehicle hours of travel (VHT), etc.], if applicable, for existing (current) and future (20 year) forecasts should also be presented.

The traffic analysis should include projected traffic volumes that would utilize the facility from the connecting portions of the proposed I-69. Even though a facility would presumably have independent utility, each segment of the proposed I-69 is envisioned to connect with other segments. The traffic analysis must include an estimation of additional traffic volumes, particularly truck traffic, that would utilize the proposed I-69. This should include traffic considered as "pass-through" (NAFTA-generated or other national traffic) to the study area, as well as traffic that either originates or would ultimately end their destination in the study area. This traffic information should be split out and reported separately.

As a NAFTA highway transporting goods, heavy truck traffic can be expected. Projections for truck traffic using the interstate highway should be consistent from state to state when incorporated in the air quality and noise analysis for each I-69 section, although additional national truck traffic may vary by state. It should also be noted that the National Highway Traffic Safety Administration has promulgated rulemaking and an associated Environmental Assessment (EA) regarding the safety standards for Mexican trucks traveling along the NAFTA highway. NEPA documents generated for the various sections of I-69 should be consistent with this rule and EA.

If an individual SIU states that there is an economic development need in the Purpose and Need statement, then that need must be credibly substantiated. This might include the use of unemployment figures, poverty figures, income figures as compared to the rest of the State. This data should support the location of the termini for each SIU. The international trade issues germane to the project, assuming they have been defined, should be stated as well.

Any local need identified and substantiated should have measurable objectives that will be used to assess whether an alternative or combination of alternatives would reasonably meet (i.e., solve) the problems or needs identified in the document. The overall purpose and need statement, including these objectives, should be developed with input from cooperating regulatory and resource agencies, as project alternatives, impacts, and impact mitigation are all evaluated in the context of project need.

Alternatives

EPA encourages consideration of a full range of feasible alternatives to accomplish the varied

needs related to development of I-69. Generally, we expect that if an EA is prepared, a minimum of one feasible action alternative as well as the No-Action Alternative should be considered. A Draft Environmental Impact Statement (EIS) should include a minimum of two feasible action alternatives which should be fully considered, in addition to the No-Action Alternative. Other alternatives that should be considered include Transportation System Management/Travel Demand Management alternatives which maximize the efficiency of existing highways or transportation networks. When applicable, a multi-modal alternative that contains a combination of transportation modes (i.e., rail, air, roadway, etc.) should also be considered (especially in metropolitan areas).

The NEPA document should also discuss the status of the adjacent SIUs, including those in other states, and identify and provide an analysis of different alternative termini locations within the Study Area in relation to the termini of the neighboring SIUs. EPA recommends that the Draft EIS should identify a preferred alternative. This minimizes some of the issues associated with rating every action alternative and enables us to provide a thorough review of the environmental issues associated with the preferred alternative. The preferred alternative should avoid or minimize adverse impacts, so that the need for mitigation of impacts will be lessened or eliminated. A critical factor of the analysis of alternatives is the avoidance or minimization of adverse impacts. When alternatives are rejected, a rationale for rejection should be provided. The rationales should include environmental reasons, along with other considerations.

If stimulating economic development is identified as a major/primary need, appropriate alternatives that consist of a combination of transportation modes with other economic development strategies in the study area should be identified and analyzed. The analysis of economic development alternatives must contain an evaluation of the environmental impacts that result from that economic development (see Secondary and Cumulative Impacts section).

Alternatives should include corridors or alignments that utilize existing highway to the maximum extent practicable, even if this includes extending the alignment outside the "green" I-69 representative corridor depicted in Exhibit 2 of the February 7, 2000, I-69 (Corridor 18) Special Environmental Study - Statement of Purpose and Need for Interstate Highway 69. Furthermore, appropriate flexibility should be allowed in siting specific alignments outside the "green" corridor if environmental or other information suggests movement of an alignment outside this area would avoid or minimize environmental effects. The number and type of alternatives that meet the overall purpose and need, as well as the rejection of specific action alternatives, should be developed with input and concurrence from cooperating regulatory and resource agencies in order to streamline review of the NEPA document and expedite permitting requirements in later phases, as appropriate.

Air Quality

The NEPA document should contain a discussion of the transportation air quality regulatory

requirements, regional air quality concerns in the project area, and a localized carbon monoxide (CO) analysis. The document should assess existing air quality conditions in terms of National Ambient Air Quality Standards (NAAQS), Federal Prevention of Significant Deterioration (PSD) increments, and state air quality standards (particularly if they are more stringent than the federal regulations). Any aspects of the project that could adversely affect air quality, in terms of creating new violations of Federal air quality standards, increasing the frequency and severity of existing violations of the standards, or delaying attainment of the standards should be identified. All emissions resulting from the project must be in compliance with applicable air quality regulations, particularly the NAAQS for criteria air pollutants [e.g., ozone, carbon monoxide (CO), nitrogen oxides, sulfur dioxide, lead and particulate matter (PM)] in designated non-attainment or maintenance areas.

Mesoscale Concerns: Ozone, hydrocarbons, and nitrogen oxides air quality concerns are regional in nature and as such meaningful evaluation on a project-by-project basis is not possible. Therefore, the EIS should include a discussion of regional air quality conditions, depending on the location of the project, as described below:

> Non-attainment/Maintenance Areas: If the project is located in a nonattainment or maintenance area, the EIS must document that provisions of 40 CFR Part 93 Subpart A, Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Project Development, Funded or Approved Under Title 23 U.S.C. or the Federal Transit Laws, have been satisfied. For example, the project should be included in a Long Range Transportation Plan (LRTP) and/or Transportation Improvement Program (TIP) that is in conformance with an approved State Implementation Plan (SIP). The relationship of the project to the SIP should be described in the EIS. Specifically, the EIS must show that the project (without significant changes to the scope and/or design) has been included in the LRTP and/or TIP, and that FHWA has issued a conformity determination for the most recent SIP.
>
> Attainment Areas: If the project is not located in a nonattainment or maintenance area, the EIS should make a negative declaration for Section 176(c) of the Clean Air Act. In this case, the provisions of 40 CFR Part 93 Subpart A, Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Project Development, Funded or Approved Under Title 23 U.S.C. or the Federal Transit Laws, will not apply.

Microscale (Project-level) Concerns: The primary pollutant that is analyzed at the project stage is carbon monoxide. Therefore, CO emissions must be addressed by a localized hot spot analysis. The locations and level of detail for conducting analyses should be collectively determined by the affected agencies. The requirements of 40 CFR Part 93 Subpart A for carbon monoxide emissions must be satisfied. A localized PM-10 quantitative hot spot analysis will not be required until EPA releases modeling guidance in the Federal Register.

Coordination with state/local/regional air pollution control agencies on air quality planning, air

quality modeling, compliance with federal/state air quality standards, the need for air permits, air quality monitoring, and mitigation for adverse impacts should be identified in the NEPA document. The air quality analyses at the regional and local scales should include as modeling inputs the additional traffic volumes that would utilize the I-69 facility from other segments (as described in the purpose and need section above). Parties which will be responsible for implementing air quality mitigation measures should be included in the document.

Construction: It is recommended that all construction equipment be tuned to manufacturer's specifications to reduce air emissions. Open burning should also be minimized/avoided to reduce the emissions of ozone precursors. It is recommended that any necessary open burning be coordinated with the state and/or county regarding permitting needs. The NEPA document should discuss the types and effectiveness of any mitigation measures that will be used to protect air quality (e.g., vapor recovery systems, fumes incinerators, and dust control measures) during construction phase. We recommend water for fugitive dust control during construction, instead of oils and other chemicals.

Example (Segment 9): Shelby County, Tennessee, is currently a maintenance area for both ozone and carbon monoxide. As such, the LRTP must include an air emissions analysis that demonstrates conformity with the SIP. Since Segment 9 of the proposed I-69 traverses Shelby County, it must be included in the LRTP and the corresponding conformity analysis. This analysis and relationship to the LRTP should be identified in the NEPA document.

Noise

Interstate construction and operational (highway) noise should be predicted for the no build and each of the build alternatives. State-of-the-art noise modeling should be utilized and consistent methods used by the DOTs of the various states involved. In general, a greater level of consistency in approach, methodology and mitigation of noise impacts is needed for the I-69 project.

Construction Noise: The NEPA document should analyze construction noise attributable to the project. Typical noise levels produced by construction equipment (e.g., trucks, front end loaders, pile drivers, etc.) within 50 feet, which are available in the literature, should be disclosed. The total project construction time (months, years) should also be estimated to assess the magnitude of the construction noise impact. Attempts should also be made to estimate the temporary construction time associated with any one feature along the ROW or section thereof. For example, how long is construction expected to take near any given affected residence or for an average mile of roadway? This information would allow affected residents to approximate their degree of noise disturbance during construction.

Although temporary, construction noise should be reasonably mitigated in the vicinity of residential areas or other noise-sensitive land uses. Under normal circumstances, EPA

recommends that construction should not start before 7:00 AM or continue after 7:00 PM during the work week and should be discontinued on Sundays (preferably the whole weekend) and on locally-observed federal and/or state holidays (exceptions could involve nighttime construction in urban areas that would otherwise involve lane closures during daytime peak traffic periods). In addition, the use of "hush houses" should be considered around any stationary equipment to shield noise at its source. EPA recommends that all motorized equipment be properly tuned to the manufacturer's specifications for additional source reduction. All construction equipment should be equipped with noise attenuation devices, such as mufflers and insulated engine housings. Such mitigative methods should be identified in the NEPA document for implementation as part of future construction-related activities.

Highway Noise: Given that I-69 is a national highway under NAFTA, several states will be crossed and consistency in the noise analysis could become an issue. In order to provide consistency within the streamlined NEPA process for the I-69 sections, EPA recommends the following measures:

Definitions of Substantial Noise Increases - Pursuant to 23 CFR 772, the Federal Highway Administration (FHWA) provides the state DOTs discretion in their interpretation of what constitutes a "substantial increase" in noise levels attributable to their highway projects. When predicted traffic noise levels substantially exceed the existing noise level, it is defined as a traffic noise impact which warrants further attention. Some states consider a 10 dBA or greater increase as substantial while other states believe that increases are not substantial until increases are 15 dBA or greater. EPA believes that a 10 dBA or greater increase due to the project is substantial (significant) since a 10 dBA increase is perceived as a doubling of sound by the human ear. For those states that adhere to the 15 dBA or greater threshold, EPA requests that noise analysis also be provided for a 10-14 dBA increment category as well as the 15 dBA or greater increment category.

Consistent Use of Noise Metrics - Similar to the states' discretion in defining substantial incremental increases, FHWA allows the use of either the L_{eq} or the L_{10} metric in the noise analysis. In order to achieve consistency within the noise analysis of this national highway, EPA requests that if the use of L_{10} is prescribed by state regulation, a noise analysis using L_{eq} should also be provided to supplement the required L_{10} analysis. However, if all states along the route use L_{10}, then L_{eq} data need not be secondarily provided since consistency would already be achieved.

Consistent Use of Noise Models - Modeling should also be consistent for noise analyses along the I-69 NAFTA highway. It is particularly important that the same noise model version be used for both the Draft EIS and Final EIS and among EISs for I-69 sections to the extent possible. For example, use of STAMINA followed by the use of the Traffic Noise Model could create concern regarding model acceptability.

Noise Mitigation: Noise abatement should be considered by FHWA when project noise impacts approach FHWA Noise Abatement Criteria or meet or exceed the existing noise levels by the state thresholds, i.e., incremental increases of 10 dBA or greater (preferred by EPA) or 15 dBA or greater. Forms of noise mitigation include -- but are not limited to -- the construction and use of fabricated noise barriers and vegetated earthen berms (suburban areas). Vegetative screens included as part of highway landscaping can also be useful to visually remove receptors from the project, but have to consist of a substantial width of dense evergreen vegetation to offer any real attenuation. In general, avoiding noise impacts via alignment shifts is frequently the most effective form of "mitigation" (since it avoids or minimizes the need for attenuation) and should therefore be emphasized during the alternative analysis.

Waters of the United States and Aquatic Resources

The EIS should identify and discuss the location, amount, type, and quality of waters of the U.S., including wetlands, in the study area, by whom they were delineated (i.e., U.S. Army Corps of Engineers (COE), contractor, lead agency, etc.), the delineation method(s) used, and impacts to these resources for each action alternative. All discussions of waters of the U.S. should be broken out by rivers/streams and wetlands. Include maps, text, and tables that feature areas occupied by wetlands, aquatic systems, and non-wetland riparian habitat. Specific wetland and other waters of the U.S. requirements are as follows:

NEPA/404 Merger: If waters of the United States may be impacted by activities regulated by Section 404 of the Clean Water Act, EPA strongly recommends that the NEPA document contain a thorough discussion of the proposed project's consistency with Federal Guidelines for specification of disposal sites for dredged or fill materials [the 404(b)(1) Guidelines found at 40 CFR Part 230]. In order to demonstrate compliance with the 404(b)(1) Guidelines, the NEPA document should meet the following criteria to the extent possible:

- The proposed action must be the practicable alternative which would have the least adverse impact on the aquatic ecosystem [40 CFR 230.10(a)]. If wetlands would be filled, then the NEPA document should explain why there are no practicable alternatives to locating the project outside jurisdictional wetlands and demonstrate how the project has been designed to minimize harm to existing wetlands.

- The proposed action must not cause or contribute to significant degradation of waters of the United States including wetlands and other special aquatic sites [40 CFR 230.10(c)]. Significant degradation includes the loss of fish and wildlife habitat and the loss of other wetland habitat values and functions. Significant degradation also includes cumulative impacts.

- The proposed project does not violate state-adopted, EPA-approved water quality standards or jeopardize the continued existence of any species listed as threatened or

endangered under the Endangered Species Act [40 CFR 230.10(b)].

- Minimize the number of acres subject to Section 404 jurisdiction that would be permanently lost or degraded due to impacts other than the placement of fill (e.g., the impacts of erosion, sedimentation and runoff of pollutants on wetland habitats; diversion of water from wetland habitats).

- Direct, indirect and cumulative impacts to these resources should be fully described.

Avoidance and Minimization: Impacts to wetlands and stream resources should be avoided and minimized to the maximum extent practicable. As described above, feasible alternatives that avoid wetland impacts should be evaluated consistent with the Section 404(b)(1) Guidelines. In addition, further fragmentation of remaining large contiguous undeveloped wetland or riparian areas should also be avoided. Special attention should also be given to avoidance and minimization of impacts in areas assigned special regional, state, or local designation or recognition (i.e. Scenic Rivers, wildlife management areas, etc.).

Characterization: Wetland types should be characterized using the hydrogeomorphic (HGM) classification for wetlands (Brinson 1993) and augmented with vegetation and hydroperiod modifiers, such as those utilized nationally by Cowardin et al. (1979)[Citation information is included in Appendix A below]. Where sufficient documentation exists, wetland types and descriptors should follow regional or local protocol, such as those found in the Tennessee Wetlands Conservation Strategy (GIWC 1998). Stream types should be delineated according to the Rosgen classification of natural rivers (Rosgen 1994, 1996) which is based on the fluvial geomorphic condition of rivers and their valleys.

Where rivers and streams are not adequately evaluated by the wetland functional assessment methodology utilized, impacts to river and stream channels should be evaluated utilizing appropriate local or State conservation plans or strategies (i.e., KDOW 2001) or regional guidelines, such as the North Carolina Stream Mitigation Guidelines (NCWRC 1996, NCDENR 2001) or the Compensatory Stream Mitigation Standard Operating Procedure developed by the COE Savannah District (COESD 2000).

The NEPA document should also identify farmed wetlands (FW) and prior converted wetlands (PCW) in the project study area. The Natural Resources Conservation Service (NRCS) has determined which areas are PCW and which areas are considered FW. If the State DOT, NRCS, or private landowners cannot verify a PCW or FW designation (which happens often since these determinations were made many years ago), then a delineation should be completed based on the current conditions at the site. Mitigation will be required for impacts to farmed wetlands.

Quality: The quality of the wetland resources proposed for impact should be evaluated using a wetland functional assessment methodology. Where the appropriate guidebooks have been developed (e.g., Kentucky, Mississippi, and Tennessee), HGM should be utilized (Ainslie et al.

1999, Smith and Klimas 2000, Wilder and Roberts 1999). Where the appropriate HGM guidebooks have not been developed, equivalent functional assessment methodologies should be utilized.

Quantity: Impacts to wetlands and other waters should be appropriately quantified for each alternative considered in the EIS. For example, the amount of impacts to wetlands should be characterized in terms of acreage, while impacts to stream channels should be characterized in terms of linear feet of stream and stream order. Impacts for each alternative should be compiled to facilitate comparison.

Mitigation: A draft mitigation plan should be developed during the NEPA process to compensate for predicted wetland and stream losses that remain following efforts to avoid and minimize such impacts.

Wetlands: Wetland restoration is EPA's preferred mitigation option for impacts to wetlands. Wetland restoration is normally considered an action that successfully restores all three wetland parameters (hydric soils, hydrophytic vegetation, and wetland hydrology) to an area that was formerly a wetland, but where at least one of the aforementioned parameters has been removed. At a minimum, any restored site must meet the criteria outlined in the 1987 COE wetland delineation manual for a jurisdictional wetland (or the Clean Water Act definition of a water of the U.S.). However, site selection and the specific restoration measures employed should be designed to replace the aquatic ecosystem functions lost or impaired due to the proposed project, and this may entail more than simply the three parameters.

Enhancement is the second preference for mitigation for impacts to wetlands. Enhancement measures must address a suite of functions, as opposed to only a single function, and the enhancement measures themselves must not adversely affect other wetland functions currently performed or capable of being performed by the mitigation site. EPA does not view the conversion of one wetland type to another as enhancement. As with wetland restoration, it is important to establish a baseline condition for a wetland prior to any action, and then establish measurable performance criteria to quantify the level of enhancement. The results of the aforementioned wetland functional assessment will assist in determining the appropriate type, location and amount of mitigation for impacts to wetlands.

Streams: Stream restoration is EPA's preferred mitigation option for impacts to streams. Stream restoration includes actions taken to correct previous alterations that have destroyed, diminished, or impaired the character and function of streams or rivers. Restoration is the process of converting an unstable, altered, or degraded stream channel to its natural or referenced stable condition, with consideration of recent and future watershed conditions. This process may include restoration of the stream's geomorphic dimension, pattern and profile and/or biological and chemical integrity, including

transport of water and sediment produced by the streams' watershed in order to achieve dynamic equilibrium. Other components of stream mitigation may include riparian buffer restoration and preservation of appropriately buffered streams. The results of the aforementioned wetland functional assessment will assist in determining the appropriate type, location and amount of mitigation for impacts to stream assessment.

Location: While mitigation for otherwise disparate impacts may be clustered to provide the maximum level of ecological benefit, impacts in "special designation" areas or watersheds may require mitigation in the subject watersheds.

The mitigation proposal should include the proposed mitigation replacement ratio, the habitat value and proposed location of replacement habitats, general grading and revegetation plans and a biological maintenance and monitoring program. Clear mitigation goals and objectives and quantifiable criteria by which to judge the success or failure of mitigation should be provided. The proposal should include commitments to ensure the restoration, creation, and protection of wetland habitats of equal or greater resource value.

Water Quality & Quantity

EPA is concerned about degradation of water quality in various waterways from erosion, siltation and other pollutants associated with road construction and operations. The NEPA document should discuss potential impacts to water quality, designated uses and biological resources from construction and operations of the proposed I-69. The discussion in the document should be of sufficient detail to determine which alternatives are environmentally preferable. Site-specific water quality problems need to be assessed in greater detail, if applicable, including the adoption of site-specific mitigation measures to protect water quality and designated uses.

Protecting water quality ensures the protection of its designated uses. Especially critical is the protection of several sensitive uses. It is important to protect water quality in order to maintain freshwater and wildlife habitats, since many species are sensitive to the introduction of pollutants or the adverse modification of their habitats. It is also important to protect groundwater recharge and freshwater replenishment, particularly if public drinking water supplies could be adversely affected. These sensitive beneficial uses should be carefully considered when evaluating potential impacts caused by the placement of fill, erosion, sedimentation, the runoff of pollutants, and the accidental discharge of hazardous waste or toxic substances.

Characterization: The NEPA document should identify all surface waters that may be affected by the proposed project, as well as current drainage patterns in the project study area. The document should identify the existing and potential designated uses of these surface waters. Protected designated uses for streams, creeks, lagoons, tidal areas and other surface waters may include one or more of the following: cold and warm freshwater habitat; marine habitat; fish spawning and migration; shellfish habitat; wildlife habitat; preservation of rare, threatened or

endangered species; groundwater recharge; freshwater replenishment; public drinking water supplies; agricultural supply; and water contact and non-contact recreation. Individual waterbodies in the vicinity of the project not meeting designated uses should be identified in the NEPA document. The causes and sources of the impairments should also be identified.

Critical habitat areas (wildlife feeding and drinking areas; fishery migration, spawning or rearing areas; sensitive aquatic habitats such as wetlands; riparian resources; critical habitat for threatened and endangered species) should be identified in the study area, including a description of the existing designated uses and resource values of these critical areas.

Impacts and Coordination: The document should discuss any proposed crossings of water bodies. In general, crossings should be minimized. Unavoidable crossings should be strategically placed to reduce harm by avoiding fish spawning areas, avoiding fringe wetlands, approaching at right angles to streams, etc. Impacts to critical habitat areas, described previously, that cannot be avoided should be discussed. The document should assess how altering drainage patterns and characteristics will affect drainage hydrology, surface runoff, erosion potential, soils vegetation, and water quality. The document should include an analysis of project effects on floodplains in the study area. This includes using maps prepared by the Federal Emergency Management Agency, National Flood Insurance Program, and other appropriate agencies to determine whether the proposed action is located in or will likely affect a floodplain. The document should discuss these impacts and also describe the alternatives considered. Compliance with Executive Order 11988 on floodplain management should be documented. EPA strongly recommends bridging of floodplains whenever feasible. Any wetland loss or other impacts contributing to loss of floodwater storage or retention functions should be appropriately mitigated with in-kind replacement of those functions.

The NEPA document should discuss how the project will comply with state and local water quality management plans, state water quality objectives; and state-adopted, EPA-approved water quality standards. The state DOT should work closely with state water pollution control agencies, state fish and game agencies, the U.S. Fish and Wildlife Service (USFWS), and/or the National Marine Fisheries Service (NMFS) on water quality standards; the protection of water quality, designated uses and biological resources; mitigation and monitoring for adverse impacts. If the proposed project includes disturbance of five or more acres of land during construction, and point source discharges into waters of the United States (i.e., water bodies such as rivers, lakes, wetlands, etc.), coverage under an EPA stormwater National Pollutant Discharge Elimination System (NPDES) General Permit or state equivalent may be required. The state DOT should contact the appropriate state environmental agency for further information on the NPDES program.

In addition, Section 319 of the CWA requires states to assess nonpoint source water pollution problems, develop nonpoint source pollution management programs, and implement controls to protect and improve water quality and beneficial uses. The state DOT should work closely with appropriate state water pollution control agencies to determine what pollution control measures

should be adopted to advance the state's nonpoint source management plans in the project area. Specifically, the status of development of Total Maximum Daily Loads (TMDLs) for any waterways in the study area should be identified and how the proposed project could affect implementation of restoration efforts in these watersheds.

Mitigation: The NEPA document should discuss what mitigation measures (e.g., nonpoint source controls) will be implemented to protect or improve water quality, designated uses, and biological resources. Mitigation measures related to protection of water quality should be tailored depending on the condition of the specific water resource as well as the severity of the potential impacts. Best Management Practices (BMPs) should be used to reduce erosion during construction and operation of the facility. In the vicinity of impaired surface water resources in the project area, it is recommended that all storm water runoff from the proposed roadway be collected and treated before being discharged to surface waters. In other areas, typical BMPs, including the use of staked hay bales, silt fences, mulching and reseeding, and use of buffer zones along water bodies, are appropriate. The document should include an erosion control plan or reference the State erosion control regulations and a commitment to compliance. Compliance should include both BMP application and long-term maintenance.

Groundwater: For each alternative under consideration, the NEPA document should:

- Describe current groundwater conditions in the project area. Any likely impacts to groundwater quality and quantity from the proposed action should be assessed.

- Identify mitigation measures to prevent or reduce adverse impacts to groundwater quality and discuss their effectiveness. The state DOT should work closely with state and local agencies which regulate the protection of groundwater resources (i.e., state health departments and water pollution control agencies.)

Sole Source Aquifers: Pursuant to Section 1424(e) of the Safe Drinking Water Act of 1974, all Federal financially assisted projects which have the potential to contaminate designated sole source aquifers (SSA) are subject to EPA review. The NEPA document should identify if there is a designated sole source aquifer in the vicinity of the project and the potential for impacts to this sensitive resource. Segments of the proposed I-69 should be designed in a manner that will prevent the introduction of contaminants into the SSAs in quantities or concentrations which may create a significant hazard to public health. The document should determine whether the proposed project may contaminate the aquifer through its recharge zone so as to create a significant hazard to public health, or which may require a public water system to install additional treatment to prevent such adverse effect.

Public Water Supply Systems: A concerted effort should be made to avoid locating capacity adding transportation projects within water supply recharge of defined critical areas associated with water supply impoundments and intakes. If unavoidable, any projects that are located in these areas should be carefully designed to avoid or minimize any adverse effects from accidental

spills and runoff. Source water protection areas are areas defined and delineated by each state for the purpose of geographically identifying the surface and ground waters currently used as a source of public drinking water. States are required by the Safe Drinking Water Act, through EPA-approved Source Water Assessment Programs (SWAPs), to conduct a source water assessment at every public water supply in each State. State deadlines for completing source water assessments are dependent upon each state's SWAP approval date.

Example (Segment 9): There are no surface water sources of drinking water in Mississippi (MS) in the areas of concern for I-69 (and probably few, if any in Tennessee (TN)). These areas within TN and MS have extensive and very productive confined aquifers that public water supplies typically use. For the well locations in Mississippi, a 3,500-foot radius around each well location will sufficiently capture the source water protection area for these wells. Mississippi is still conducting source water assessments for many of the counties throughout the northern Mississippi Delta and have not specifically delineated the source water protection areas yet. Therefore, a 3500-foot radius will be sufficient.

Environmental Justice

Background: Executive Order 12898: (*Federal Actions to Address in Minority and Low-Income Populations)* requires all federal agencies to identify and address disproportionately high and adverse human health or environmental effects of federal programs on minority or low-income populations. The general purpose is to foster non-discrimination in federal programs and to provide minority and low-income communities greater opportunities for public participation in, and access to public information regarding human health and environmental issues.

In an effort to determine whether there are potential environmental justice (EJ) areas of concern (areas that have high levels of minority and/or low-income populations relative to the reference area), the demographic characteristics of the proposed project area are examined. Information regarding potential EJ areas identified in the screening process is used to ensure that these communities have access to both concise and clear information sufficient to effectively participate in the public involvement process and to ensure that these communities/areas are not disproportionately adversely affected by this project area. Consistent with Executive Order 12898, potential EJ impacts should be considered in the NEPA document. The following items should be incorporated into all EJ analyses related to the I-69 project:

Demographic Characterization: The NEPA document should identify potential EJ areas of concern. Appropriate geographic boundaries surrounding the communities that may be potentially impacted by the proposed project must be identified. General screening to identify potential EJ areas involves comparing the minority and low-income characteristics of smaller geographic areas (project area) with those of a larger geographic areas (reference area). U.S. Census data for 1990 (or more recent data if possible) should be used for the minority and low-income analysis. Data should be collected at the block group level for the project area and the county, metropolitan

statistical area, or state for the reference area. The block group data level should be used because it provides the best combination of demographic accuracy and data accessibility. The appropriate reference area should be selected based on the scope and intent of the project. Given the magnitude of the proposed I-69, state-level data should be used as the reference areas. The NEPA document should indicate what demographic threshold or methodology was used to determine whether low-income and/or minority populations exist in the study area. EPA recommends the use of a relative threshold in EJ analyses for determining significant minority and low-income populations. In an effort to ensure inter-regional consistency, the relative threshold recommended for use in I-69 NEPA documents is 1.2 times the State Average of low-income and minority populations. The 1.2 figure is recommended for use because it allows the determination of areas that contain a "meaningfully " greater percent minority or low- income population than the reference population which is consistent with recommendations from the Interim Federal Interagency Working Group Guidance, EPA Region 4 Interim Policy and other regions EJ Guidance to Identify and Address Potential EJ Areas. This threshold is merely used as a benchmark in determining whether or not a target area has a significant minority or low-income population. Therefore, additional analysis or information may be necessary for certain segments.

The following information includes some data sources or tools that may be used to identify low-income and minority communities:

- Maps provide by state, county and local agencies that delineate political and population boundaries
- U.S. Census Bureau geographic data
- Sources such as Chambers of Commerce, civic groups, trade associations and commercial organizations
- Standard demographic surveys that identify minority and low-income populations
- Local resources such as community and public outreach groups, community leaders, state universities
- Tools such as maps, aerial photographs and geographical information systems

Environmental Characterization and Impact Assessment: If percentages of low-income or minority populations are elevated within the project area, alternatives should be considered that avoid or minimize impacts to potential EJ areas. The issue of disproportionately high and adverse impacts should also be evaluated in the document by comparing environmental impact data to EJ information for highway segments. Adverse effects are defined as "disproportionate" if the risk of adverse environmental impacts are predominately borne in areas with minority or low-income populations or if the impacts are greater in magnitude in areas with minority or low-income populations than in other areas. When analyzing these impacts, it is important to assess both the negative and positive impacts, consider both the short and long-term effects as well as the secondary and cumulative impacts. One of the most detrimental aspects of controlled access can be to divide defined communities regardless of whether they are EJ communities. This potential impact must be assessed.

Public Involvement: If impacts are unavoidable, EPA recommends that coordination with these affected populations be conducted to determine the affected population's concerns and comments regarding the proposed project. This coordination should include a clear discussion of the project, project updates or expansions, environmental impacts, any economic benefits (job opportunities, etc.) of the project to the affected population, and the opportunity for informal and/or formal comments (e.g., EIS scoping meetings, public hearings, or other public meetings). Because public involvement is an important part of the NEPA process, we recommend early involvement with the potentially impacted communities and documentation of community coordination in the NEPA document.

Maps: The NEPA document should contain maps of potential EJ areas of concern within the proposed project corridor. Maps for the route should evaluate population density, minority status, and low-income status.

Economic Development: In those segments where economic development is a primary objective, efforts should be made to describe any opportunities the impacted community, especially EJ communities, may have for economic benefit. These opportunities should be described as clearly and in as much detail as possible. For example, the document should discuss how many jobs (or other economic development opportunities) would be created as a result of the proposed project and what percentage of the affected EJ community would likely be the recipient of these opportunities. The document should also address any adverse economic effects on potential EJ communities that may occur.

Example (Segment 9) - Based on preliminary EJ screening analysis using 1990 Census data, it appears as though there are a substantial amount of potential EJ communities along Alternative A (Memphis area). Therefore, EPA recommends that additional analysis should be conducted based on some of the recommendations above and that potential EJ communities should be involved throughout the EIS development process.

Archeological and Historic Property

Federal agencies are required to consider the effects of their actions on historic properties that are on or eligible for listing on the National Register of Historic Places in compliance with Section 106 of the National Historic Preservation Act. If identified early, federal undertakings often can avoid historic properties, or minimize adverse effects when avoidance is not feasible. EPA believes the flexibility to merge the NEPA and Section 106 processes, which the revised implementing regulations offer agencies, also can serve to minimize potential conflicts between the natural environment and cultural resources. To gain the greatest streamlining efficiencies, EPA recommends that merging the two processes be considered for segments which may effect historic properties. At a minimum, EPA believes each NEPA document should describe the cultural resources which the undertaking may effect, and demonstrate to the public that appropriate consultation with the State Historic Preservation Officer/Tribal Historic Preservation

Officer (SHPO/THPO) is underway or has occurred. If consultation is completed, EPA also believes any mitigation for adverse effects agreed to through the Section 106 process should be included in the NEPA documentation so the public, as well as EPA, has a complete picture of the action and all of its potential impacts to the environment, both natural and man-made. This enables all reviewers to give better, more informed comments.

Additionally, EPA is concerned that some of the proposed corridors in eastern Texas, for example, may affect sites to which a tribe may attach religious and/or cultural significance. EPA encourages FHWA to work with the SHPO/THPO as appropriate to avoid or minimize effects to such sites as early as possible.

Agricultural Land

The NEPA document should clarify if any agricultural land, specifically prime and unique farmland, would be impacted by the program. If so, the document should use the U.S. Department of Agriculture classification scheme to describe the present use of agricultural land which would be affected. If this acreage includes prime agricultural land (Class 2), consideration should be given to the Council on Environmental Quality (CEQ) guidelines (August 30, 1976 and August 11, 1980) which urge the protection of prime agricultural land. Mitigation measures should be developed to avoid loss of such valuable resources.

Biodiversity/Natural Areas

Biodiversity is defined as the variety of plants and animals (biota) of a site or region, and is typically measured by the number of different species and number of individuals per species. In general, the more diverse an area (number of habitat types and animal inhabitants) and the better represented these components are (population counts), the more rigorous (resistant, undisturbed, natural, "healthy") the area is considered. Consistent with CEQ guidance, the NEPA document should discuss biodiversity aspects of the proposal as appropriate. For example, will the project increase, restore, or decrease biodiversity of the area or region? Coordination with the USFWS/NMFS and the state fish and wildlife agency is recommended regarding the design of any project mitigation areas to enhance or restore biodiversity.

In addition to important natural areas in the vast Lower Mississippi River ecosystem, a number of other critical environmental resources exist in the I-69 project area, such as national and state parks/refuges, wildlife management areas, and other important habitat and greenspace areas on private lands. However, successful protection of natural resources requires more than "spot" conservation of isolated highly valuable and sensitive ecological areas, but also the links between them. One of the biggest threats to the environment is loss of ecosystem functionality due to fragmentation. Roads, agriculture and other development often lead to cutting natural systems into smaller pieces. Large, contiguous tracts of natural land are required not only for species

habitat range, such as migratory birds or black bears, but for ecosystem function. Many ecological processes require large areas of land, often crossing more than one land cover type. Viable landscape linkages are needed to connect these different land types, or the processes are disrupted and their capabilities to function healthily are compromised. For these reasons, conservation must take on the new challenge of not only protecting pristine areas, but ecological connectivity as well.

EPA strongly encourages utilization of existing roads and discourages placement of new interchanges in the vicinity of these areas to minimize potential direct and indirect impacts to these important conservation areas and other important connecting ecological areas. EPA has developed various geographic information system (GIS) tools that attempt to identify linkages between important natural resources. EPA encourages state DOTs in the I-69 corridor to utilize this information for inclusion in the NEPA document in order to refine alternatives such that impacts to these resources could be minimized. Any proposed routing of I-69 on new alignment should be sited to minimize fragmentation of forested areas or other important natural resources in the project areas. Appropriate compensatory mitigation for impacts to these resources or loss of critical ecosystem functions should be addressed in the NEPA document. Coordination between the appropriate EPA Regional Office and other natural resource agencies in the project area is encouraged to identify important areas, habitat connections, and potential mitigation opportunities. EPA Regional GIS points-of-contact are provided at the end of this document.

Endangered Species

The USFWS and NMFS are the agencies with responsibility for overseeing compliance with the Endangered Species Act. EPA recommends early coordination with the UFWS/NMFS and that the NEPA document demonstrate adequate coordination with the USFWS as part of the identification of any listed species in the project area, the potential for adverse effects, and any measures taken to avoid and minimize these impacts. "Adequate coordination" includes either a concurrence letter from USFWS or a biological opinion from USFWS for the species concerned. Mitigation measures (including reasonable and prudent measures) should be incorporated in the appropriate places in the NEPA document.

Cumulative and Secondary Impacts

NEPA requires the analysis and disclosure of the direct, secondary and cumulative impacts of major federal actions on the environment. While the direct impacts of transportation projects may or may not be significant, the secondary or indirect effects of the project on land use and the subsequent environmental effects can be both temporally and geographically more extensive. Similarly, there could be cases where the cumulative impacts would be great due to existing environmental conditions or other projects planned in an area. With respect to transportation projects, such as the proposed I-69, which both appear to serve and induce land use changes, the

analysis of these changes and their subsequent environmental effects is important to the understanding of the overall impact of the federal action on the natural, cultural and socioeconomic environment. Consideration of secondary and cumulative impacts requires the assessment of an area's ability to absorb additional development, the loss of businesses or residences, and the watershed's ability to absorb the loss of additional wetlands.

EPA is concerned about the environmental effects of secondary development in the project study area that would come about as an indirect result of the new roadway. For example, one of the goals for I-69 is to "facilitate economic development and enhance economic growth opportunities domestically and internationally through efficient and flexible transportation with specific emphasis being given to economic growth in the Lower Mississippi Delta Region." In this context, highway investment is meant to attract new businesses and expand existing businesses. If the impact area of interest is the geographic area along the highway, an increase in economic activity is almost certain in this area along the highway. The NEPA document should include a more detailed analysis of the economic and environmental implications of secondary development, focusing more directly within the project study area.

The NEPA document should examine the relative impacts of the various alternatives on potential land use changes. It should not only identify areas for development potential in the project study area, specifically in the vicinity of proposed interchanges, but also the secondary environmental impacts of the projected land use change associated with improved access and economic development. For example, what will be the secondary impact on service-related businesses along existing roadways through towns that will be bypassed? What will be the environmental effects of potential land use change associated with varying degrees and locations of access to the facility? The specific environmental impacts at these areas should be quantified and compared between alternatives, as much as possible. In particular, if there are important existing natural resources, such as high quality wetlands or wildlife habitat, in the vicinity of proposed access points for any of the alternatives, these areas should be identified for potential acquisition as mitigation sites.

A critical aspect to the process will be to provide the local communities with a better understanding of the land use implications that will be expected from implementation of the project. With this information, these communities can develop future land use plans and potential zoning regulations that could be enacted in concert with development of the transportation infrastructure.

The NEPA document should estimate the cumulative impacts associated with the proposed project. Cumulative impacts include the additive effects of a given parameter for all contributing projects in the area, as well as the cumulative impact of all parameters for all projects in the area. The document should define what cumulative impacts would result from implementation of the proposed project. Existing or future projects (federal and non-federal projects) with attendant pollutants should also be considered. EPA also suggests that the spacial/temporal criteria of the analysis be given and that they be uniform throughout the analyses of the interstate highway project, if appropriate given the varied terrain.

As an organizational approach, EPA recommends discussion of the secondary and cumulative impacts of each of the alternatives within each impact section, as opposed to a separate section at the end of the "Environmental Consequences" section. A specific break-out of the direct, indirect (secondary), and cumulative effects is suggested.

Public Involvement

Public involvement should be initiated early and solicited throughout the NEPA documentation process. It is essential to know the values of a community in order to avoid, minimize and mitigate impacts as well as narrow the field of alternatives. The community also needs to understand the tradeoffs and constraints of the process. Some useful strategies that EPA has employed in public involvement throughout the NEPA process includes the following:

- Identify stakeholders – the affected or potentially impacted people and communities with an economic, cultural, social or environmental "stake" in the action. Stakeholders can be identified through conducting community profiles and/or by holding public meetings. State, local and tribal governments; Federal agencies with jurisdiction by law or expertise; civic and environmental organizations; interested or affected private citizens; and communications media should be informed of key upcoming project decisions or milestones throughout the NEPA process. Participants should be sought out through effective outreach methods, such as the utilization of existing community-based organizations and communication networks.

- Make information available in an understandable form. It should be clear, simple and straightforward to encourage mutual understanding and discussion. It should be tailored to the audience, including the provision of bi- or multi-lingual formats, depending on the demographics of the project area.

- Information can be provided via direct mailing, display advertisements, inserts in local newspapers, information hotlines, internet web sites, mall exhibits, open houses, civic meetings, public meetings, and workshops. The media used should be selected for its ability to reach all members of the target audience. For example, notices should be run in papers with diverse readerships, which specifically cater to each sector of the target audience. Multiple public meetings/hearings should be held in locations closest to potentially impacted communities.

- Another successful strategy for community outreach is the establishment of a project office at a central location in the project corridor. The primary benefit of such an office would be to provide qualified project representatives empowered to meet with the public regarding any issue of concern they may have (e.g., environmental or property information, project location, design) throughout all phases of project planning, engineering, and construction.

- Public participation strategies should be designed to avoid conflicts with cultural events and beliefs.

- All public involvement activities and input should be well documented.

U.S. EPA Regional Points-of-Contact for I-69

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Appendix A – Wetland References

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Appendix E – Directional Design Hourly Volumes (DDHV)

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: WEBSTER 2003 STATION: 330 N
DISTRICT: 2 ROUTE: KY9004
MILEPOST: 58.500 TYPE COUNT: AUTOMATIC
ROAD DESIGNATION: R FUNCTIONAL CLASS: 2
LATEST ADT COUNT: 12900 IN 2001
LOCATION INFORMATION: 2 MILES SOUTH OF THE KY 370 OVERPASS

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	OTHERS	TOTAL VEHICLES
06-07AM	3/25/03	4	172	46	5	11	4	1	19	16	7	2	0	2	0	289
07-08AM	3/25/03	6	167	38	3	8	6	0	18	25	4	0	0	4	0	279
08-09AM	3/25/03	5	162	39	2	8	9	0	19	34	7	2	0	3	0	290
09-10AM	3/25/03	7	171	46	4	9	8	1	27	39	8	1	0	4	0	325
10-11AM	3/25/03	6	165	52	4	13	12	0	23	37	3	3	0	3	0	321
11-12AM	3/25/03	7	219	38	4	12	10	0	33	48	6	2	0	2	0	381
12-01PM	3/25/03	7	226	52	6	18	8	0	32	32	4	2	0	1	0	388
01-02PM	3/25/03	6	265	61	6	15	8	0	30	44	3	0	0	1	0	439
02-03PM	3/25/03	5	233	64	3	16	11	1	28	34	4	1	0	2	0	402
03-04PM	3/25/03	5	244	66	3	11	10	0	25	32	8	2	0	2	0	408
04-05PM	3/25/03	9	237	69	3	12	5	0	24	31	10	1	0	2	0	403
05-06PM	3/25/03	9	221	56	2	14	6	0	20	35	8	1	0	3	0	375
06-07PM	3/25/03	6	172	35	1	10	6	0	19	29	8	1	0	5	0	292
07-08PM	3/25/03	5	131	23	2	9	4	0	17	23	8	1	0	4	0	227
08-09PM	3/25/03	6	108	23	1	7	3	0	13	23	4	1	0	2	0	191
09-10PM	3/25/03	6	112	23	1	8	5	0	13	17	4	1	0	1	0	191
10-11PM	3/25/03	6	114	18	1	12	4	0	11	16	4	1	0	0	0	187
11-12PM	3/25/03	3	78	11	1	7	2	0	10	14	3	1	1	1	0	132
12-01AM	3/25/03	3	46	6	1	6	2	0	10	14	3	1	0	1	0	93
01-02AM	3/25/03	2	35	3	1	7	1	0	6	6	1	2	1	1	0	66
02-03AM	3/25/03	2	38	5	1	8	1	0	9	8	2	2	1	0	0	77
03-04AM	3/25/03	1	54	6	1	6	2	0	9	9	2	0	0	0	0	90
04-05AM	3/25/03	2	82	10	0	7	2	0	11	8	1	2	0	1	0	126
05-06AM	3/25/03	4	123	30	0	10	3	0	16	13	4	2	0	2	0	207
TOTAL VEHICLES		122	3575	820	56	244	132	3	442	587	116	32	3	47	0*	6179
PERCENT OF TOTAL		2.0	57.9	13.3	0.9	3.9	2.1	0.0	7.2	9.5	1.9	0.5	0.0	0.8	0.0	

% HEAVY TRUCKS = 1662/ 6179 = 26.9 %
AXLES / TRUCK = 6914/ 1662 = 4.160
% TRAILER TRUCKS = 1227/ 6179 = 19.9 %
% TRAILERS @PK HR= 78/ 439 = 17.8 %
PEAK HOUR BETWEEN 01-02PM 439 VEHICLES
TOTAL HOURS = 24

AXLE CORRECTION FACTOR = 0.77
% SINGLE UNIT TRUCKS = 435/ 6179 = 7.0 %
% SINGLE UNIT @ PK HR = 29/ 439 = 6.6 %
% TRUCKS AT PEAK HOUR = 107/ 439 = 24.4 %

* NOTE: RECOMMENDED OTHERS DISTRIBUTION IS CARS 00 %
OTHER 2 AXLE 4 TIRE VEHICLES 00 %
4 OR LESS AXLE SINGLE TRAILER TRUCKS 00 %

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: WEBSTER 2003 STATION: 330 S
DISTRICT: 2 ROUTE: KY9004
MILEPOST: 58.500 TYPE COUNT: AUTOMATIC
ROAD DESIGNATION: R FUNCTIONAL CLASS: 2
LATEST ADT COUNT: 12900 IN 2001
LOCATION INFORMATION: 2 MILES SOUTH OF THE KY 370 OVERPASS

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	OTHERS	TOTAL VEHICLES
06-07AM	3/25/03	4	83	26	2	10	5	0	8	8	2	0	0	1	0	149
07-08AM	3/25/03	4	150	37	3	9	6	0	6	14	3	0	0	1	0	233
08-09AM	3/25/03	3	128	38	3	8	5	0	9	15	4	0	0	2	0	215
09-10AM	3/25/03	3	126	44	4	9	7	0	9	18	4	1	0	1	0	226
10-11AM	3/25/03	6	137	41	4	10	9	0	11	18	2	0	0	1	0	239
11-12AM	3/25/03	9	137	38	3	10	11	1	11	20	2	0	0	0	0	242
12-01PM	3/25/03	9	149	37	5	11	11	0	9	13	2	0	0	1	0	247
01-02PM	3/25/03	6	141	35	3	12	7	0	7	14	2	0	0	0	0	227
02-03PM	3/25/03	8	191	44	3	9	9	0	9	17	2	1	0	1	0	294
03-04PM	3/25/03	5	218	49	4	11	8	0	7	21	3	0	0	1	0	327
04-05PM	3/25/03	9	224	51	4	10	9	0	6	16	2	1	0	1	0	333
05-06PM	3/25/03	5	208	47	2	9	7	0	6	12	2	0	0	0	0	298
06-07PM	3/25/03	5	156	37	2	7	5	0	5	10	3	1	0	0	0	231
07-08PM	3/25/03	8	119	24	2	7	9	0	4	13	1	1	0	0	0	188
08-09PM	3/25/03	6	100	19	2	8	8	0	4	7	1	1	0	0	0	156
09-10PM	3/25/03	4	92	15	2	8	6	0	3	7	3	1	0	1	0	142
10-11PM	3/25/03	4	61	13	1	5	4	0	2	5	2	0	0	0	0	97
11-12PM	3/25/03	4	47	8	1	4	4	0	1	4	1	1	0	0	0	75
12-01AM	3/25/03	3	46	10	0	5	4	0	2	5	2	0	0	1	0	78
01-02AM	3/25/03	3	23	4	1	4	3	0	3	4	1	0	0	0	0	46
02-03AM	3/25/03	2	20	3	1	3	2	0	3	5	1	0	0	1	0	41
03-04AM	3/25/03	4	23	4	1	4	2	0	3	4	1	0	0	1	0	47
04-05AM	3/25/03	2	27	9	1	6	3	0	3	5	2	0	0	0	0	58
05-06AM	3/25/03	2	49	17	1	6	3	0	5	6	1	0	0	0	0	90
TOTAL VEHICLES		118	2655	650	55	185	147	1	136	261	49	8	0	14	0*	4279
PERCENT OF TOTAL		2.8	62.0	15.2	1.3	4.3	3.4	0.0	3.2	6.1	1.1	0.2	0.0	0.3	0.0	

% HEAVY TRUCKS = 856/ 4279 = 20.0 %
AXLES / TRUCK = 3206/ 856 = 3.745
% TRAILER TRUCKS = 468/ 4279 = 10.9 %
% TRAILERS @PK HR= 26/ 333 = 7.8 %
PEAK HOUR BETWEEN 04-05PM 333 VEHICLES
TOTAL HOURS = 24

AXLE CORRECTION FACTOR = 0.85
% SINGLE UNIT TRUCKS = 388/ 4279 = 9.1 %
% SINGLE UNIT @ PK HR = 23/ 333 = 6.9 %
% TRUCKS AT PEAK HOUR = 49/ 333 = 14.7 %

* NOTE: RECOMMENDED OTHERS DISTRIBUTION IS CARS 00 %
OTHER 2 AXLE 4 TIRE VEHICLES 00 %
4 OR LESS AXLE SINGLE TRAILER TRUCKS 00 %

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: WEBSTER 2003 STATION: 330
DISTRICT: 2 ROUTE: KY9004
MILEPOST: 58.500 TYPE COUNT: AUTOMATIC
ROAD DESIGNATION: R FUNCTIONAL CLASS: 2
LATEST ADT COUNT: 12900 IN 2001
LOCATION INFORMATION: 2 MILES SOUTH OF THE KY 370 OVERPASS

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	OTHERS	TOTAL VEHICLES
06-07AM	3/25/03	8	255	72	7	21	9	1	27	24	9	2	0	3	0	438
07-08AM	3/25/03	10	317	75	6	17	12	0	24	39	7	0	0	5	0	512
08-09AM	3/25/03	8	290	77	5	16	14	0	28	49	11	2	0	5	0	505
09-10AM	3/25/03	10	297	90	8	18	15	1	36	57	12	2	0	5	0	551
10-11AM	3/25/03	12	302	93	8	23	21	0	34	55	5	3	0	4	0	560
11-12AM	3/25/03	16	356	76	7	22	21	1	44	68	8	2	0	2	0	623
12-01PM	3/25/03	16	375	89	11	29	19	0	41	45	6	2	0	2	0	635
01-02PM	3/25/03	12	406	96	9	27	15	0	37	58	5	0	0	1	0	666
02-03PM	3/25/03	13	424	108	6	25	20	1	37	51	6	2	0	3	0	696
03-04PM	3/25/03	10	462	115	7	22	18	0	32	53	11	2	0	3	0	735
04-05PM	3/25/03	18	481	120	7	22	14	0	30	47	12	2	0	3	0	736
05-06PM	3/25/03	14	429	103	4	23	13	0	26	47	10	1	0	3	0	673
06-07PM	3/25/03	11	328	72	3	17	11	0	24	39	11	2	0	5	0	523
07-08PM	3/25/03	13	250	47	4	16	13	0	21	36	9	2	0	4	0	415
08-09PM	3/25/03	12	208	42	3	15	11	0	17	30	5	2	0	2	0	347
09-10PM	3/25/03	10	204	38	3	16	11	0	16	24	7	2	0	2	0	333
10-11PM	3/25/03	10	175	31	2	17	8	0	13	21	6	1	0	0	0	284
11-12PM	3/25/03	7	125	19	2	11	6	0	11	18	4	2	1	1	0	207
12-01AM	3/25/03	6	92	16	1	11	6	0	12	19	5	1	0	2	0	171
01-02AM	3/25/03	5	58	7	2	11	4	0	9	10	2	2	1	1	0	112
02-03AM	3/25/03	4	58	8	2	11	3	0	12	13	3	2	1	1	0	118
03-04AM	3/25/03	5	77	10	2	10	4	0	12	13	3	0	0	1	0	137
04-05AM	3/25/03	4	109	19	1	13	5	0	14	13	3	2	0	1	0	184
05-06AM	3/25/03	6	172	47	1	16	6	0	21	19	5	2	0	2	0	297
TOTAL VEHICLES		240	6230	1470	111	429	279	4	578	848	165	40	3	61	0*	10458
PERCENT OF TOTAL		2.3	59.6	14.1	1.1	4.1	2.7	0.0	5.5	8.1	1.6	0.4	0.0	0.6	0.0	

% HEAVY TRUCKS = 2518/10458 = 24.1 %
AXLES / TRUCK = 10120/ 2518 = 4.019
% TRAILER TRUCKS = 1695/10458 = 16.2 %
% TRAILERS @PK HR= 94/ 736 = 12.8 %
PEAK HOUR BETWEEN 04-05PM 736 VEHICLES
TOTAL HOURS = NORTH BOUND 24 - SOUTH BOUND 24

AXLE CORRECTION FACTOR = 0.80
% SINGLE UNIT TRUCKS = 823/10458 = 7.9 %
% SINGLE UNIT @ PK HR = 43/ 736 = 5.8 %
% TRUCKS AT PEAK HOUR = 137/ 736 = 18.6 %

* NOTE: RECOMMENDED OTHERS DISTRIBUTION IS CARS 00 %
OTHER 2 AXLE 4 TIRE VEHICLES 00 %
4 OR LESS AXLE SINGLE TRAILER TRUCKS 00 %

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: HOPKINS 2003 STATION: 260 N
DISTRICT: 2 ROUTE: PEN9004
MILEPOST: 37.000 TYPE COUNT: AUTOMATIC
ROAD DESIGNATION: R FUNCTIONAL CLASS: 2
LATEST ADT COUNT: 16900 IN 2001
LOCATION INFORMATION: E. T. B. PARKWAY, JUST NORTH OF THE WESTERN KY. PARKWAY

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	OTHERS	TOTAL VEHICLES
06-07AM	4/14/03	11	294	71	5	14	11	1	16	37	7	2	1	2	0	472
07-08AM	4/14/03	9	446	90	4	13	13	2	19	40	7	1	0	3	0	647
08-09AM	4/14/03	8	376	84	4	17	12	2	27	50	7	2	0	3	0	592
09-10AM	4/14/03	12	354	91	4	15	20	1	37	60	6	2	0	1	0	603
10-11AM	4/14/03	11	329	88	5	18	12	3	35	65	9	2	0	1	0	578
11-12AM	4/14/03	10	307	89	6	19	19	2	35	51	8	3	1	1	0	551
12-01PM	4/14/03	15	348	93	6	17	21	2	35	52	8	2	1	1	0	601
01-02PM	4/14/03	11	350	102	7	17	18	3	30	55	5	0	0	2	0	600
02-03PM	4/14/03	12	399	113	7	20	13	3	30	54	7	2	0	1	0	661
03-04PM	4/14/03	13	438	114	5	21	15	3	28	48	5	1	0	1	0	692
04-05PM	4/14/03	11	428	112	5	23	16	2	26	49	6	2	0	2	0	682
05-06PM	4/14/03	11	398	90	6	13	14	2	25	35	6	1	0	2	0	603
06-07PM	4/14/03	11	292	64	3	10	14	1	17	44	5	1	0	1	0	483
07-08PM	4/14/03	12	227	50	3	8	16	0	18	39	3	1	0	1	0	378
08-09PM	4/14/03	11	193	50	4	7	9	1	17	39	4	2	0	0	0	337
09-10PM	4/14/03	9	164	27	1	6	10	0	13	32	2	2	0	0	0	266
10-11PM	4/14/03	8	128	22	1	4	8	0	11	32	2	0	1	1	0	218
11-12PM	4/14/03	10	92	17	1	4	8	0	9	26	2	1	1	0	0	171
12-01AM	4/14/03	6	57	10	0	4	6	0	7	19	1	1	0	0	0	111
01-02AM	4/14/03	7	40	7	3	5	6	0	8	12	1	2	1	0	0	92
02-03AM	4/14/03	8	35	7	2	4	7	0	8	15	1	1	1	0	0	89
03-04AM	4/14/03	7	46	11	2	5	3	0	8	15	2	1	1	1	0	102
04-05AM	4/14/03	11	68	21	1	10	7	0	11	19	2	3	0	1	0	154
05-06AM	4/14/03	6	153	39	1	7	7	0	17	27	4	5	0	1	0	267
TOTAL VEHICLES		240	5962	1462	86	281	285	28	487	915	110	40	8	26	0*	9930
PERCENT OF TOTAL		2.4	60.0	14.7	0.9	2.8	2.9	0.3	4.9	9.2	1.1	0.4	0.1	0.3	0.0	

% HEAVY TRUCKS = 2266/ 9930 = 22.8 %
AXLES / TRUCK = 9314/ 2266 = 4.110
% TRAILER TRUCKS = 1586/ 9930 = 16.0 %
% TRAILERS @PK HR= 83/ 692 = 12.0 %
PEAK HOUR BETWEEN 03-04PM 692 VEHICLES
TOTAL HOURS = 24

AXLE CORRECTION FACTOR = 0.81
% SINGLE UNIT TRUCKS = 680/ 9930 = 6.8 %
% SINGLE UNIT @ PK HR = 44/ 692 = 6.4 %
% TRUCKS AT PEAK HOUR = 127/ 692 = 18.4 %

* NOTE: RECOMMENDED OTHERS DISTRIBUTION IS CARS 00 %
OTHER 2 AXLE 4 TIRE VEHICLES 00 %
4 OR LESS AXLE SINGLE TRAILER TRUCKS 00 %

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: HOPKINS 2003 STATION: 260 S
DISTRICT: 2 ROUTE: PEN9004
MILEPOST: 37.000 TYPE COUNT: AUTOMATIC
ROAD DESIGNATION: R FUNCTIONAL CLASS: 2
LATEST ADT COUNT: 16900 IN 2001
LOCATION INFORMATION: E. T. B. PARKWAY, JUST NORTH OF THE WESTERN KY. PARKWAY

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	OTHERS	TOTAL VEHICLES
06-07AM	4/14/03	2	147	67	2	4	4	2	16	25	8	0	0	9	0	286
07-08AM	4/14/03	1	187	83	2	7	3	2	12	23	22	2	0	10	0	354
08-09AM	4/14/03	1	168	70	3	11	6	3	16	29	16	1	0	13	0	337
09-10AM	4/14/03	0	178	89	2	4	5	0	15	30	21	0	0	14	0	358
10-11AM	4/14/03	1	170	83	1	6	4	1	23	26	15	1	0	13	0	344
11-12AM	4/14/03	4	174	88	7	5	3	0	17	31	16	0	0	10	0	355
12-01PM	4/14/03	1	175	70	3	6	2	2	20	38	16	1	0	10	0	344
01-02PM	4/14/03	2	199	83	6	3	4	3	18	32	14	1	0	9	0	374
02-03PM	4/14/03	1	210	85	1	6	2	3	10	24	29	0	0	13	0	384
03-04PM	4/14/03	4	342	108	2	13	9	2	20	47	17	1	0	5	0	570
04-05PM	4/14/03	6	355	103	2	8	7	4	19	34	18	2	1	5	0	564
05-06PM	4/14/03	5	323	88	1	9	6	1	15	31	10	2	0	7	0	498
06-07PM	4/14/03	4	242	62	3	6	5	1	22	28	11	1	1	7	0	393
07-08PM	4/14/03	3	194	50	1	5	3	0	18	28	7	3	1	4	0	317
08-09PM	4/14/03	3	180	40	1	4	3	1	19	30	6	4	0	5	0	296
09-10PM	4/14/03	4	150	33	2	2	4	0	15	30	3	4	0	5	0	252
10-11PM	4/14/03	2	122	29	1	1	3	0	12	33	4	2	1	4	0	214
11-12PM	4/14/03	1	71	21	0	1	2	1	11	31	2	2	0	2	0	145
12-01AM	4/14/03	1	76	17	0	3	1	0	11	22	1	2	0	2	0	136
01-02AM	4/14/03	1	43	10	0	1	1	0	9	16	0	1	1	1	0	84
02-03AM	4/14/03	0	21	4	1	3	0	0	14	16	1	1	0	2	0	63
03-04AM	4/14/03	1	39	15	3	3	2	0	18	25	2	2	0	3	0	113
04-05AM	4/14/03	1	63	34	1	7	2	1	22	25	2	0	1	5	0	164
05-06AM	4/14/03	1	105	44	2	5	4	1	13	23	5	2	0	8	0	213
TOTAL VEHICLES		50	3934	1376	47	123	85	28	385	677	246	35	6	166	0*	7158
PERCENT OF TOTAL		0.7	55.0	19.2	0.7	1.7	1.2	0.4	5.4	9.5	3.4	0.5	0.1	2.3	0.0	

% HEAVY TRUCKS = 1798/ 7158 = 25.1 %
AXLES / TRUCK = 8481/ 1798 = 4.717
% TRAILER TRUCKS = 1515/ 7158 = 21.2 %
% TRAILERS @PK HR= 90/ 570 = 15.8 %
PEAK HOUR BETWEEN 03-04PM 570 VEHICLES
TOTAL HOURS = 24

AXLE CORRECTION FACTOR = 0.75
% SINGLE UNIT TRUCKS = 283/ 7158 = 4.0 %
% SINGLE UNIT @ PK HR = 26/ 570 = 4.6 %
% TRUCKS AT PEAK HOUR = 116/ 570 = 20.4 %

* NOTE: RECOMMENDED OTHERS DISTRIBUTION IS CARS 00 %
OTHER 2 AXLE 4 TIRE VEHICLES 00 %
4 OR LESS AXLE SINGLE TRAILER TRUCKS 00 %

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: HOPKINS 2003 STATION: 260
DISTRICT: 2 ROUTE: PEN9004
MILEPOST: 37.000 TYPE COUNT: AUTOMATIC
ROAD DESIGNATION: R FUNCTIONAL CLASS: 2
LATEST ADT COUNT: 16900 IN 2001
LOCATION INFORMATION: E. T. B. PARKWAY, JUST NORTH OF THE WESTERN KY. PARKWAY

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	OTHERS	TOTAL VEHICLES
06-07AM	4/14/03	13	441	138	7	18	15	3	32	62	15	2	1	11	0	758
07-08AM	4/14/03	10	633	173	6	20	16	4	31	63	29	3	0	13	0	1001
08-09AM	4/14/03	9	544	154	7	28	18	5	43	79	23	3	0	16	0	929
09-10AM	4/14/03	12	532	180	6	19	25	1	52	90	27	2	0	15	0	961
10-11AM	4/14/03	12	499	171	6	24	16	4	58	91	24	3	0	14	0	922
11-12AM	4/14/03	14	481	177	13	24	22	2	52	82	24	3	1	11	0	906
12-01PM	4/14/03	16	523	163	9	23	23	4	55	90	24	3	1	11	0	945
01-02PM	4/14/03	13	549	185	13	20	22	6	48	87	19	1	0	11	0	974
02-03PM	4/14/03	13	609	198	8	26	15	6	40	78	36	2	0	14	0	1045
03-04PM	4/14/03	17	780	222	7	34	24	5	48	95	22	2	0	6	0	1262
04-05PM	4/14/03	17	783	215	7	31	23	6	45	83	24	4	1	7	0	1246
05-06PM	4/14/03	16	721	178	7	22	20	3	40	66	16	3	0	9	0	1101
06-07PM	4/14/03	15	534	126	6	16	19	2	39	72	16	2	1	8	0	856
07-08PM	4/14/03	15	421	100	4	13	19	0	36	67	10	4	1	5	0	695
08-09PM	4/14/03	14	373	90	5	11	12	2	36	69	10	6	0	5	0	633
09-10PM	4/14/03	13	314	60	3	8	14	0	28	62	5	6	0	5	0	518
10-11PM	4/14/03	10	250	51	2	5	11	0	23	65	6	2	2	5	0	432
11-12PM	4/14/03	11	183	38	1	5	10	1	20	57	4	3	1	2	0	316
12-01AM	4/14/03	7	133	27	0	7	7	0	18	41	2	3	0	2	0	247
01-02AM	4/14/03	8	83	17	3	6	7	0	17	28	1	3	2	1	0	176
02-03AM	4/14/03	8	56	11	3	7	7	0	22	31	2	2	1	2	0	152
03-04AM	4/14/03	8	85	26	5	8	5	0	26	40	4	3	1	4	0	215
04-05AM	4/14/03	12	131	55	2	17	9	1	33	44	4	3	1	6	0	318
05-06AM	4/14/03	7	258	83	3	12	11	1	30	50	9	7	0	9	0	480
TOTAL VEHICLES		290	9896	2838	133	404	370	56	872	1592	356	75	14	192	0*	17088
PERCENT OF TOTAL		1.7	57.9	16.6	0.8	2.4	2.2	0.3	5.1	9.3	2.1	0.4	0.1	1.1	0.0	

% HEAVY TRUCKS = 4064/17088 = 23.8 %
AXLES / TRUCK = 17795/ 4064 = 4.379
% TRAILER TRUCKS = 3101/17088 = 18.1 %
% TRAILERS @PK HR= 173/ 1262 = 13.7 %
PEAK HOUR BETWEEN 03-04PM 1262 VEHICLES
TOTAL HOURS = NORTH BOUND 24 - SOUTH BOUND 24

AXLE CORRECTION FACTOR = 0.78
% SINGLE UNIT TRUCKS = 963/17088 = 5.6 %
% SINGLE UNIT @ PK HR = 70/ 1262 = 5.5 %
% TRUCKS AT PEAK HOUR = 243/ 1262 = 19.3 %

* NOTE: RECOMMENDED OTHERS DISTRIBUTION IS CARS 00 %
OTHER 2 AXLE 4 TIRE VEHICLES 00 %
4 OR LESS AXLE SINGLE TRAILER TRUCKS 00 %

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: HENDERSON 2003 STATION: B75 N
DISTRICT: 2 ROUTE: KY9004
MILEPOST: 78.000 TYPE COUNT: MANUAL
ROAD DESIGNATION: U FUNCTIONAL CLASS: 12
LATEST ADT COUNT: 20400 IN 2001
LOCATION INFORMATION: EDWARD T. BREATHITT PKWY. BETWEEN THE AUDUBON PKWY. AND US 41

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	COAL TRUCKS	TOTAL VEHICLES
06-07AM	6/11/03	8	266	270	0	14	2	2	0	42	13	2	2	0	2	621
07-08AM	6/11/03	0	509	252	1	19	0	0	0	78	1	1	0	0	3	861
08-09AM	6/11/03	1	388	209	1	22	2	2	1	78	0	0	0	0	2	704
09-10AM	6/11/03	1	360	160	1	27	4	1	0	118	0	1	2	0	2	675
10-11AM	6/11/03	0	396	171	3	18	2	0	0	121	0	3	0	0	0	714
11-12AM	6/11/03	0	366	235	1	22	7	2	1	109	0	0	2	0	3	745
12-01PM	6/11/03	0	407	140	2	25	2	0	0	100	4	5	0	0	0	685
01-02PM	6/11/03	0	372	224	2	25	6	1	3	101	0	0	1	0	0	735
02-03PM	5/ 1/03	0	303	217	2	42	2	2	0	106	1	0	0	0	2	675
03-04PM	5/ 1/03	0	328	267	6	35	5	0	1	99	1	10	2	0	1	754
04-05PM	5/ 1/03	0	474	242	0	29	3	0	2	102	0	1	0	0	0	853
05-06PM	5/ 1/03	1	373	278	2	21	1	0	2	91	1	3	0	0	2	773
06-07PM	5/ 1/03	0	275	123	1	12	1	0	0	81	2	1	0	0	0	496
07-08PM	5/ 1/03	0	159	127	1	10	1	2	1	88	0	3	0	0	0	392
08-09PM	5/ 1/03	0	147	72	1	5	1	0	1	66	0	8	0	0	0	301
09-10PM	5/ 1/03	0	125	77	0	7	2	0	2	62	0	6	0	0	0	281
10-11PM																
11-12PM																
12-01AM																
01-02AM																
02-03AM																
03-04AM																
04-05AM																
05-06AM																
TOTAL VEHICLES		11	5248	3064	24	333	41	12	14	1442	23	44	9	0	17*	10265
PERCENT OF TOTAL		0.1	51.1	29.8	0.2	3.2	0.4	0.1	0.1	14.0	0.2	0.4	0.1	0.0	0.2	

% HEAVY TRUCKS = 1942/10265 = 18.9 %
AXLES / TRUCK = 8563/ 1942 = 4.409
% TRAILER TRUCKS = 1532/10265 = 14.9 %
% TRAILERS @PK HR= 80/ 861 = 9.3 %
PEAK HOUR BETWEEN 07-08AM 861 VEHICLES
TOTAL HOURS = 16

AXLE CORRECTION FACTOR = 0.81
% SINGLE UNIT TRUCKS = 410/10265 = 4.0 %
% SINGLE UNIT @ PK HR = 20/ 861 = 2.3 %
% TRUCKS AT PEAK HOUR = 100/ 861 = 11.6 %

* NOTE: COAL TRUCKS HAVE BEEN INCLUDED WITH OTHER TRUCK TYPES (ACCORDING TO APPROPRIATE VEHICLE TYPE) FOR COMPUTATION OF TOTAL TRUCKS, PERCENT TRUCKS, AXLES PER TRUCK, AND AXLE CORRECTION FACTOR.

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: HENDERSON 2003 STATION: B75 S
DISTRICT: 2 ROUTE: KY9004
MILEPOST: 78.000 TYPE COUNT: MANUAL
ROAD DESIGNATION: U FUNCTIONAL CLASS: 12
LATEST ADT COUNT: 20400 IN 2001
LOCATION INFORMATION: EDWARD T. BREATHITT PKWY. BETWEEN THE AUDUBON PKWY. AND US 41

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	COAL TRUCKS	TOTAL VEHICLES
06-07AM	6/11/03	1	180	209	0	29	3	0	0	56	6	2	6	0	4	492
07-08AM	6/11/03	1	291	163	1	22	2	4	0	75	1	1	2	0	1	563
08-09AM	6/11/03	0	255	170	0	33	1	0	0	118	0	0	1	0	1	578
09-10AM	6/11/03	0	238	138	0	37	5	1	0	97	0	0	3	0	0	519
10-11AM	6/11/03	0	235	124	0	33	5	0	0	122	0	0	0	0	2	519
11-12AM	6/11/03	1	286	190	3	21	4	1	2	97	0	0	5	0	1	610
12-01PM	6/11/03	1	282	123	2	21	5	0	0	109	0	4	0	0	0	547
01-02PM	6/11/03	0	309	209	0	16	2	1	1	79	0	0	5	0	4	622
02-03PM	5/ 1/03	0	362	251	2	35	3	2	0	88	2	0	0	0	3	745
03-04PM	5/ 1/03	0	343	291	8	27	2	1	0	96	1	0	0	0	2	769
04-05PM	5/ 1/03	1	458	274	1	10	0	0	0	73	0	2	0	0	0	819
05-06PM	5/ 1/03	1	407	294	1	21	3	0	0	77	3	0	0	0	2	807
06-07PM	5/ 1/03	0	344	130	2	9	0	0	0	76	0	4	0	0	0	565
07-08PM	5/ 1/03	0	192	133	2	11	1	0	1	64	4	0	0	0	1	408
08-09PM	5/ 1/03	2	256	81	1	3	1	0	1	77	0	0	0	0	0	422
09-10PM	5/ 1/03	0	158	113	0	3	1	1	0	58	9	0	0	0	0	343
10-11PM																
11-12PM																
12-01AM																
01-02AM																
02-03AM																
03-04AM																
04-05AM																
05-06AM																
TOTAL VEHICLES		8	4596	2893	23	331	38	11	5	1362	26	13	22	0	21*	9328
PERCENT OF TOTAL		0.1	49.3	31.0	0.2	3.5	0.4	0.1	0.1	14.6	0.3	0.1	0.2	0.0	0.2	

% HEAVY TRUCKS = 1831/ 9328 = 19.6 %
AXLES / TRUCK = 8049/ 1831 = 4.396
% TRAILER TRUCKS = 1428/ 9328 = 15.3 %
% TRAILERS @PK HR= 75/ 819 = 9.2 %
PEAK HOUR BETWEEN 04-05PM 819 VEHICLES
TOTAL HOURS = 16

AXLE CORRECTION FACTOR = 0.81
% SINGLE UNIT TRUCKS = 403/ 9328 = 4.3 %
% SINGLE UNIT @ PK HR = 11/ 819 = 1.3 %
% TRUCKS AT PEAK HOUR = 86/ 819 = 10.5 %

* NOTE: COAL TRUCKS HAVE BEEN INCLUDED WITH OTHER TRUCK TYPES (ACCORDING TO APPROPRIATE VEHICLE TYPE) FOR COMPUTATION OF TOTAL TRUCKS, PERCENT TRUCKS, AXLES PER TRUCK, AND AXLE CORRECTION FACTOR.

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: HENDERSON 2003 STATION: B75
DISTRICT: 2 ROUTE: KY9004
MILEPOST: 78.000 TYPE COUNT: MANUAL
ROAD DESIGNATION: U FUNCTIONAL CLASS: 12
LATEST ADT COUNT: 20400 IN 2001
LOCATION INFORMATION: EDWARD T. BREATHITT PKWY. BETWEEN THE AUDUBON PKWY. AND US 41

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	COAL TRUCKS	TOTAL VEHICLES
06-07AM	6/11/03	9	446	479	0	43	5	2	0	98	19	4	8	0	6	1113
07-08AM	6/11/03	1	800	415	2	41	2	4	0	153	2	2	2	0	4	1424
08-09AM	6/11/03	1	643	379	1	55	3	2	1	196	0	0	1	0	3	1282
09-10AM	6/11/03	1	598	298	1	64	9	2	0	215	0	1	5	0	2	1194
10-11AM	6/11/03	0	631	295	3	51	7	0	0	243	0	3	0	0	2	1233
11-12AM	6/11/03	1	652	425	4	43	11	3	3	206	0	0	7	0	4	1355
12-01PM	6/11/03	1	689	263	4	46	7	0	0	209	4	9	0	0	0	1232
01-02PM	6/11/03	0	681	433	2	41	8	2	4	180	0	0	6	0	4	1357
02-03PM	5/ 1/03	0	665	468	4	77	5	4	0	194	3	0	0	0	5	1420
03-04PM	5/ 1/03	0	671	558	14	62	7	1	1	195	2	10	2	0	3	1523
04-05PM	5/ 1/03	1	932	516	1	39	3	0	2	175	0	3	0	0	0	1672
05-06PM	5/ 1/03	2	780	572	3	42	4	0	2	168	4	3	0	0	4	1580
06-07PM	5/ 1/03	0	619	253	3	21	1	0	0	157	2	5	0	0	0	1061
07-08PM	5/ 1/03	0	351	260	3	21	2	2	2	152	4	3	0	0	1	800
08-09PM	5/ 1/03	2	403	153	2	8	2	0	2	143	0	8	0	0	0	723
09-10PM	5/ 1/03	0	283	190	0	10	3	1	2	120	9	6	0	0	0	624
10-11PM																
11-12PM																
12-01AM																
01-02AM																
02-03AM																
03-04AM																
04-05AM																
05-06AM																
TOTAL VEHICLES		19	9844	5957	47	664	79	23	19	2804	49	57	31	0	38*	19593
PERCENT OF TOTAL		0.1	50.2	30.4	0.2	3.4	0.4	0.1	0.1	14.3	0.3	0.3	0.2	0.0	0.2	

% HEAVY TRUCKS = 3773/19593 = 19.3 %
AXLES / TRUCK = 16612/ 3773 = 4.403
% TRAILER TRUCKS = 2960/19593 = 15.1 %
% TRAILERS @PK HR= 180/ 1672 = 10.8 %
PEAK HOUR BETWEEN 04-05PM 1672 VEHICLES
TOTAL HOURS = NORTH BOUND 16 - SOUTH BOUND 16

AXLE CORRECTION FACTOR = 0.81
% SINGLE UNIT TRUCKS = 813/19593 = 4.1 %
% SINGLE UNIT @ PK HR = 43/ 1672 = 2.6 %
% TRUCKS AT PEAK HOUR = 223/ 1672 = 13.3 %

* NOTE: COAL TRUCKS HAVE BEEN INCLUDED WITH OTHER TRUCK TYPES (ACCORDING TO APPROPRIATE VEHICLE TYPE) FOR COMPUTATION OF TOTAL TRUCKS, PERCENT TRUCKS, AXLES PER TRUCK, AND AXLE CORRECTION FACTOR.

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: CALDWELL 2003 STATION: 301 E
DISTRICT: 2 ROUTE: KY9001
MILEPOST: 20.800 TYPE COUNT: AUTOMATIC
ROAD DESIGNATION: R FUNCTIONAL CLASS: 2
LATEST ADT COUNT: 8770 IN 2002
LOCATION INFORMATION: WESTERN KY. PKWY., JUST WEST OF THE CALDWELL-HOPKINS COUNTY LINE

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	OTHERS	TOTAL VEHICLES
06-07AM	4/23/03	2	82	24	3	3	3	0	16	12	4	1	1	1	0	152
07-08AM	4/23/03	3	161	39	1	6	3	2	14	16	3	0	1	1	0	250
08-09AM	4/23/03	1	163	42	1	4	3	1	19	22	6	0	0	1	0	263
09-10AM	4/23/03	2	164	47	1	4	2	1	28	31	10	0	0	2	0	292
10-11AM	4/23/03	3	128	42	2	7	2	3	27	29	5	0	0	1	0	249
11-12AM	4/23/03	1	145	31	2	8	2	3	19	43	5	2	0	2	0	263
12-01PM	4/23/03	1	136	39	2	9	0	4	18	47	5	1	0	1	0	263
01-02PM	4/23/03	1	151	44	2	8	1	3	25	40	4	7	0	2	0	288
02-03PM	4/23/03	0	181	58	6	11	2	3	22	37	6	3	1	1	0	331
03-04PM	4/23/03	4	210	60	3	6	3	0	20	39	6	3	1	3	0	358
04-05PM	4/23/03	1	202	45	3	5	2	1	22	36	3	1	0	1	0	322
05-06PM	4/23/03	6	155	43	3	4	1	1	17	41	8	1	1	0	0	281
06-07PM	4/23/03	0	131	35	2	4	2	1	12	30	8	1	0	1	0	227
07-08PM	4/23/03	2	95	30	2	3	1	0	8	26	3	0	0	1	0	171
08-09PM	4/23/03	1	72	19	1	3	1	0	13	25	3	1	0	1	0	140
09-10PM	4/23/03	1	56	14	1	2	2	0	12	20	9	2	1	1	0	121
10-11PM	4/23/03	0	43	9	1	2	0	0	8	15	2	1	0	0	0	81
11-12PM	4/23/03	1	36	6	2	0	0	0	10	13	4	2	0	1	0	75
12-01AM	4/23/03	0	17	6	0	1	0	0	4	9	2	1	0	1	0	41
01-02AM	4/23/03	1	12	4	1	1	0	0	5	10	3	1	0	0	0	38
02-03AM	4/23/03	2	17	5	1	0	1	0	9	9	0	1	0	0	0	45
03-04AM	4/23/03	0	11	4	0	1	0	0	4	8	2	0	0	0	0	30
04-05AM	4/23/03	1	26	4	0	1	1	0	10	12	4	0	0	1	0	60
05-06AM	4/23/03	0	45	13	0	5	0	0	9	12	5	0	0	0	0	89
TOTAL VEHICLES		34	2439	663	40	98	32	23	351	582	110	29	6	23	0*	4430
PERCENT OF TOTAL		0.8	55.1	15.0	0.9	2.2	0.7	0.5	7.9	13.1	2.5	0.7	0.1	0.5	0.0	

% HEAVY TRUCKS = 1294/ 4430 = 29.2 %
AXLES / TRUCK = 5780/ 1294 = 4.467
% TRAILER TRUCKS = 1101/ 4430 = 24.9 %
% TRAILERS @PK HR= 72/ 358 = 20.1 %
PEAK HOUR BETWEEN 03-04PM 358 VEHICLES
TOTAL HOURS = 24

AXLE CORRECTION FACTOR = 0.74
% SINGLE UNIT TRUCKS = 193/ 4430 = 4.4 %
% SINGLE UNIT @ PK HR = 12/ 358 = 3.4 %
% TRUCKS AT PEAK HOUR = 84/ 358 = 23.5 %

* NOTE: RECOMMENDED OTHERS DISTRIBUTION IS CARS 00 %
OTHER 2 AXLE 4 TIRE VEHICLES 00 %
4 OR LESS AXLE SINGLE TRAILER TRUCKS 00 %

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: CALDWELL 2003 STATION: 301 W
DISTRICT: 2 ROUTE: KY9001
MILEPOST: 20.800 TYPE COUNT: AUTOMATIC
ROAD DESIGNATION: R FUNCTIONAL CLASS: 2
LATEST ADT COUNT: 8770 IN 2002
LOCATION INFORMATION: WESTERN KY. PKWY., JUST WEST OF THE CALDWELL-HOPKINS COUNTY LINE

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	OTHERS	TOTAL VEHICLES
06-07AM	4/23/03	11	94	37	5	13	8	1	17	14	4	2	1	1	0	208
07-08AM	4/23/03	9	119	36	6	10	8	0	16	13	2	3	0	2	0	224
08-09AM	4/23/03	11	151	45	6	15	10	1	20	19	3	1	0	2	0	284
09-10AM	4/23/03	11	165	48	3	13	7	1	26	23	7	2	0	1	0	307
10-11AM	4/23/03	11	172	38	5	15	11	1	26	34	3	3	1	2	0	322
11-12AM	4/23/03	8	146	45	6	9	11	1	19	32	4	2	2	1	0	286
12-01PM	4/23/03	7	134	32	1	10	11	0	19	38	2	5	0	0	0	259
01-02PM	4/23/03	8	155	45	3	6	10	0	21	35	3	1	0	1	0	288
02-03PM	4/23/03	7	181	48	5	6	8	0	15	39	3	0	0	1	0	313
03-04PM	4/23/03	10	194	48	4	10	10	0	17	41	5	0	0	1	0	340
04-05PM	4/23/03	10	201	48	4	6	8	1	19	32	5	1	0	2	0	337
05-06PM	4/23/03	12	176	38	4	7	9	0	16	28	3	0	0	1	0	294
06-07PM	4/23/03	9	130	31	3	10	7	0	11	23	3	0	1	0	0	228
07-08PM	4/23/03	8	98	26	3	9	8	0	14	15	6	2	0	1	0	190
08-09PM	4/23/03	9	85	14	5	9	6	0	11	18	3	1	0	0	0	161
09-10PM	4/23/03	8	64	14	4	12	4	1	10	12	6	1	0	1	0	137
10-11PM	4/23/03	11	65	13	5	7	5	1	10	16	2	1	0	0	0	136
11-12PM	4/23/03	10	32	6	2	8	8	1	9	8	3	0	0	1	0	88
12-01AM	4/23/03	6	19	3	2	6	3	0	5	9	2	1	0	0	0	56
01-02AM	4/23/03	3	19	4	1	3	4	0	3	9	4	0	0	0	0	50
02-03AM	4/23/03	8	19	4	3	11	4	0	4	9	3	1	0	0	0	66
03-04AM	4/23/03	5	19	6	4	5	5	0	6	8	3	1	0	1	0	63
04-05AM	4/23/03	7	23	6	3	9	1	0	12	13	5	1	0	0	0	80
05-06AM	4/23/03	6	48	14	5	9	8	0	13	14	3	0	0	0	0	120
TOTAL VEHICLES		205	2509	649	92	218	174	9	339	502	87	29	5	19	0*	4837
PERCENT OF TOTAL		4.2	51.9	13.4	1.9	4.5	3.6	0.2	7.0	10.4	1.8	0.6	0.1	0.4	0.0	

% HEAVY TRUCKS = 1474/ 4837 = 30.5 %
AXLES / TRUCK = 5874/ 1474 = 3.985
% TRAILER TRUCKS = 981/ 4837 = 20.3 %
% TRAILERS @PK HR= 64/ 340 = 18.8 %
PEAK HOUR BETWEEN 03-04PM 340 VEHICLES
TOTAL HOURS = 24

AXLE CORRECTION FACTOR = 0.77
% SINGLE UNIT TRUCKS = 493/ 4837 = 10.2 %
% SINGLE UNIT @ PK HR = 24/ 340 = 7.1 %
% TRUCKS AT PEAK HOUR = 88/ 340 = 25.9 %

* NOTE: RECOMMENDED OTHERS DISTRIBUTION IS CARS 00 %
OTHER 2 AXLE 4 TIRE VEHICLES 00 %
4 OR LESS AXLE SINGLE TRAILER TRUCKS 00 %

KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING-TRAFFIC SURVEY AND ANALYSIS SECTION
VEHICLE CLASSIFICATION COUNT

COUNTY: CALDWELL 2003 STATION: 301
DISTRICT: 2 ROUTE: KY9001
MILEPOST: 20.800 TYPE COUNT: AUTOMATIC
ROAD DESIGNATION: R FUNCTIONAL CLASS: 2
LATEST ADT COUNT: 8770 IN 2002
LOCATION INFORMATION: WESTERN KY. PKWY., JUST WEST OF THE CALDWELL-HOPKINS COUNTY LINE

					SINGLE UNIT TRUCKS				SINGLE TRAILER TRUCKS			MULTI-TRAILER TRUCKS				
TIME PERIOD	DATE	MOTOR-CYCLES	PASSENGER CARS	OTHER 2 AXLE 4 TIRE VEHICLES	BUSSES	2 AXLE 6 TIRE	3 AXLE	4 OR MORE AXLE	4 OR LESS AXLE	5 AXLE	6 OR MORE AXLE	5 OR LESS AXLE	6 AXLE	7 OR MORE AXLE	OTHERS	TOTAL VEHICLES
06-07AM	4/23/03	13	176	61	8	16	11	1	33	26	8	3	2	2	0	360
07-08AM	4/23/03	12	280	75	7	16	11	2	30	29	5	3	1	3	0	474
08-09AM	4/23/03	12	314	87	7	19	13	2	39	41	9	1	0	3	0	547
09-10AM	4/23/03	13	329	95	4	17	9	2	54	54	17	2	0	3	0	599
10-11AM	4/23/03	14	300	80	7	22	13	4	53	63	8	3	1	3	0	571
11-12AM	4/23/03	9	291	76	8	17	13	4	38	75	9	4	2	3	0	549
12-01PM	4/23/03	8	270	71	3	19	11	4	37	85	7	6	0	1	0	522
01-02PM	4/23/03	9	306	89	5	14	11	3	46	75	7	8	0	3	0	576
02-03PM	4/23/03	7	362	106	11	17	10	3	37	76	9	3	1	2	0	644
03-04PM	4/23/03	14	404	108	7	16	13	0	37	80	11	3	1	4	0	698
04-05PM	4/23/03	11	403	93	7	11	10	2	41	68	8	2	0	3	0	659
05-06PM	4/23/03	18	331	81	7	11	10	1	33	69	11	1	1	1	0	575
06-07PM	4/23/03	9	261	66	5	14	9	1	23	53	11	1	1	1	0	455
07-08PM	4/23/03	10	193	56	5	12	9	0	22	41	9	2	0	2	0	361
08-09PM	4/23/03	10	157	33	6	12	7	0	24	43	6	2	0	1	0	301
09-10PM	4/23/03	9	120	28	5	14	6	1	22	32	15	3	1	2	0	258
10-11PM	4/23/03	11	108	22	6	9	5	1	18	31	4	2	0	0	0	217
11-12PM	4/23/03	11	68	12	4	8	8	1	19	21	7	2	0	2	0	163
12-01AM	4/23/03	6	36	9	2	7	3	0	9	18	4	2	0	1	0	97
01-02AM	4/23/03	4	31	8	2	4	4	0	8	19	7	1	0	0	0	88
02-03AM	4/23/03	10	36	9	4	11	5	0	13	18	3	2	0	0	0	111
03-04AM	4/23/03	5	30	10	4	6	5	0	10	16	5	1	0	1	0	93
04-05AM	4/23/03	8	49	10	3	10	2	0	22	25	9	1	0	1	0	140
05-06AM	4/23/03	6	93	27	5	14	8	0	22	26	8	0	0	0	0	209
TOTAL VEHICLES		239	4948	1312	132	316	206	32	690	1084	197	58	11	42	0*	9267
PERCENT OF TOTAL		2.6	53.4	14.2	1.4	3.4	2.2	0.3	7.4	11.7	2.1	0.6	0.1	0.5	0.0	

% HEAVY TRUCKS = 2768/ 9267 = 29.9 %
AXLES / TRUCK = 11654/ 2768 = 4.210
% TRAILER TRUCKS = 2082/ 9267 = 22.5 %
% TRAILERS @PK HR= 136/ 698 = 19.5 %
PEAK HOUR BETWEEN 03-04PM 698 VEHICLES
TOTAL HOURS = EAST BOUND 24 - WEST BOUND 24

AXLE CORRECTION FACTOR = 0.75
% SINGLE UNIT TRUCKS = 686/ 9267 = 7.4 %
% SINGLE UNIT @ PK HR = 36/ 698 = 5.2 %
% TRUCKS AT PEAK HOUR = 172/ 698 = 24.6 %

* NOTE: RECOMMENDED OTHERS DISTRIBUTION IS CARS 00 %
OTHER 2 AXLE 4 TIRE VEHICLES 00 %
4 OR LESS AXLE SINGLE TRAILER TRUCKS 00 %

Appendix F – Highway Information System Summary of Parkway Data

1. Geometric Characteristics
2. Highway Systems
3. Bridge Characteristics
4. Horizontal and Vertical Curve Data

Geometric Characteristics

Wendell H. Ford and Edward T. Breathitt Parkways

Eddyville to Henderson

County	Begin MP	End MP	Length (miles)	Number of Lanes	Lane Width (feet)	Inside Shoulder Width (feet)	Outside Shoulder Width (feet)	Speed Limit (mph)	Roadway Type	Terrain Type	Pavement Type
Wendell H. Ford Western Kentucky Parkway, MP 0.000 to MP 43.424											
Lyon	0.000	3.675	3.675	4	12	3	10	65	Divided	Rolling	High Flexible
Lyon	3.675	3.702	0.027	4	12	3	10	65	Divided	Flat	High Flexible
Lyon	3.702	5.610	1.908	4	12	3	10	65	Divided	Flat	High Flexible
Caldwell	5.610	9.963	4.353	4	12	3	10	65	Divided	Rolling	High Flexible
Caldwell	9.963	10.293	0.330	4	12	3	10	65	Divided	Rolling	Composite
Caldwell	10.293	11.109	0.816	4	12	3	10	65	Divided	Rolling	High Flexible
Caldwell	11.109	11.700	0.591	4	12	3	10	65	Divided	Rolling	High Flexible
Caldwell	11.700	13.116	1.416	4	12	3	10	65	Divided	Rolling	High Flexible
Caldwell	13.116	21.764	8.648	4	12	3	10	65	Divided	Rolling	High Flexible
Hopkins	21.764	24.435	2.671	4	12	3	10	65	Divided	Rolling	High Flexible
Hopkins	24.435	25.655	1.220	4	12	3	10	65	Divided	Rolling	High Flexible
Hopkins	25.655	38.332	12.677	4	12	3	10	65	Divided	Rolling	Composite
Hopkins	38.332	43.424	5.092	4	12	3	10	65	Divided	Rolling	Composite
Edward T. Breathitt (Pennyrile) Parkway, MP 28.095 to MP 78.306											
Hopkins	28.095	29.568	1.473	4	12	4	10	65	Divided	Rolling	High Rigid
Hopkins	29.568	32.861	3.293	4	12	4	10	65	Divided	Rolling	High Rigid
Hopkins	32.861	34.271	1.410	4	12	4	10	65	Divided	Rolling	High Rigid
Hopkins	34.271	37.070	2.799	4	12	4	10	65	Divided	Rolling	High Rigid
Hopkins	37.070	39.550	2.480	4	12	4	10	65	Divided	Rolling	High Rigid
Hopkins	39.550	41.002	1.452	4	12	3 NB/4 SB	10	65	Divided	Rolling	High Rigid
Hopkins	41.002	42.437	1.435	4	12	3 NB/4 SB	10	65	Divided	Rolling	High Rigid
Hopkins	42.437	44.337	1.900	4	12	3	10	65	Divided	Rolling	High Rigid
Hopkins	44.337	44.713	0.376	4	12	3	10	65	Divided	Rolling	High Rigid
Hopkins	44.713	45.200	0.487	4	12	3 NB/6 SB	10	55	Divided	Rolling	High Rigid
Hopkins	45.200	45.460	0.260	4	12	3 NB/6 SB	10	55	Divided	Rolling	High Rigid
Hopkins	45.460	47.472	2.012	4	12	3	10	55	Divided	Rolling	High Rigid
Hopkins	47.472	48.990	1.518	4	12	3	10	55	Divided	Rolling	High Rigid
Hopkins	48.990	53.278	4.288	4	12	3	10	55	Divided	Rolling	High Rigid
Hopkins	53.278	54.070	0.792	4	12	3	10	65	Divided	Rolling	Composite
Hopkins	54.070	55.003	0.933	4	12	3	10	65	Divided	Rolling	Composite
Webster	55.003	62.637	7.634	4	12	3	10	65	Divided	Rolling	High Flexible
Webster	62.637	65.305	2.668	4	12	3	10	65	Divided	Rolling	High Flexible
Henderson	65.305	68.363	3.058	4	12	3	10	65	Divided	Rolling	High Flexible
Henderson	68.363	76.258	7.895	4	12	3	10	65	Divided	Rolling	High Flexible
Henderson	76.258	77.210	0.952	4	12	3	10	65	Divided	Flat	High Flexible
Henderson	77.210	78.306	1.096	4	12	3	10	65	Divided	Flat	High Flexible

Highway Systems

Wendell H. Ford and Edward T. Breathitt Parkways
Eddyville to Henderson

County	Begin MP	End MP	State System	National Truck Network (NN)	National Highway System (NHS)	Functional Classification	Truck Weight Class
Wendell H. Ford Western Kentucky Parkway, MP 0.000 to MP 43.424							
Lyon	0.000	3.702	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Lyon	3.702	5.610	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Caldwell	5.610	11.109	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Caldwell	11.109	11.700	State Primary	Yes	Yes	Urban Principal Arterial	AAA
Caldwell	11.700	13.116	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Caldwell	13.116	21.764	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	21.764	24.435	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	24.435	38.332	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	38.332	43.424	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Edward T. Breathitt (Pennyrile) Parkway, MP 28.095 to MP 78.306							
Hopkins	28.095	29.568	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	29.568	32.861	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	32.861	34.271	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	34.271	37.070	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	37.070	41.002	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	41.002	42.437	State Primary	Yes	Yes	Urban Freeways & Expressways	AAA
Hopkins	42.437	44.337	State Primary	Yes	Yes	Urban Freeways & Expressways	AAA
Hopkins	44.337	45.200	State Primary	Yes	Yes	Urban Freeways & Expressways	AAA
Hopkins	45.200	47.472	State Primary	Yes	Yes	Urban Freeways & Expressways	AAA
Hopkins	47.472	48.990	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	48.990	54.070	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Hopkins	54.070	55.003	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Webster	55.003	62.637	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Webster	62.637	65.305	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Henderson	65.305	68.363	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Henderson	68.363	76.258	State Primary	Yes	Yes	Rural Principal Arterial	AAA
Henderson	76.258	77.210	State Primary	Yes	Yes	Urban Freeways & Expressways	AAA
Henderson	77.210	78.306	State Primary	Yes	Yes	Urban Freeways & Expressways	AAA

Bridge Characteristics

Wendell H. Ford and Edward T. Breathitt Parkways

Eddyville to Henderson

Mainline Bridges

Route	County	Bridge No.	MP	Features Intersected	Length (ft.)	Width (parapet-to-parapet) (ft.)	Horizontal Clearance (curb-to-curb) (ft.)	Sufficiency Rating	Structural Function	Location	Load I (lbs)	Load II (lbs)	Load III (lbs)	Load IV (lbs)
EB 9004	Hopkins	B00095	37.054	P&L RR-FLAT CREEK-KY 813	318	36	34	88.1	-	NBL 2.8 MI N OF W KY PW	118,000	120,000	130,000	170,000
EB 9004	Hopkins	B00095P	37.054	P&L RR-FLAT CREEK-KY 813	318	36	34	88.1	-	SBL 2.8 MI N OF W KY PW	118,000	120,000	130,000	170,000
EB 9004	Hopkins	B00096P	39.774	KY 2171	265	36	30	78.8	-	SBL 2.5 MI S OF KY 70 INTERCHANGE	116,000	120,000	130,000	168,000
EB 9004	Hopkins	B00096	39.774	KY 2171	265	37	34	86	Functionally Obsolete	NBL 2.5 MI S OF KY 70 INTERCHANGE	116,000	120,000	130,000	168,000
EB 9004	Hopkins	B00100P	42.418	KENTUCKY 70	192	36	30	72.6	Functionally Obsolete	SBL 1.9 MI S-KY 281 INTERCHANGE	114,000	118,000	128,000	174,000
EB 9004	Hopkins	B00100	42.418	KENTUCKY 70	192	37	34	85	Functionally Obsolete	NBL 1.9 MI S-KY 281 INTERCHANGE	114,000	118,000	128,000	174,000
EB 9004	Hopkins	B00101P	43.438	CSX RAILROAD	159	36	30	76.5	Functionally Obsolete	SBL .85 MI N OF KY 70 INTERCHANGE	112,000	114,000	124,000	162,000
EB 9004	Hopkins	B00101	43.438	CSX RAILROAD	159	37	34	87.9	-	NBL .85 MI N OF KY 70 INTERCHANGE	112,000	114,000	124,000	162,000
EB 9004	Hopkins	B00020P	48.805	OTTER CREEK	144	40	38	94.7	-	SBL 4.0 NOR OF KY 281 INTERCHANGE	112,000	118,000	130,000	180,000
EB 9004	Hopkins	B00020	48.805	OTTER CREEK	144	40	38	94.7	-	NBL 4.0 NOR OF KY 281 INTERCHANGE	112,000	118,000	130,000	180,000
EB 9004	Hopkins	B00210	48.97	OTTER CREEK	132	28.3	26.2	90.4	-	RAMP C .2 MI S KY 260	120,000	128,000	140,000	202,000
EB 9004	Hopkins	B00211	48.971	OTTER CREEK	182	28.3	26.2	86.1	Functionally Obsolete	at RAMP D.14 MI S-KY 260	134,000	140,000	150,000	192,000
EB 9004	Hopkins	B00021	48.979	KY 260 @ HANSON	161	39	38	92.7	-	.5 MI E OF JCT US 41	108,000	114,000	126,000	178,000
EB 9004	Hopkins	B00021P	48.979	KY 260 @ HANSON	161	39	38	92.7	-	.5 MI E OF JCT US 41	108,000	114,000	126,000	178,000
EB 9004	Hopkins	B00012	54.07	KY 138	174	40	38	94.4	-	NBL 1.0 SOU OF WEBSTER COUNTY LINE	76,000	80,000	88,000	116,000
EB 9004	Hopkins	B00012P	54.07	KY 138	174	40	38	94.4	-	SBL 1.0 SOU OF WEBSTER COUNTY LINE	76,000	80,000	88,000	116,000
EB 9004	Webster	B00069P	56.523	KY 147	163	40	38	96.2	-	SBL 1.4 MI N-HOPKINS COUNTY LINE	134,000	140,000	152,000	202,000
EB 9004	Webster	B00069	56.523	KY 147	163	40	38	96.2	-	NBL 1.4 MI N-HOPKINS COUNTY LINE	134,000	140,000	152,000	202,000
EB 9004	Webster	B00071P	59.28	DEER CREEK	368	33	30	80.1	-	SBL 3.2 MI S OF KY 56 INTERCHANGE	142,000	150,000	162,000	220,000
EB 9004	Webster	B00071	59.28	DEER CREEK	368	33	30	80.1	-	NBL 3.2 MI S OF KY 56 INTERCHANGE	142,000	150,000	162,000	220,000
EB 9004	Webster	B00072	60.476	KY 370	166	40	38	95.2	-	NBL 2.0 MI S OF KY 56 INTERCHANGE	112,000	122,000	135,000	212,000
EB 9004	Webster	B00072P	60.476	KY 370	166	40	38	64	Functionally Obsolete	SBL 2.0 MI S OF KY 56 INTERCHANGE	112,000	122,000	136,000	212,000
EB 9004	Webster	B00074	63.887	GROVES CREEK	260	33	30	80	-	NBL 1.0 MI N OF KY 56 INTERCHANGE	124,000	130,000	140,000	186,000
EB 9004	Webster	B00074P	63.888	GROVES CREEK	260	33	30	80	-	SBL 1.0 MI N OF KY 56 INTERCHANGE	124,000	130,000	140,000	186,000
EB 9004	Henderson	B00062P	65.393	ACCESS RD-BIG RIVERS RR	183	41	38	92.7	-	SBL .1 MI N OF WEBSTER CL	156,000	164,000	176,000	234,000
EB 9004	Henderson	B00062	65.393	ACCESS RD-BIG RIVERS RR	183	41	38	92.7	-	NBL .1 MI N OF WEBSTER CL	156,000	164,000	176,000	234,000
EB 9004	Henderson	B00068	75.36	ELAM DITCH	141	40	38	95.9	-	NBL .9 M S OF KY 425 INTERCHANGE	132,000	138,000	154,000	216,000
EB 9004	Henderson	B00068P	75.36	ELAM DITCH	141	40	38	95.9	-	SBL .9 M S OF KY 425 INTERCHANGE	132,000	138,000	154,000	216,000
WK 9001	Lyon	B00049P	0.001	I-24 @ MP 41.603	275	30	26	78.2	Functionally Obsolete	WBL-I-24 INTERCHANGE	112,000	116,000	120,000	132,000
WK 9001	Lyon	B00049	0.001	I-24 @ MP 41.603	272	38	34	96.3	-	EBL-I-24 INTERCHANGE	112,000	116,000	120,000	132,000
WK 9001	Lyon	B00052	3.408	P&L RR-ELKHORN TAVERN RD	221	41.7	38	93.9	-	EBL .25 MI W OF US 62 INTERCHANGE	76,000	80,000	88,000	114,000
WK 9001	Lyon	B00052P	3.408	P&L RR-ELKHORN TAVERN RD	221	52.7	38	93.9	-	WBL .25 MI W OF US 62 INTERCHANGE	76,000	80,000	88,000	114,000
WK 9001	Lyon	B00030	3.702	US 62	226	39.8	38.3	92.3	-	EBL 1.9 W OF CALDWELL COUNTY LINE	86,000	88,000	96,000	120,000
WK 9001	Lyon	B00030P	3.703	US 62	226	39.8	38	92.3	-	WBL 1.9 W OF CALDWELL COUNTY LINE	86,000	88,000	96,000	120,000
WK 9001	Caldwell	B00029P	11.357	P&L RAILWAY	189	33	30	80.3	-	WBL .2 MI W OF KY 91 INTERCHANGE	70,000	76,000	84,000	116,000
WK 9001	Caldwell	B00029	11.357	P&L RAILWAY	189	33	30	80.3	-	EBL .2 MI W OF KY 91 INTERCHANGE	70,000	76,000	84,000	116,000
WK 9001	Caldwell	B00033P	21.752	TRADEWATER RIVER	207	33	30	69.1	-	WBL AT HOPKINS-CALDWELL COUNTY LINE	92,000	84,000	92,000	120,000
WK 9001	Caldwell	B00033	21.752	TRADEWATER RIVER	207	33	30	80.2	-	EBL AT HOPKINS-CALDWELL COUNTY LINE	92,000	84,000	92,000	120,000
WK 9001	Hopkins	B00138	22.003	TRADEWATER RIVER OVERFLOW	215	33	30	69.1	-	EBL .20 MI E OF CALDWELL COUNTY LINE	86,000	88,000	100,000	142,000
WK 9001	Hopkins	B00138P	22.003	TRADEWATER RIVER OVERFLOW	215	33	30	69.1	-	WBL .20 MI E OF CALDWELL COUNTY LINE	86,000	88,000	100,000	142,000
WK 9001	Hopkins	B00139P	24.887	P&L RAILWAY	131	38	38	92.3	-	WBL .5 MI E OF KY 109 INTERCHANGE	88,000	90,000	100,000	142,000
WK 9001	Hopkins	B00139	24.887	P&L RAILWAY	131	38	38	92.3	-	EBL .5 MI E OF KY 109 INTERCHANGE	88,000	90,000	100,000	142,000
WK 9001	Hopkins	B00140	28.346	KY 112 & COPPERAS CREEK	278	33	30	73.1	Functionally Obsolete	EBL 3.6 MI E OF KY 109 NT	90,000	92,000	96,000	108,000
WK 9001	Hopkins	B00140P	28.346	KY 112 & COPPERAS CREEK	278	33	30	73.1	Functionally Obsolete	WBL 3.6 MI E OF KY 109 NT	90,000	92,000	96,000	108,000
WK 9001	Hopkins	B00143	33.872	P&L RAILWAY SPUR & OAK RD	260	33	30	76.1	-	EBL 4 MI W OF US 41 INTERCHANGE	86,000	92,000	98,000	124,000
WK 9001	Hopkins	B00143P	33.872	P&L RAILWAY SPUR & OAK RD	260	33	30	76.1	-	WBL 3.0 MI W OF US 41A OP	86,000	92,000	98,000	124,000
WK 9001	Hopkins	B00144	36.9	CSX RAILROAD	448	33	30	77.1	-	EBL 1.3 MI W-US 41A INTERCHANGE	88,000	90,000	98,000	122,000
WK 9001	Hopkins	B00144P	36.9	CSX RAILROAD	448	33	30	80.1	-	WBL 1.3 MI W-US 41A	88,000	90,000	98,000	122,000
WK 9001	Hopkins	B00145P	38.311	US 41	226	45	42.1	76.1	Functionally Obsolete	WBL @ US 41 INTERCHANGE	102,000	108,000	118,000	150,000
WK 9001	Hopkins	B00145	38.311	EB PKWY	226	47.2	44.3	75.1	Functionally Obsolete	EBL @ US 41 INTERCHANGE	102,000	108,000	118,000	150,000

Source: KYTC's Highway Information System and updated Bridge CSV file from 07/04

Bridge Characteristics (continued)

Wendell H. Ford and Edward T. Breathitt Parkways
Eddyville to Henderson

Overpasses

Route	County	Bridge No.	MP	Features Intersected	Length of Overpass Bridge (ft.)	Width of Overpass Bridge (ft.)	Horizontal Clearance under Overpass (ft.)	Sufficiency Rating	Structural Function	Location
EB 9004	Hopkins	B00102	40.996	IC RAILROAD	179	14	45	-	-	UNDER IC RAILROAD
EB 9004	Hopkins	RR0602	41.06	CSX RAILROAD	248	0	45	-	-	UNDER CSX RAILROAD
EB 9004	Hopkins	B00016	45.206	US 41/KY 281	305	33	48	79.6	-	UNDER US 41/KY 281
EB 9004	Hopkins	B00018	46.435	KY 2657	213	29	57	95.1	-	UNDER KY 2657
EB 9004	Hopkins	B00019	47.472	KY 862	202	29	52	94	-	UNDER KY 862
EB 9004	Hopkins	B00011	51.941	KY 2655	212	29	57.4	98	-	UNDER KY 2655
EB 9004	Webster	B00068	55.449	KY 2667	221	29	49	93	-	UNDER KY 2667
EB 9004	Webster	B00070	58.396	KY 2666	217	29	49	48.3	Structurally Deficient	UNDER KY 2666
EB 9004	Webster	B00073	62.637	KY 56	247	53	77	94	-	UNDER KY 56
EB 9004	Henderson	B00063	66.835	KY 2678	210	29	38	87.9	-	UNDER KY 2678
EB 9004	Henderson	B00064	68.363	KY 416	215	54	38	94.4	-	UNDER KY 416
EB 9004	Henderson	B00065	69.674	KY 2675	198	29	38	94.1	-	UNDER KY 2675
EB 9004	Henderson	B00066	72.346	KY 136	270	33	38	92.5	-	UNDER KY 136
EB 9004	Henderson	B00067	73.256	KY 2677	234	29	38	94	-	UNDER KY 2677
WK 9001	Lyon	B00050	0.85	KY 93	245	33.7	61.1	64.7	-	UNDER KY 93
WK 9001	Lyon	B00029	5.577	KY 2611	225	28.7	39.3	57.1	Functionally Obsolete	UNDER KY 2611
WK 9001	Caldwell	B00037	11.7	KY 91	318	33	38	75.1	-	UNDER KY 91
WK 9001	Caldwell	B00007	13.12	KY 293	263	31.5	54	76.8	-	UNDER KY 293
WK 9001	Caldwell	B00060	17.308	KY 2614	208	25.5	38	54.6	Structurally Deficient	UNDER KY 2614
WK 9001	Caldwell	B00061	18.61	KY 2613	174	29.5	48.5	96.7	-	UNDER KY 2613
WK 9001	Caldwell	B00048	20.88	KY 2619	192	27.5	38	69.6	-	UNDER KY 2619
WK 9001	Hopkins	B00070	24.44	KY 109	239	32	45	73.3	-	UNDER KY 109
WK 9001	Hopkins	B00117	31.58	KY 454	224	29	44.5	81.2	Functionally Obsolete	UNDER KY 454

Culverts

Route	County	Bridge No.	MP	Features Intersected	Length (ft.)	Width (ft.) [1]	Horizontal Clearance (ft.)	Sufficiency Rating	Structural Function	Location
EB 9004	Hopkins	B00104	37.491	BR OF FLAT CREEK	23	0	44	70	-	.30 MI NOR. OF KY 813 INTERCHANGE
EB 9004	Hopkins	B00105	41.025	DRAIN TO BR OF FLAT CREEK	31	0	44	68	-	1.3 MI SOU. OF KY 70 INTERCHANGE
EB 9004	Hopkins	B00017	46.024	ELK CREEK	25	0	76	68	-	1.5 MI NOR. OF KY 281 INTERCHANGE
EB 9004	Hopkins	B00010	50.647	BR OF OTTER CREEK	27	0	76	67	-	1.8 MI N OF KY 260 INTERCHANGE
WK 9001	Lyon	B00051	1.745	RILEY ROAD	29	0	21.5	72.6	Functionally Obsolete	1.6 MI E OF I-24 INTERCHANGE
WK 9001	Caldwell	B00028	6.618	LUTHER SELLS ROAD	28	0	76	74.4	Functionally Obsolete	1.0 MI EAST OF LYON COUNTY LINE
WK 9001	Caldwell	B00030	14.572	WILEY CREEK	26	0	76	76.9	-	1.4 MI EAST OF KY 293 OP
WK 9001	Caldwell	B00031	15.825	WARD CREEK	31	0	76	76.9	-	2.5 MI EAST OF KY 293
WK 9001	Caldwell	B00032	19.209	EAST FORK	31	0	76	76.9	-	.50 MI EAST OF KY 2613 OP
WK 9001	Hopkins	B00141	30.706	CANE RUN CREEK	26	0	76	66.9	-	1.0 MI WEST OF KY 454 OP

[1] All culvert widths are listed as 0 in the KYTC's Highway Information System.

Source: KYTC's Highway Information System and updated Bridge CSV file from 07/04

Horizontal and Vertical Curve Data

Wendell H. Ford and Edward T. Breathitt Parkways

Eddyville to Henderson

Station	MP	Grade			Vertical Length of Curve		Horizontal Radius of Curve[1]
		In %	Out %	Difference %	Minimum (ft)	Actual (ft)	Actual (ft)
WENDELL H. FORD (WESTERN KENTUCKY) PARKWAY							
Lyon Co. (Begin at MP 0.000)							
1382+50	0.606	2.296	-2.120	4.416	1090'	1800'	
1396+00	0.862	-2.120	0.850	2.970	536'	600'	
1410+51	1.137						5729.58'
1425+00	1.411	0.850	1.398	0.548	99'	600'	
1435+00	1.600	1.398	-1.997	3.395	838'	1400'	
1448+00	1.847	-1.997	1.460	3.457	623'	800'	
1495+00	2.737	1.460	0.500	0.960	237'	800'	
1504+45	2.916						5729.58'
1512+50	3.068	0.500	3.199	2.699	487'	800'	
1530+50	3.409	3.199	-0.728	3.927	970'	1600'	
1559+50	3.958	-0.728	-1.500	0.772	191'	600'	
1569+00	4.138	-1.500	-0.500	1.000	180'	800'	
1571+99	4.195						4092.56'
1601+00	4.744	-0.500	-1.600	1.100	272'	800'	
1616+00	5.028	-1.600	0.720	2.320	418'	800'	
1633+50	5.360	0.720	2.769	2.049	370'	800'	
Caldwell Co. (Begin at MP 5.610)							
1652+00	5.710	2.769	0.500	2.269	560'	1400'	
1678+00	6.203	0.500	-1.200	1.700	420'	800'	
1689+39	6.418						2864.92'
1691+25	6.454	-1.200	1.670	2.870	518'	800'	
1706+50	6.742	1.670	-1.750	3.420	845'	1400'	
1725+00	7.093	-1.750	0.580	2.330	420'	800'	
1749+00	7.547	0.580	-2.020	2.600	642'	1100'	
1753+53	7.633						5729.58'
1763+00	7.813	-2.020	-1.240	0.780	141'	600'	
1781+00	8.153	-1.240	2.100	3.340	602'	800'	
1795+13	8.421						2864.93'
1799+00	8.494	2.100	0.500	1.600	395'	800'	
1815+00	8.797	0.500	-1.500	2.000	494'	1000'	
1831+00	9.100	-1.500	-1.099	0.401	72'	600'	
1859+00	9.631	-1.099	-0.728	0.371	67'	600'	
1864+34	9.732						11459.15'
1887+39	10.168						4583.66'
1890+00	10.218	-0.728	1.500	2.228	402'	700'	
1912+46	10.643						5729.58'
1925+00	10.881	1.500	-2.290	3.790	936'	1300'	
1939+00	11.146	-2.290	2.000	4.290	411'	700'	
1956+00	11.468	2.000	-3.250	5.250	439'	1650'	
1969+00	11.714	-3.250	-0.500	2.750	496'	400'	
1984+00	11.998	-0.500	2.374	2.874	518'	900'	
1985+23	12.021						5729.58'
1994+50	12.197	2.374	0.820	1.554	384'	700'	
2017+00	12.623	0.820	2.600	1.780	321'	400'	
2027+00	12.813						11459.16'
2030+00	12.869	2.600	-1.114	3.714	917'	1600'	
2064+00	13.513	-1.114	-4.000	2.886	713'	1300'	
2082+50	13.864	-4.000	1.146	5.146	928'	1000'	
2099+50	14.186	1.146	-2.600	3.746	925'	1700'	
2106+46	14.317						11459.16'
2127+50	14.716	-2.600	3.500	6.100	1100'	1200'	
2164+00	15.407	3.500	-3.170	6.670	1647'	3000'	
2192+14	15.940						22918.32'
2192+30	15.943	-3.170	4.000	7.170	1293'	1400'	
2221+00	16.487	4.000	-4.000	8.000	1976'	3400'	
2223+76	16.539						4583.66'
Plan Sheet Missing from As-Builts (Station 2230+00 to Station 2260+00)							
2265+50	17.330	0.532	-0.556	1.088	269'	500'	
2277+00	17.548	-0.556	-1.634	1.078	266'	1000'	
2299+06	17.965						5729.58'
2318+50	18.333	-1.634	2.775	4.409	795'	800'	
2341+50	18.769	2.775	-3.307	6.082	1502'	2600'	

Station	MP	Grade			Vertical Length of Curve		Horizontal Radius of Curve[1]
		In %	Out %	Difference %	Minimum (ft)	Actual (ft)	Actual (ft)
2363+50	19.186	-3.307	-0.530	2.777	501'	800'	
2371+90	19.345						5729.58'
2386+00	19.612	-0.530	0.500	1.030	186'	400'	
2401+00	19.896	0.500	3.305	2.805	506'	600'	
2412+18	20.108						5729.58'
2434+00	20.521	3.305	1.000	2.305	569'	2400'	
2458+00	20.975	1.000	-1.750	2.750	679'	1600'	
2463+47	21.079						5729.58'
2474+99	21.297						5729.58'
2480+00	21.392	-1.750	-3.600	1.850	457'	800'	
2495+76	21.691						5729.58'
Hopkins Co. (Begin at MP 21.764)							
2509+00	21.941	-3.600	0.407	4.007	723'	800'	
2523+00	22.206	0.407	1.720	1.313	237'	400'	
2563+00	22.964	1.720	-0.513	2.233	551'	1000'	
2600+00	23.665	-0.513	0.500	1.013	183'	500'	
2622+04	24.082						5729.58'
2667+00	24.934	0.500	-2.355	2.855	705'	1550'	
2680+00	25.180	-2.355	-0.500	1.855	335'	400'	
2708+87	25.727						7639.44'
2735+00	26.220	-0.500	2.000	2.500	451'	1000'	
2746+00	26.429	2.000	1.500	0.500	123'	800'	
2757+00	26.637	1.500	2.500	1.000	180'	800'	
2768+00	26.845	2.500	2.000	0.500	123'	800'	
2782+00	27.111	2.000	-0.500	2.500	617'	1200'	
2794+00	27.338	-0.500	1.500	2.000	361'	600'	
2811+00	27.660	1.500	-3.388	4.888	1207'	2070'	
2840+00	28.209	-3.388	0.992	4.380	790'	1200'	
2861+00	28.607	0.992	-1.345	2.337	577'	1000'	
2872+34	28.822	-1.345	1.150	2.495	450'	600'	
2902+76	29.398						11459.16'
2910+50	29.544	1.150	-2.000	3.150	778'	1400'	
2926+00	29.838	-2.000	3.500	5.500	992'	1000'	
2946+92	30.234	3.500	-3.000	6.500	1605'	2750'	
2978+00	30.823	-3.000	3.000	6.000	1082'	1400'	
2991+00	31.069	3.000	0.500	2.500	617'	1200'	
3014+00	31.505	0.500	3.500	3.000	541'	1600'	
3046+75	32.125	3.500	-3.990	7.490	1850'	3200'	
3078+85	32.733	-3.990	2.700	6.690	1206'	1200'	
3107+00	33.266	2.700	-1.700	4.400	1087'	2000'	
3122+50	33.559	-1.700	-0.500	1.200	216'	800'	
3132+50	33.749	-0.500	-2.870	2.370	585'	1000'	
3144+50	33.976	-2.870	-0.653	2.217	400'	850'	
3152+83	34.134						22918.32'
3165+50	34.374	-0.653	1.200	1.853	334'	600'	
3193+00	34.895	1.200	-2.500	3.700	914'	1600'	
3209+00	35.198	-2.500	2.700	5.200	938'	1000'	
3223+50	35.472	2.700	-0.500	3.200	790'	1400'	
3252+00	36.012	-0.500	-2.610	2.110	521'	1000'	
3267+00	36.296	-2.610	-0.500	2.110	381'	800'	
3291+00	36.751	-0.500	3.000	3.500	631'	600'	
3296+68	36.858						5729.58'
3307+00	37.054	3.000	-3.000	6.000	1482'	2600'	
3323+00	37.357	-3.000	0.500	3.500	631'	600'	
3333+00	37.546	0.500	1.300	0.800	144'	600'	
3343+00	37.736	1.300	0.500	0.800	198'	600'	
3357+50	38.010	0.500	-1.780	2.280	563'	1200'	
3369+50	38.238	-1.780	1.500	3.280	592'	600'	
EDWARD T. BREATHITT (PENNYRILE) PARKWAY							
Hopkins County (Begin at MP 34.271)							
422+50	34.403	-1.000	-0.600	0.400	72'	400'	
468+60	35.276	-0.600	1.180	1.780	321'	1000'	
492+00	35.719	1.180	-2.200	3.380	835'	1200'	
506+50	35.994	-2.200	0.300	2.500	451'	800'	
525+00	36.344	0.300	1.280	0.980	177'	500'	
545+00	36.723	1.280	0.480	0.800	198'	500'	
585+00	37.481	0.480	1.000	0.520	94'	300'	
602+50	37.812	1.000	-2.500	3.500	864'	1200'	
622+50	38.191	-2.500	1.330	3.830	691'	1000'	

Station	MP	Grade			Vertical Length of Curve		Horizontal Radius of Curve[1]
		In %	Out %	Difference %	Minimum (ft)	Actual (ft)	Actual (ft)
635+48	38.437	1.330	-1.000	2.330	575'	1000'	
646+00	38.636	-1.000	-0.480	0.520	94'	400'	
670+01	39.091						22918.32'
677+50	39.233	-0.480	-0.280	0.200	36'	400'	
697+50	39.611	-0.280	0.280	0.560	101'	500'	
709+75	39.843						7639.44'
725+00	40.132	0.280	0.500	0.220	40'	400'	
743+00	40.473	0.500	-0.301	0.801	198'	600'	
759+50	40.786	-0.301	2.000	2.301	415'	500'	
760+89	40.812						4583.66'
775+00	41.079	2.000	-2.000	4.000	335'	1200'	
787+00	41.306	-2.000	1.180	3.180	304'	600'	
807+23	41.690						7639.44'
829+00	42.102	1.180	-3.000	4.180	350'	1200'	
843+00	42.367	-3.000	0.600	3.600	345'	500'	
894+00	43.333	0.600	1.790	1.190	114'	400'	
922+00	43.863	1.790	-2.940	4.730	396'	1000'	
925+74	43.934						7639.44'
936+00	44.128	-2.940	-0.500	2.440	233'	1000'	
944+75	44.294	-0.500	-1.560	1.060	89'	400'	
2228+00	49.504	-1.560	-0.500	1.060	191'	1200'	
2239+19	49.716						22918.32'
2262+00	50.148	-0.500	-1.269	0.769	190'	400'	
2275+00	50.394	-1.269	0.500	1.769	319'	1000'	
2286+00	50.602	0.500	-0.500	1.000	247'	400'	
2294+00	50.754	-0.500	0.500	1.000	180'	400'	
2302+00	50.905	0.500	-0.520	1.020	252'	400'	
2314+00	51.132	-0.520	2.430	2.950	532'	800'	
2333+00	51.492	2.430	-1.646	4.076	1007'	1800'	
2346+50	51.748	-1.646	2.000	3.646	658'	800'	
2361+00	52.023	2.000	-1.260	3.260	805'	1500'	
2371+70	52.225						5729.58'
2380+00	52.382	-1.260	2.500	3.760	678'	1000'	
2404+00	52.837	2.500	-2.483	4.983	1231'	2000'	
2427+50	53.282	-2.483	1.820	4.303	776'	800'	
2448+50	53.829	1.820	-2.400	4.220	1042'	1700'	
2464+00	54.122	-2.400	1.000	3.400	613'	600'	
2490+00	54.615	1.000	-2.000	3.000	741'	1200'	
2510+00	54.994	-2.000	-0.500	1.500	271'	400'	
Webster Co. (Begin at MP 55.003)							
2535+50	55.477	-0.500	0.700	1.200	216'	400'	
2556+00	55.865	0.700	0.600	0.100	25'	400'	
2577+00	56.263	0.600	-2.400	3.000	741'	1200'	
2586+75	56.447	-2.400	1.350	3.750	676'	750'	
2606+00	56.812	1.350	-2.000	3.350	827'	1400'	
2610+72	56.901						11459.16'
2621+50	57.105	-2.000	2.400	4.400	793'	900'	
2644+50	57.541	2.400	-2.320	4.720	1166'	1900'	
2661+00	57.853	-2.320	0.720	3.040	548'	600'	
2652+19	57.687						7639.44'
2698+00	58.554	0.720	-2.403	3.123	771'	1300'	
2724+50	59.056	-2.403	0.320	2.723	491'	700'	
2739+00	59.331	0.320	-0.320	0.640	158'	600'	
2750+00	59.539	-0.320	0.300	0.620	112'	400'	
2758+00	59.691	0.300	-0.250	0.550	136'	400'	
2760+09	59.730						5729.58'
2768+00	59.880	-0.250	0.500	0.750	135'	400'	
2780+00	60.107	0.500	-0.500	1.000	247'	400'	
2790+00	60.297	-0.500	1.740	2.240	404'	600'	
2801+00	60.505	1.740	-1.740	3.480	859'	1400'	
2811+00	60.694	-1.740	-0.246	1.494	269'	400'	
2825+00	60.960	-0.246	0.300	0.546	98'	400'	
2842+00	61.281	0.300	1.000	0.700	126'	400'	
2858+00	61.585	1.000	2.862	1.862	336'	400'	
2860+99	61.641						7639.44'
2873+00	62.061	2.862	-3.000	5.862	1448'	2400'	
2899+00	62.553	-3.000	-1.875	1.125	203'	400'	
2907+00	62.705	-1.875	0.000	1.875	338'	400'	
2913+85	62.835						7639.44'

Station	MP	Grade			Vertical Length of Curve		Horizontal Radius of Curve[1]
		In %	Out %	Difference %	Minimum (ft)	Actual (ft)	Actual (ft)
2965+00	63.803	0.000	0.821	0.821	148'	400'	
2966+78	63.837						5729.58'
2970+50	63.908	0.821	-0.841	1.662	410'	600'	
2977+00	64.031	-0.841	0.000	0.841	152'	400'	
3002+00	64.504	0.000	0.500	0.500	90'	400'	
3019+00	64.826	0.500	-0.600	1.100	272'	600'	
3034+00	65.110	-0.600	0.020	0.620	112'	400'	
3041+50	65.252	0.020	2.220	2.200	397'	400'	
Henderson Co. (Begin at MP 65.305)							
3051+50	65.442	2.220	-1.630	3.850	951'	1600'	
3063+00	65.660	-1.630	2.204	3.834	691'	700'	
3078+18	65.947						22918.32'
3082+00	66.019	2.204	-0.904	3.108	767'	1300'	
3110+00	66.550	-0.904	2.000	2.904	524'	600'	
3127+00	66.872	2.000	0.895	1.105	273'	400'	
3138+00	67.080	0.895	2.000	1.105	199'	400'	
3148+00	67.269	2.000	-1.034	3.034	749'	1300'	
3158+00	67.459	-1.034	0.507	1.541	278'	400'	
3176+00	67.800	0.507	-0.500	1.007	249'	400'	
3211+03	68.463						22918.32'
3213+00	68.500	-0.500	2.615	3.115	562'	500'	
3226+00	68.747	2.615	-2.444	5.059	1249'	2100'	
3239+50	69.002	-2.444	0.875	3.319	599'	600'	
3255+50	69.305	0.875	-1.480	2.355	582'	1000'	
3268+00	69.542	-1.480	-0.500	0.980	177'	400'	
3290+00	69.959	-0.500	-1.625	1.125	278'	400'	
3302+00	70.186	-1.625	-0.661	0.964	174'	400'	
3324+50	70.612	-0.661	0.500	1.161	209'	900'	
3338+50	70.877	0.500	-1.860	2.360	583'	1000'	
3352+50	71.142	-1.860	0.500	2.360	426'	1200'	
3368+00	71.436	0.500	-0.500	1.000	247'	900'	
3381+50	71.692	-0.500	1.440	1.940	350'	1200'	
3407+50	72.184	1.440	-0.500	1.940	479'	900'	
3425+50	72.525	-0.500	0.700	1.200	216'	1000'	
3443+02	72.857						7639.44'
3455+00	73.084	0.700	-1.850	2.550	630'	1100'	
3484+00	73.633	-1.850	0.000	1.850	334'	1200'	
3522+82	74.368	0.000	1.400	1.400	252'	800'	
3535+50	74.608	1.400	-1.470	2.870	709'	1200'	
3558+00	75.035	-1.470	0.000	1.470	265'	1000'	
3577+50	75.404	0.000	0.500	0.500	90'	800'	
3585+50	75.555	0.500	-0.500	1.000	247'	800'	
3593+50	75.707	-0.500	0.000	0.500	90'	800'	
3614+00	76.095	0.000	1.460	1.460	263'	800'	

Notes: 1) The minimum horizontal radius of the curve is 1820' for rural areas and 750' for urban areas.

ENVIRONMENTAL OVERVIEW

along the Wendell H. Ford and
Edward T. Breathitt Parkways
as part of the
Strategic Corridor Planning Study for I-69
Eddyville to Henderson, Kentucky
ITEM NO. 2-69.10

March 2005

prepared by:

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

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Lexington, Kentucky

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KENTUCKY TRANSPORTATION CABINET

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PROPOSED INTERSTATE 69 CORRIDOR
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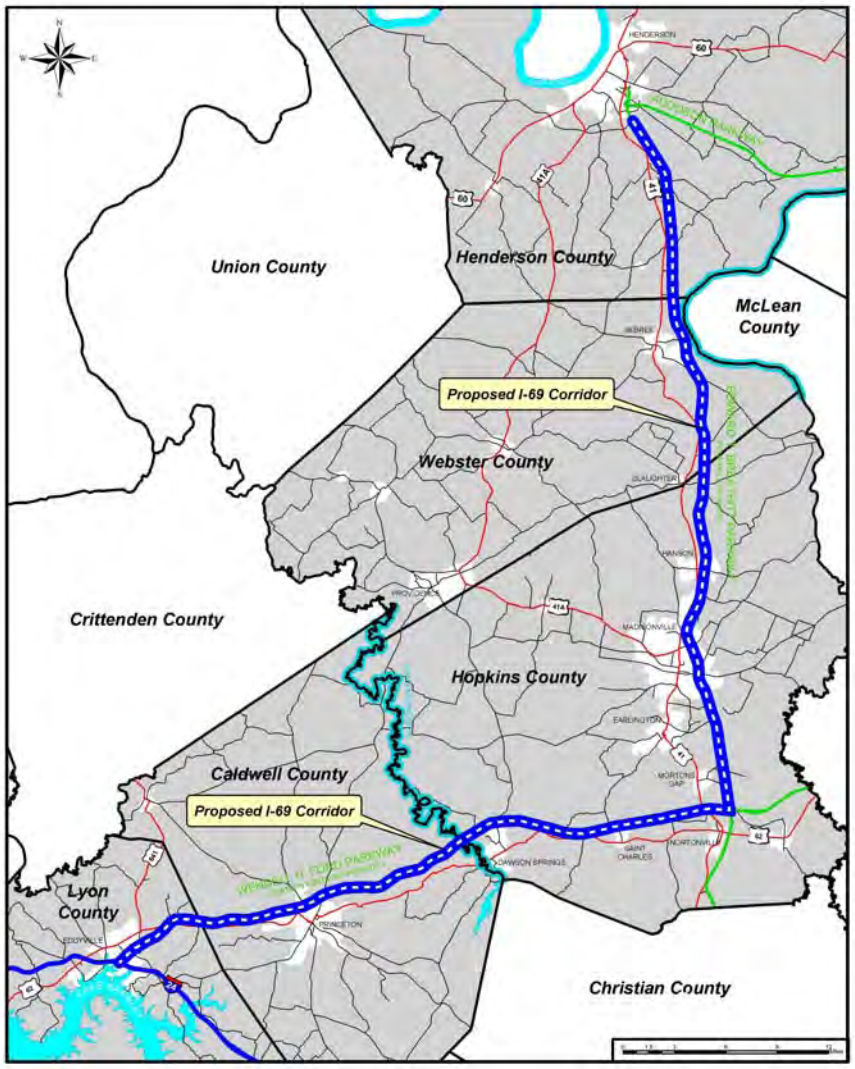
I. Project Description

This Environmental Overview was conducted for the Strategic Corridor Planning Study for I-69 between Eddyville and Henderson, Kentucky. The Overview presents a summary of the social, economic, and environmental features within the proposed I-69 corridor, based on record searches, literature reviews, field reconnaissance, and early coordination with appropriate federal and state resource agencies. The coordination response letters are included in **Appendix A**.

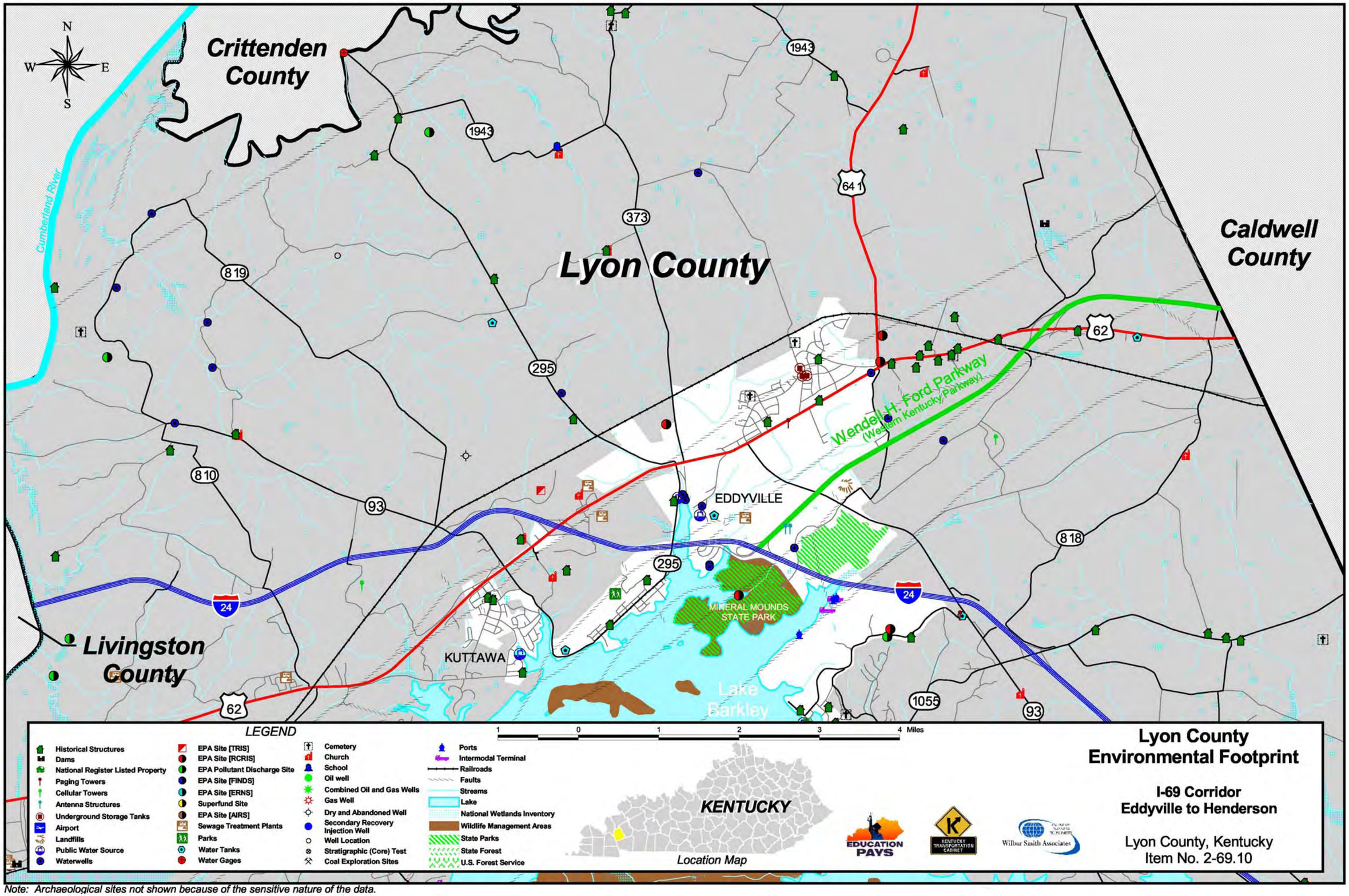
The project's termini (beginning and end points) are from I-24 in Eddyville north to KY 425 in Henderson, including the following segments:

- The Wendell H. Ford (Western Kentucky) Parkway, from I-24 near Eddyville in Lyon County to the Edward T. Breathitt (Pennyrile) Parkway in Hopkins County, hereinafter called the Ford Parkway and Breathitt Parkway, respectively; and
- The Breathitt Parkway, from the Ford Parkway in Hopkins County to Henderson at or near the Henderson Bypass (KY 425) in Henderson County.

The overview includes a summary of the environmental characteristics within a 1000-foot buffer on each side of the existing Parkway routes. Overview maps for each county in the study area are included as **Figures 1** through **5**.

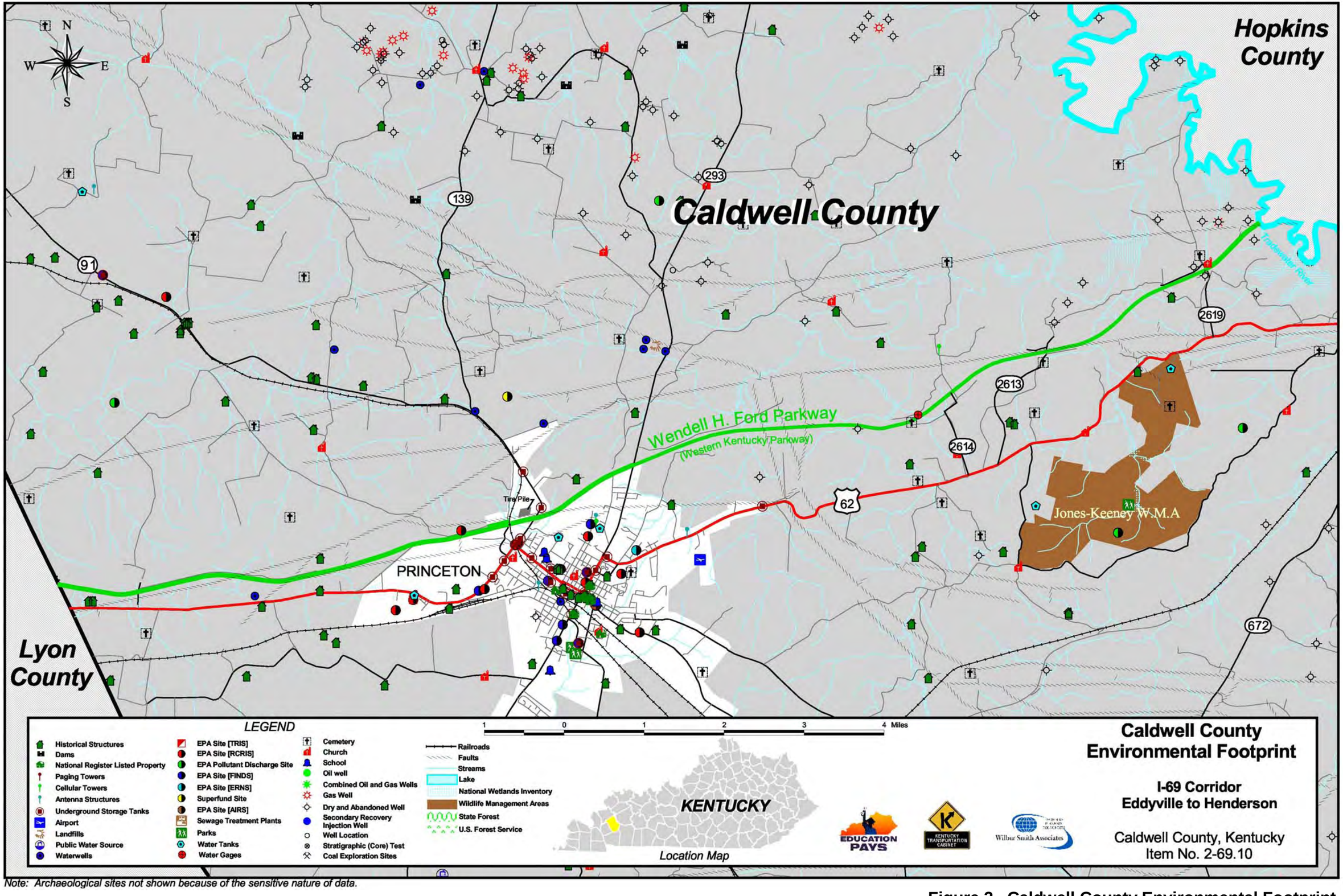


Study Area: I-69 Eddyville to Henderson



Note: Archaeological sites not shown because of the sensitive nature of the data.

Figure 1. Lyon County Environmental Footprint



Note: Archaeological sites not shown because of the sensitive nature of data.

Figure 2. Caldwell County Environmental Footprint

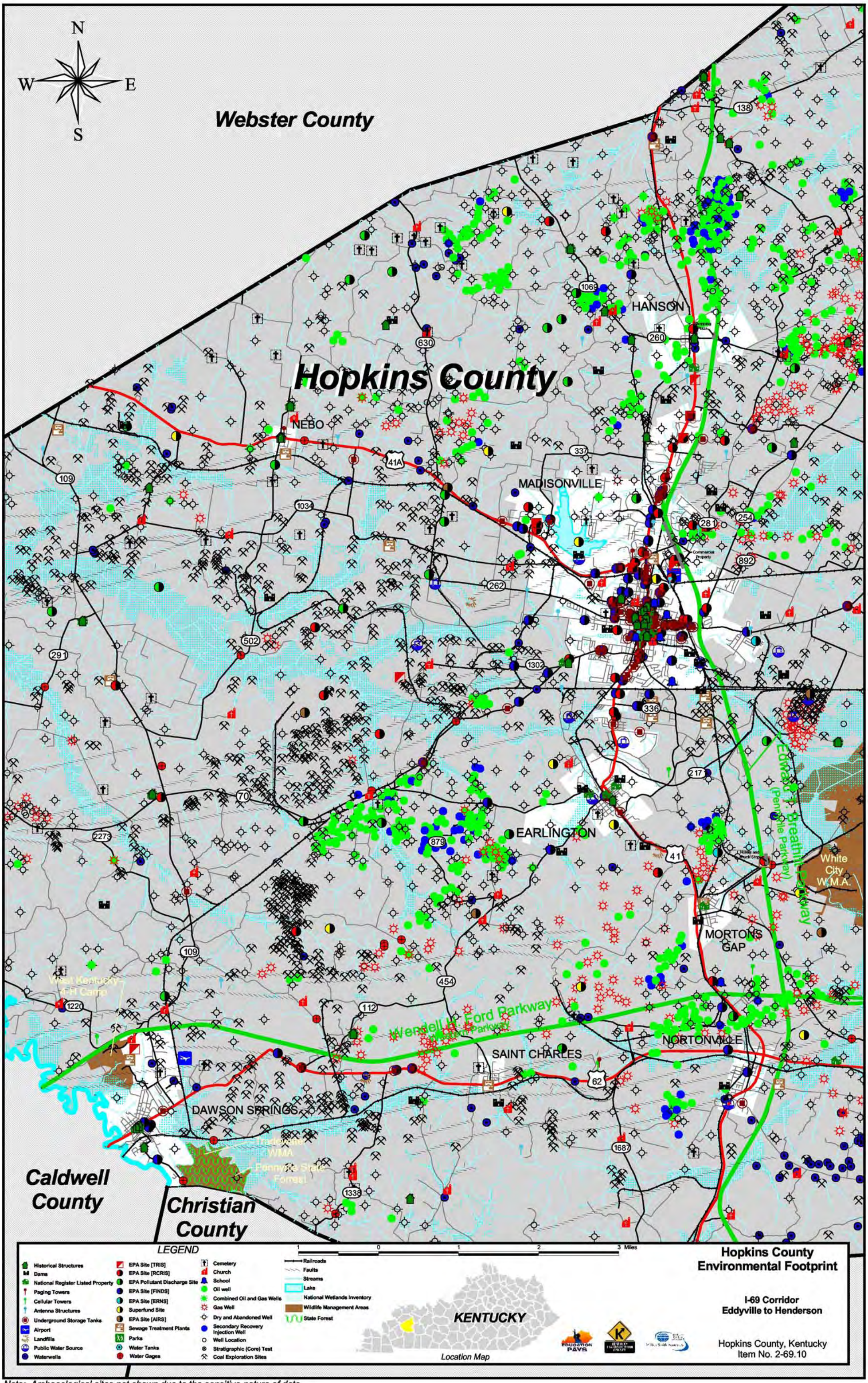


Figure 3. Hopkins County Environmental Footprint

Note: Archaeological sites not shown due to the sensitive nature of data.

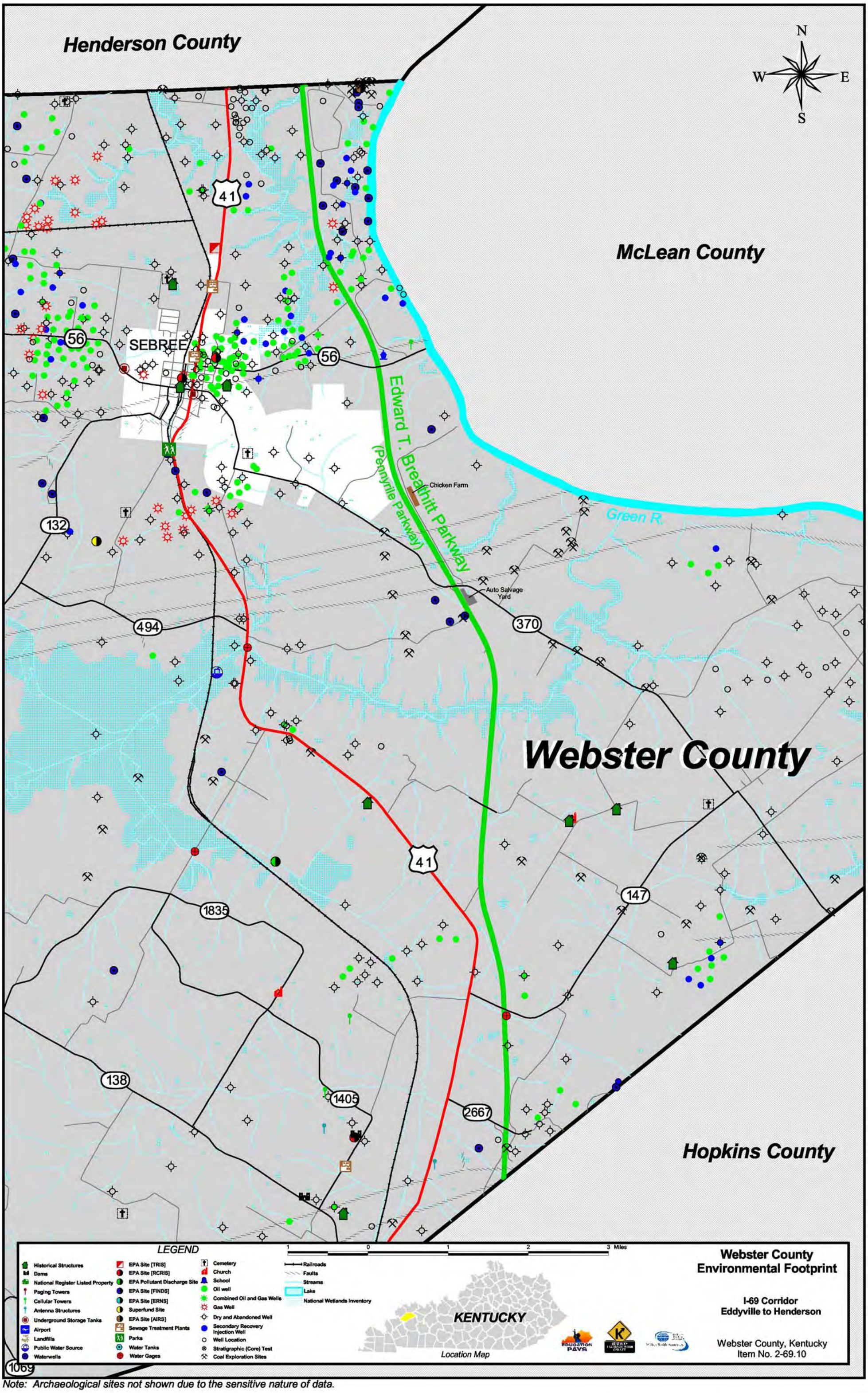


Figure 4. Webster County Environmental Footprint

Note: Archaeological sites not shown due to the sensitive nature of data.

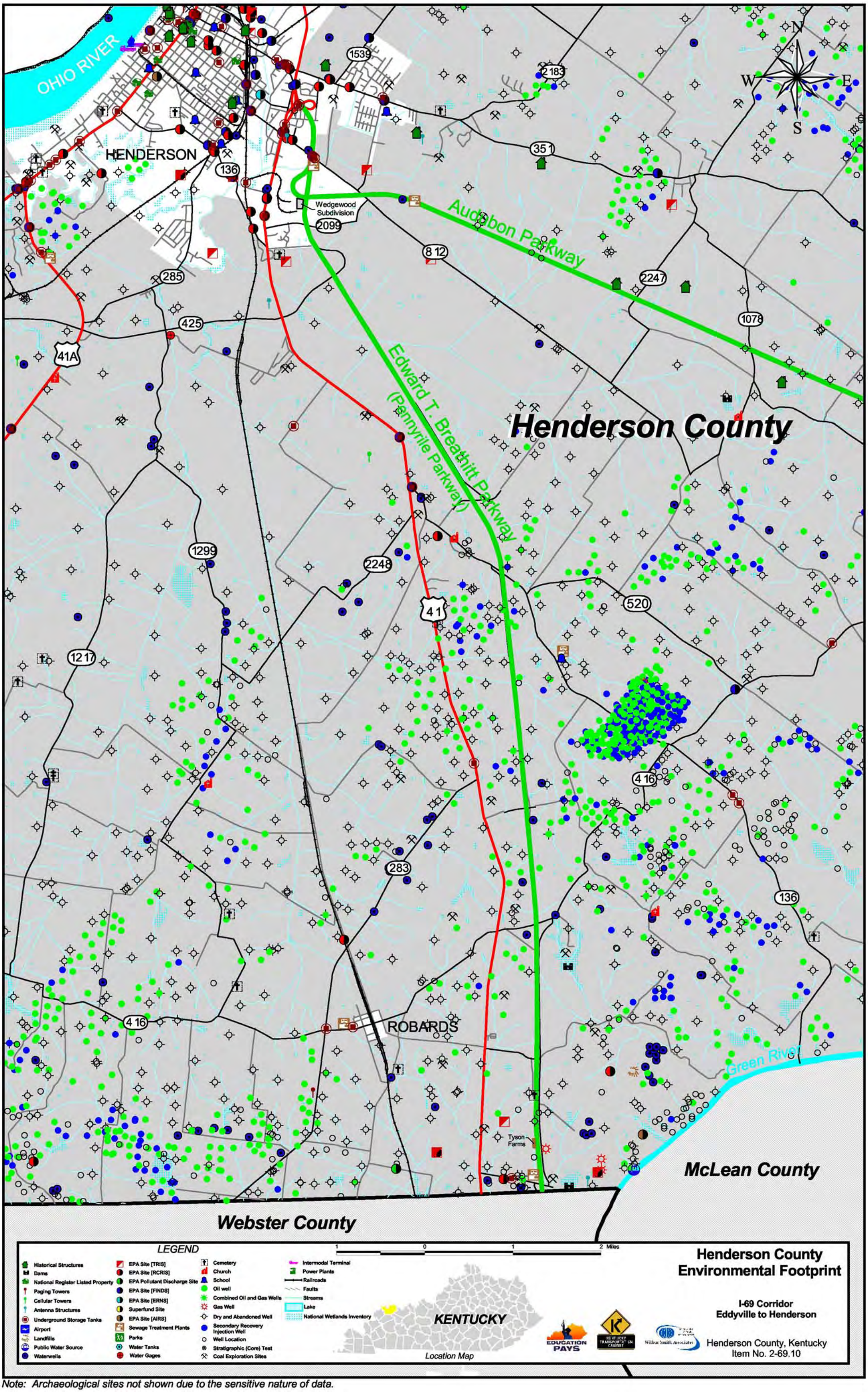


Figure 5. Henderson County Environmental Footprint

Note: Archaeological sites not shown due to the sensitive nature of data.

II. Terrestrial and Aquatic Ecosystems

A. Physiographic Region and Topography

According to McGrain and Currens (1978), Henderson, Webster, and Hopkins counties are within the Western Kentucky Coal Field physiographic region. This region is characterized by rolling to hilly terrain throughout the interior with sandstone cliffs and narrow, rocky valleys along the perimeter of the region.

The two remaining counties, Caldwell and Lyon, are found within the Mississippian Plateau region. This region, according to McGrain and Currens (1978) and McGrain (1983), has numerous knobs, extensive sinkhole plains, the Kentucky cave country, wooded escarpments, and sandstone capped plateaus.

Elevations along the I-69 corridor range from approximately 370 to 660 feet (ft) above mean sea level. The I-69 project is located within 12 of the United States Geological Survey (USGS) 7.5-minute quadrangles, including: Henderson, Robards, Sebree, Beech Grove, Hanson, Madisonville East, Nortonville, Saint Charles, Dawson Springs, Olney, Princeton West, and Eddyville.

Due to the gently rolling terrain, the topography should not have an excessive effect on erosion. The project is not expected to change the topography in the area other than the usual cuts, fills and grading done for similar projects.

B. Geology

The I-69 project corridor crosses a variety of geological formations. The northern end of the corridor, near Henderson, KY, is situated upon Ohio River alluvium and Loess glacial outwash of Pleistocene age. Alluvium and glacial outwash is typically sand and silt with some clay and gravel interbedded. These deposits range from 0 to 135 feet thick. Alluvium and Loess outwash is predominant along the corridor to the Robards exit. South of this point, the Lisman Formation, consisting of a mix of limestone, sandstone, shale, coal, and clay, dominates within the 2000-foot corridor.

In Webster County, alluvium and glacial outwash continue to dominate with the addition of Tradewater and Caseyville Formations near the Green River and a Sturgis Formation occurring in the southern portion of the county. These formations, all of Pennsylvanian age, contain a mixture of limestone, sandstone, siltstone, coal, and underclay with depths ranging from 700 to 1090 feet or more.

Upon entering Hopkins County, alluvium formations share dominance with the Henshaw and Lisman Formation, consisting of sandstone, siltstone, shale, and clay, with depths ranging from 0 to 920 feet. The geology shifts near Madisonville with the Lisman and Carbondale Formations becoming more prevalent. The Lisman Formation differs from the Henshaw and Lisman Formation with the addition of coal in place of clay within the strata. The Carbondale Formation consists primarily of coal and clay, with portions of land along the project area being currently or previously mined. These coal beds range from 10 to 75 feet thick. The Carbondale Formation continues south to the Breathitt/Ford Parkway interchange, where it underlies a majority of the project corridor to the county line. The final portion of the project area in Hopkins County consists of the Tradewater Formation. This unit is

composed of sandstone, siltstone, shale, limestone, underclay, and coal that ranges from 175 to 320 feet thick.

Caldwell County has a variety of geologic formations and the project corridor traverses many of these units. These formations include: Tradewater, Caseyville, Palestine Sandstone, Menard Limestone, Waltersburg Sandstone and Vienna Limestone, Tar Springs Sandstone, Glen Dean Limestone, Hardinsburg Sandstone, Golconda, Cypress Sandstone, Paint Creek Limestone, Renault and Ste. Genevieve Limestone, St. Louis Limestone, and Alluvium. All of these formations, except the Alluvium, are of Carboniferous age and range in depth from 0 to 500 feet.

The westernmost portion of the project corridor crosses into Lyon County. The majority of the corridor in this county is situated upon St. Louis and Salem Limestone. This rock is of Mississippian age and is approximately 350 to 375 feet thick. The remaining portion of the project near Eddyville crosses Warsaw Limestone and Fort Payne Formations. Both units consist of limestone and are of Mississippian age with the Warsaw Formation ranging in thickness from 180 to 240 feet while the Fort Payne Formation averages around 600 feet thick.

C. Groundwater

According to the Water Resource Development Commission of Kentucky, public water is provided to 85 to 95 percent of the population found in the five study area counties. In areas not supplied by public water, Henderson County has the highest use of private domestic wells (90%) while Hopkins County has the least reliance on individual water sources (50%). The remaining households rely on other means of obtaining water.

Locations for monitoring wells, domestic wells, public water supplies and springs are provided in the Kentucky Natural Resources and Environmental Protection Cabinet's map in **Appendix A.**

No wellhead protection areas are known within the project area. Eleven monitoring wells and twelve domestic wells are located within the 2000-foot corridor between Henderson and Eddyville, KY.

A review of the "Availability of Ground Water in Union and Henderson Counties, Kentucky" (Maxwell and Devaul, 1962) provided information about the groundwater along the project corridor in Henderson County. The majority of the project corridor contains drilled wells that yield enough water from a depth of less than 300 feet for a modern domestic supply (more than 500 gallons a day). The remaining portions of the project area near the northern end of the corridor contain wells that yield enough water from depths of less than 300 feet for a domestic supply with a bucket, bailer, or hand pump. Water in this area is hard and may contain objectionable amounts of sulfur and iron.

Groundwater availability in Webster and Hopkins counties consists primarily of wells that yield enough water from depths of less than 300 feet for a modern domestic supply. Small sections of the corridor near Nortonville have wells that fail to supply enough water for a domestic supply from less than 300 feet (less than 100 gpd). A small portion of the corridor northeast of Sebree contains wells where the yield is

unpredictable due to faulting in the area. The water is generally hard with some areas containing hydrogen sulfide (Maxwell and Devaul, 1962).

According to the "Availability of Groundwater in Caldwell, Christian, Crittenden, Livingston, Lyon, Todd, and Trigg Counties, Kentucky" (Lambert and Brown, 1963) most drilled wells along the project corridor will produce enough water for a domestic supply with a power pump (greater than 500 gpd). Portions of the corridor near the Lyon/Caldwell county line contain drilled wells in lowland areas that produce enough water for a domestic supply with a power pump. Most drilled wells in uplands are inadequate for a domestic supply with a power pump.

There are a number of blue-line streams within each county of the study area. The number of potential stream crossings in the study area is summarized by county in the following table:

County	Stream Type	
	Blue-line Perennial	Blue-line Intermittent
Henderson	5	24
Webster	5	18
Hopkins	13	73
Caldwell	5	31
Lyon	2	3

There are also a number of wetland areas within the study area for the proposed I-69 corridor. The number of wetland occurrences in the study area is listed by type in the following table:

Type of Wetland	Number of Occurrences
Ponded-Emergent	11
Ponded-Scrub/Shrub	11
Ponded-Forested	57
Riverine	7
Lacustrine (Lake)	2

D. Floodplains

The Federal Emergency Management Agency (FEMA) was consulted for information regarding 100-year floodplains. The I-69 corridor crosses special flood hazard areas inundated by 100-year floods within Henderson and Hopkins Counties. The project crosses the floodplains of Elam Ditch and East Fork of Canoe Creek in Henderson County. Floodplain crossings in Hopkins County include Otter Creek, Flat Creek, a tributary of Flat Creek, Pleasant Run, a tributary of Cany Creek, East Fork of Hurricane Creek, North Fork of Hurricane Creek, and the Tradewater River. No published floodplain information is available for the project corridor within Webster, Caldwell, and Lyon Counties. Additional 100-year floodplains may exist along streams in these unmapped counties.

As part of the I-69 project, all stream crossings should be structured in a manner as to not raise flood elevations. Impacts on floodplains are expected to be minimal since all of these streams currently have spanning structures in place. Some floodplain encroachment may occur, but efforts should be made to limit any fill areas. Exact impacts on floodplains will be determined during final design. This project is not anticipated to encourage new development in the floodplain.

Protection of floodplains and floodways is required by Executive Order 11988; Floodplain Management (May 24, 1977), U.S. Department of Transportation Order 5650.2: Floodplain Management and Protection, and Federal-Aid Policy Guide 23 (23 CFR 6580A). These regulations require KYTC to avoid or minimize highway encroachments within the 100-year floodplain, where practicable. Where encroachment along the project is unavoidable, KYTC must take appropriate measures to minimize impacts.

A "No-Rise" certification and coordination with FEMA will probably be required. As part of the No-Rise certification, modeling is undertaken to ensure that constructing across floodplains will have minimal impact on existing flood levels. Regulations limit the effect to a maximum of 1 foot. If the modeling determines that flood elevations will not change significantly, no further evaluation is needed and the encroachments are considered minimal.

E. Soils

A Soil Survey summary for Henderson, Webster, Hopkins, Caldwell, and Lyon Counties is included in **Appendix B**. Please refer to this table for a description of the soil units within each county crossed by the project corridor.

Roadway construction, agricultural activities and residential/commercial development have previously disturbed much of the project area. Construction of the proposed project will potentially result in loss of previously disturbed areas, as well as small agricultural areas composed of cropland and pastures.

Erodible soils are found in the project area and should be a consideration when an erosion control plan is developed. Impacts on soil and erosion of topsoil can decrease agricultural productivity. Use of heavy equipment to move soil and existing vegetation can disrupt natural drainage patterns. Use of heavy equipment can also

compact soil and decrease permeability. Areas of prime farmland, unique or statewide important soils should be considered prior to construction activities.

Specific amounts of disturbance will be determined in coordination with the Natural Resources Conservation Service and discussed in the Socioeconomic Baseline Study (i.e., during the development of the Land Evaluation Site Assessment (LESA) score).

F. Flora and Fauna

The project corridor includes areas disturbed by human occupation. The land uses are agricultural, residential, or forested. The agricultural areas are used for crop production and pastures. The residence areas consist of manicured lawns with introduced and native species. Flora and fauna that would be expected to occur in the project corridor are species adapted to the encroachment of man.

Information from the United States Fish and Wildlife Service (USFWS) indicates that the federally endangered Indiana bat, the gray bat and the bald eagle have the potential to occur in the vicinities within and near the I-69 project corridor. Foraging habitat exists for both bats.

As alternates are developed, the project team will conduct baseline studies to determine the potential impacts to plants, animals and their habitats. This process will ensure that impacts to threatened and endangered species are avoided. If they cannot be avoided, the team will work to minimize potential impacts to the species and their habitats. If threatened and/or endangered species could be located in the project area, biological assessments will be conducted prior to construction.

Field investigations and coordination efforts yielded the following information:

- Indiana Bat

  The project team reviewed USGS maps and databases to identify waterways, lakes (e.g. Lake Barkley, Kentucky Lake, Lake Beshear), parks (e.g. Pennyrile Forest, Land Between the Lakes), wildlife management areas (e.g. Tradewater, Jones Keeney), and other significant natural features and determined that areas suitable for sustaining Indiana bats exist throughout the project area.

  The Indiana bat formally attained endangered status March 11, 1967 (USFWS 2003). The historic range of the Indiana bat extended throughout the southeastern and central United States into New England. Causes of decline in the species populations are primarily the result of human disturbance and include activities such as commercialization and vandalism of caves, manmade changes to cave entrances, deforestation, and insecticide applications. Currently the Indiana bat is found throughout the eastern United States, as far west as Oklahoma and Iowa, north to Wisconsin, east to Vermont, and south to northwestern Florida (Slone and Wethington 2001).

  Two caves in Kentucky, Bat Cave in Carter County and Coach Cave in Edmonson County, have been designated as critical habitat for the Indiana bat (USFWS 2003). Coach Cave is located in an area near the project corridor.

Dense clusters of Indiana bats hibernate in limestone caves and abandoned mines with cool, stable temperatures. Female bats leave the hibernacula in April and migrate to summer habitat. Males typically migrate at a later time or spend the summer near the hibernacula. During summer months, maternal colonies roost under loose bark and in cavities of dead and live trees. Some male Indiana bats are found in caves during the summer (Harvey et al., 1999). Foraging occurs along streams in the floodplain and riparian forests as well as in upland forests and over farm ponds (Bat Conservation International 2001).

- Gray Bat

  The gray bat formally attained endangered status April 28, 1976 (USFWS 2003). Gray bat populations are primarily found in cave regions in Alabama, Arkansas Kentucky, Missouri and Tennessee. Smaller populations occur in areas of Florida, Georgia, Kansas, Indiana, Illinois, Oklahoma, Mississippi, Virginia and North Carolina. Population decline is attributed to human disturbance and vandalism of caves, improper cave gating, insecticide applications, and flooding of caves due to impoundment of waterways (USFWS 2003).

  Gray bats are year-round cave inhabitants. They migrate between summer and winter caves and will use transient caves along the way. Gray bats hibernate in caves with deep, vertical passages that serve as cold air traps. Females emerge from the hibernacula in late March and migrate to summer caves. Thousands of females form maternity colonies in these summer caves. The summer maternity caves generally contain large streams, and are located in proximity to rivers or lakes where the bats forage for insects. While females are rearing pups, the males and non-reproductive females form bachelor colonies in nearby caves (Slone and Wethington 2001, Barbour and Davis 1969, Bat Conservation International 2001).

- Bald Eagle

  The bald eagle formally attained threatened status on March 11, 1967 (USFWS 2003). The distribution of the bald eagle was historically throughout North America, from western Alaska east to the maritime Canadian provinces, south to the Florida Keys and Baja California (USFWS 2003). This large raptor (meat eating predator) is absent as a breeding species throughout much of its former range outside Alaska and Florida. The use of the pesticide DDT between 1940 and 1972 caused a decline the species' population. However, numbers have been increasing since the ban of DDT usage in 1972 and since subsequent efforts to protect bald eagles and their habitats have occurred. Since 1989, the number of successfully nesting eagles at Land Between the Lakes in Kentucky has been increasing (Slone and Wethington 2001).

  Bald eagles wintering in Kentucky migrate from the Great Lakes Region, arriving in October to begin December courtship. Eggs laid in late February hatch after 35 days (Slone and Wethington 2001). Nesting habitat includes a nest tree, perch and roost sites (USFWS 2003). Nest sites are constructed in trees that are larger and taller than surrounding trees, and the trees are located within several hundred yards of large rivers, lakes, or reservoirs. The nests are large and

average 7 to 8 feet in diameter and up to 12 feet deep (Slone and Wethington 2001). Shorelines with large trees provide daytime perches from which the eagles forage feed or defend nesting territories. Roost sites are used at nights for resting and are usually the tallest, dominant trees in the forest (USFWS 2003).

A summary of the project team's field investigations and coordination efforts yielded the following information related to threatened and endangered species within the study area counties:

	Known Occurrences of Threatened and Endangered Species	
	US Fish and Wildlife and KY Fish and Wildlife Threatened and Endangered Species	**KSNPC State Threatened and Endangered Species**
Mammals	Indiana Bat	Masked Shrew
	Gray Bat	
Birds	Bald Eagle	Great Egret
		Great Blue Heron
		Fish Crow
Reptiles/Amphibians		Copperbelly Water Snake
		Eastern Ribbon Snake
		Green Treefrog
		Bird-Voiced Treefrog
Mussels		Texas Lilliput
Insects	American Burying Beetle	American Burying Beetle
Trees/Plants	Price's Potato Bean	Red Buckeye
		Appalachian Bugbane
		Small Flower Baby-Blue-Eyes
		Buckley's Goldenrod
Special Communities		Acidic Mesophytic Forest

Source: US Fish and Wildlife Service, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission

III. Socioeconomic/Environmental Justice

A review of U.S. Census information, economic data, and a windshield survey helped examine socioeconomic and environmental justice concerns. This section also includes information related to land use, relocations, environmental justice and farmland.

A. Population Characteristics

Following is a brief overview of population characteristics for each of the five counties:

- Lyon County has 215.7 sq. miles in land area and a population density of 37.5 per square mile. In the last three decades of the 1900s, its population grew by 45.3%. On the 2000 census form, 99.5% of the population reported only one race, with 6.7% of these reporting African-American. The population of this county is 0.7% Hispanic (of any race). The average household size is 2.26 persons compared to an average family size of 2.70 persons.

  In 2003, public administration was the largest of 20 major sectors. It had an average wage per job of $28,636. Per capita income grew by 20.6% between 1992 and 2002 (adjusted for inflation).

Lyon County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	8,078	Covered Employment	2,007
Growth (%) since 1990	22.0%	Avg wage per job	$20,287
Households (2000)	2,898	Manufacturing - % all jobs in County	D
Labor Force (persons) (2003)	3,320	Avg wage per job	D
Unemployment Rate (2003)	8.4%	Transportation & Warehousing - % all jobs in County	0.8%
Per Capita Personal Income (2002)	$20,095	Avg wage per job	$34,383
Median Household Income (2000)	$31,694	Health Care, Social Assist. - % all jobs in County	12.1%
Poverty Rate (2000)	12.7%	Avg wage per job	$18,206
H.S. Diploma or More - % of Adults 25+ (2000)	68.0	Finance and Insurance - % all jobs in County	0.9%
Bachelor's Deg. or More - % of Adults 25+ (2000)	10.1	Avg wage per job	$25,928

Note: Covered Employment and Wage data for 2003 are preliminary. D = Data were not available.

- Caldwell County has 347.0 sq. miles in land area and a population density of 37.0 per square mile. In the last three decades of the 1900s, its population declined by 0.9%. On the 2000 census form, 99.4% of the population reported only one race, with 4.8% of these reporting African-American. The population of this county is 0.6% Hispanic (of any race). The average household size is 2.36 persons compared to an average family size of 2.85 persons.

  In 2003, manufacturing was the largest of 20 major sectors. It had an average wage per job of $32,707. Per capita income grew by 15.6% between 1992 and 2002 (adjusted for inflation). Following is a table illustrating various socioeconomic data for Caldwell County:

Caldwell County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	12,824	Covered Employment	4,019
Growth (%) since 1990	-3.1%	Avg wage per job	$24,800
Households (2000)	5,431	Manufacturing - % all jobs in County	23.9%
Labor Force (persons) (2003)	6,523	Avg wage per job	$32,707
Unemployment Rate (2003)	5.5%	Transportation & Warehousing - % all jobs in County	2.2%
Per Capita Personal Income (2002)	$22,578	Avg wage per job	$27,745
Median Household Income (2000)	$28,686	Health Care, Social Assist. - % all jobs in County	D
Poverty Rate (2000)	15.9%	Avg wage per job	D
H.S. Diploma or More - % of Adults 25+ (2000)	73.1	Finance and Insurance - % all jobs in County	3.5%
Bachelor's Deg. or More - % of Adults 25+ (2000)	10.0	Avg wage per job	$31,028

Note: Covered Employment and Wage data for 2003 are preliminary. D = Data were not available.

- Hopkins County has 550.6 sq. miles in land area and a population density of 85.1 per square mile. In the last three decades of the 1900s, its population grew by 21.9%. On the 2000 census form, 99.1% of the population reported only one race, with 6.2% of these reporting African-American. The population of this county is 0.9% Hispanic (of any race). The average household size is 2.43 persons compared to an average family size of 2.91 persons.

  In 2003, health care and social assistance was the largest of 20 major sectors. It had an average wage per job of $32,116. Per capita income grew by 6.3% between 1992 and 2002 (adjusted for inflation).

Hopkins County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	46,839	Covered Employment	17,464
Growth (%) since 1990	1.5%	Avg wage per job	$27,908
Households (2000)	18,820	Manufacturing - % all jobs in County	17.1%
Labor Force (persons) (2003)	19,329	Avg wage per job	$35,682
Unemployment Rate (2003)	7.7%	Transportation & Warehousing - % all jobs in County	1.8%
Per Capita Personal Income (2002)	$23,039	Avg wage per job	$31,893
Median Household Income (2000)	$30,868	Health Care, Social Assist. - % all jobs in County	18.6%
Poverty Rate (2000)	16.5%	Avg wage per job	$32,116
H.S. Diploma or More - % of Adults 25+ (2000)	71.3	Finance and Insurance - % all jobs in County	2.5%
Bachelor's Deg. or More - % of Adults 25+ (2000)	10.6	Avg wage per job	$35,759

Note: Covered Employment and Wage data for 2003 are preliminary.

- **Webster County** has 334.8 sq. miles in land area and a population density of 42.0 per square mile. In the last three decades of the 1900s, its population grew by 6.3%. On the 2000 census form, 99.3% of the population reported only one race, with 4.7% of these reporting African-American. The population of this county is 1.9% Hispanic (of any race). The average household size is 2.49 persons compared to an average family size of 2.94 persons.

  In 2003, manufacturing was the largest of 20 major sectors. It had an average wage per job of $25,420. Per capita income grew by 21.7% between 1992 and 2002 (adjusted for inflation).

Webster County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	14,051	Covered Employment	3,536
Growth (%) since 1990	0.7%	Avg wage per job	$29,908
Households (2000)	5,560	Manufacturing - % all jobs in County	18.9%
Labor Force (persons) (2003)	5,574	Avg wage per job	$25,420
Unemployment Rate (2003)	8.3%	Transportation & Warehousing - % all jobs in County	5.3%
Per Capita Personal Income (2002)	$25,417	Avg wage per job	$30,700
Median Household Income (2000)	$31,529	Health Care, Social Assist. - % all jobs in County	6.4%
Poverty Rate (2000)	15.4%	Avg wage per job	$21,268
H.S. Diploma or More - % of Adults 25+ (2000)	70.9	Finance and Insurance - % all jobs in County	3.1%
Bachelor's Deg. or More - % of Adults 25+ (2000)	7.1	Avg wage per job	$33,020

Note: Covered Employment and Wage data for 2003 are preliminary.

- **Henderson County** has 440.1 sq. miles in land area and a population density of 102.5 per square mile. In the last three decades of the 1900s, its population grew by 24.4%. On the 2000 census form, 99.1% of the population reported only one race, with 7.1% of these reporting African-American. The population of this county is 1.0% Hispanic (of any race). The average household size is 2.43 persons compared to an average family size of 2.93 persons.

  In 2003, manufacturing was the largest of 20 major sectors. It had an average wage per job of $36,956. Per capita income grew by 12.6% between 1992 and 2002 (adjusted for inflation).

Henderson County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	45,129	Covered Employment	21,342
Growth (%) since 1990	4.8%	Avg wage per job	$31,666
Households (2000)	18,095	Manufacturing - % all jobs in County	31.2%
Labor Force (persons) (2003)	24,221	Avg wage per job	$36,956
Unemployment Rate (2003)	5.8%	Transportation & Warehousing - % all jobs in County	1.4%
Per Capita Personal Income (2002)	$25,356	Avg wage per job	$32,710
Median Household Income (2000)	$35,892	Health Care, Social Assist. - % all jobs in County	D
Poverty Rate (2000)	12.3%	Avg wage per job	D
H.S. Diploma or More - % of Adults 25+ (2000)	78.3	Finance and Insurance - % all jobs in County	2.3%
Bachelor's Deg. or More - % of Adults 25+ (2000)	13.8	Avg wage per job	$33,501

Note: Covered Employment and Wage data for 2003 are preliminary. D = Data were not available.

B. Land Use

Outside of the various city limits, land throughout the study area is primarily agricultural and scattered residential. Some scattered highway commercial and general commercial activity is located along existing roadways and parkway interchanges. Additional land use in these lightly populated areas includes very limited light industrial land use. Most of the commercial, residential, and government services are located in the county seats within each of the five counties.

C. Relocations

High numbers of relocations do not appear to be necessary for this project. Since a large portion of the project will likely include improvements and widening of the existing parkways, very little commercial or residential relocation will be required in the study area. Most would be anticipated to occur at interchanges where some highway commercial development and light residential land use has been identified.

Most relocations are anticipated to occur on any new sections of roadway and in areas within or near city limits within the five counties. The design team should attempt to avoid as many relocations as possible including non-profit organizations, cemeteries, and other socially sensitive resources. City limits for each of the populated areas throughout the project corridor are shown in white on **Figures 1-5**.

D. Environmental Justice

U.S. Census 2000 data was consulted to help identify potential Environmental Justice concerns. In each of the five counties, minority populations are concentrated within or near the city limits or county seats. It does not appear that any disproportionate impacts to minority populations would occur from the development of the project corridor, based on information gathered through public meetings, windshield surveys, census data, and the few anticipated relocations.

The census tracts were also reviewed within each of the five counties for low income populations. As with the minority populations, residents living at or below the poverty level are concentrated primarily within the city limits of the county seats. One area, Dawson Springs, reported 25.5 percent of its residents at or below the poverty level. This area is located south of the proposed project corridor. No environmental justice impacts are associated with this area. Following is a table that compares countywide poverty level percentages with the state percentage. Except for Henderson County, the study area counties have poverty rates which are higher than the statewide average of 12.7%.

Residents at or below Poverty Level (2000)	
United States	11.7%
Kentucky	12.7%
Caldwell County	14.5%
Henderson County	11.9%
Hopkins County	14.7%
Lyon County	13.8%
Webster County	13.6%

The poverty level percentages were reported on the U.S. Census Bureau's webpage, and the determinations for poverty levels were based upon the U.S. Health and Human Services Poverty Guidelines. The table below compares sizes of family units and the corresponding threshold levels for poverty income. U.S. Census tracts were reviewed for each county.

2004 U. S. Health and Human Services Poverty Guidelines	
Size of Family Unit	**Income Level ($)**
1	9,310
2	12,490
3	15,670
4	18,850
5	22,030
6	25,210
7	28,390
8	31,570
For each additional person, add	3,180

In accordance with the Federal-Aid Highway Act of 1970 and Executive Order 12898 on Environmental Justice, every consideration will be given in the planning and development of this project to consider environmental impacts which might disproportionately or adversely impact minority or low income groups. As mentioned previously in this section, the project alternates are not anticipated to cause adverse effects on minority or low-income populations, and no neighborhoods or communities appear to be adversely impacted.

Reviews of figures for all census tracts for each of the five counties were conducted, and it was determined that most of the residents in each of the counties living at or below the poverty level were located within and/or near city limits where government services are located. Some outlying communities also showed higher percentages of poverty levels. This may indicate social clusters in the unincorporated communities and smaller towns, but none appeared to be within the proposed project corridor.

A mobile home park is located in Madisonville along the Breathitt Parkway near the northern Madisonville interchange. Windshield surveys, conversations with local officials, and reviews of census tracts indicate that the residents in this park do not appear to be low income. In addition, homes located along the Breathitt Parkway do not appear to be low income.

Along the corridor, it appears that no environmental justice issues exist. As the project develops and baseline studies are conducted, the project team will conduct field visits, review census tract data and work with local officials to ensure that environmental justice concerns are avoided. If these concerns cannot be avoided, every effort will be made to minimize impacts and to ensure that the relocated households are provided with decent, safe and sanitary housing with minimal disruptions to communities.

E. Farmland and Agricultural Activities

Some agricultural activities occur in each of the project's five counties, including corn, burley tobacco, hay, and cattle. Following are brief synopses of agricultural activities for each county:

- Lyon County reported 304 farms in the 2002 Census of Agriculture. This number was up 8 percent from the 282 farms reported in 1997. The land in farms for Lyon County increased by 9 percent within the same timeframe from 51,579 acres to 56,411 acres. The average size farm in Lyon County increased 2 percent from 183 acres in 1997 to 186 acres in 2002. Lyon County is 16th statewide in sheep and lambs, 32nd for hogs and pigs, 38th in soybeans and 39th in corn for grain.
- Caldwell County reported 673 farms in the 2002 Census of Agriculture. This number was down 4 percent from the 700 farms reported in 1997. The land in farms for Caldwell County decreased by 7 percent within the same timeframe from 157,980 acres to 147,207 acres. The average size farm in Caldwell County decreased 3 percent from 226 acres in 1997 to 219 acres in 2002. Caldwell County ranked 16th statewide in wheat and grain production, 17th for hogs and pigs, 19th in forage products, and 20th in grains, oilseeds, dry beans and dry peas.
- Hopkins County reported 678 farms in the 2002 Census of Agriculture. This number was up 8 percent from the 630 farms reported in 1997. The land in farms for Hopkins County increased by 8 percent within the same timeframe from 152,302 acres to 164,163 acres. The average size farm in Hopkins County remained unchanged at 242 acres in 1997 and 2002. Hopkins County ranked 1st

statewide in production of popcorn and in sorghum for grain, 6th for hogs and pigs, and 7th in broilers and other meat-type chickens.

- Webster County reported 595 farms in the 2002 Census of Agriculture. This number was up 14 percent from the 525 farms reported in 1997. The land in farms for Webster County increased by 8 percent within the same timeframe from 147,402 acres to 159,496 acres. The average size farm in Webster County decreased 5 percent from 281 acres in 1997 to 268 acres in 2002. Webster County ranked 2nd statewide in broilers and other meat-type chickens, 3rd in production of sorghum for grain, 9th in soybeans, and 10th in corn for grain.
- Henderson County reported 525 farms in the 2002 Census of Agriculture. This number was down 13 percent from the 600 farms reported in 1997. The land in farms for Henderson County decreased by 7 percent within the same timeframe from 207,453 acres to 192,264 acres. The average size farm in Henderson County increased 6 percent from 346 acres in 1997 to 366 acres in 2002. Increases in average farm sizes have been attributed to the loss of smaller farms. Henderson County ranked 2nd statewide in soybean production, 2nd in sorghum for grain production, and 6th in corn for grain production.

Agriculture is still an important economic force in this region of Kentucky. Some cropland, pasture and hayfields are located in the project area and small amounts (in comparison with overall acres in farmland for each county) may be acquired by the project. Once the project alignment has been established, an analysis of the project's impacts to prime and statewide important farmlands for each of the five project counties can be undertaken (i.e., Land Evaluation Site Assessment (LESA)). Some prime, unique, or of statewide importance farmland may be acquired.

It is anticipated that any farmland impacts will be minor in comparison to the total amount of active and available farmland in each county. No adverse effects upon farm operations or agricultural activities are anticipated. The project team should take care to minimize disruption of agricultural activities in the design and construction of this roadway.

F. Public Opinion

Discussions with local government representatives and interested parties at the public meetings for the I-69 project also provided useful information. Local government representatives and members of the general public supported the proposed project. The proposed project was seen as a way to improve safety and provide economic benefits. Temporary impacts such as increased dust and noise will occur as a result of the project's construction phase. Traffic will be maintained throughout the construction process. Any inconveniences will be short term and minor. Long-term benefits include improved safety and travel conditions and an anticipated reduction in emergency response times.

IV. Cultural and Historic Resources

Recorded historic and archaeological sites within a 2000-foot buffer along the Parkways were reviewed as part of this study. A full historic baseline study is recommended early in project development to review cultural landscapes and other historic sites in the study area.

A. Historic Structures

There are no historic structures listed within the study area of three counties: Lyon, Webster and Henderson Counties. Historic structures within the study area of Caldwell and Hopkins Counties are listed in the following sections.

A total of five (5) historic sites are found within the I-69 study area in Caldwell County and all are located outside the corporate limits of Princeton. All five (5) sites have been assessed as *survey sites*. These include:

- The *Bayless Cantrell Farm* is located off US 62W near the Lyon/Caldwell county line. This site is a one-story (1) dwelling with a construction date ranging from 1900-1924. This structure is currently in use.
- The *Jordan Log House* is located adjacent to the *Bayless Cantrell Farm*, along US 62W near the Lyon/Caldwell county line. This site is a one-and-a-half (1.5) story structure log home with a construction date ranging from 1850-1874. This structure is currently vacant.
- The *Martin-Etheridge Farm* is located about one (1) mile west of the corporate limits of Princeton near the junction of US 62W and Gromes intersection. This structure is a one-and-a-half (1.5) story dwelling with a construction date ranging from 1900-1924. This site is currently in use.
- The *Bath House* is located adjacent to Rabbit Lake, along Lakeview Drive in Crowtown. This structure is a two-story (2) dwelling with a construction date ranging from 1900-1924. This site is currently being used as an agriculture building.
- The *Wilkie Log House* is located near the Caldwell/Hopkins county line, adjacent to White School Road and north of US 62E. This site is a one-story (1) structure which is currently vacant. The construction date of this home ranges from 1850-1874.

There is only one (1) historic site found within the I-69 study area in Hopkins County.

- This site does not own an official name, but is a historic house located along KY 1033, south of KY 138. The structure is a one-story (1) dwelling with vernacular style construction and has a build date ranging from 1875-1899. This site is currently vacant and is listed as a *survey site*.

B. Archaeological Sites

With the exception of Caldwell County, there are archaeological sites recorded within the study area for each of the other four counties. Further studies of the corridor are likely to identify additional archaeological sites; however, it can be assumed that the existing right-of-way for the Parkways has already been disturbed and will not likely yield additional sites or features. The identified archaeological sites are listed in the following sections.

In Lyon County, there are seven (7) archaeological sites listed within the project area. None of these sites presently meet National Register criteria or have not had their National Register status assessed; however, further baseline studies of the corridor are likely to identify sites that may be considered to be eligible or potentially eligible. The Lyon County sites include the following:

- Sites 15L431, 15LY56, 15LY60, 15LY61, 15LY62 and 15LY69 are located near Eddyville in Lyon County. These sites are all classified as an *"open habitation without mounds"* and an *indeterminate prehistoric* cultural period.
- Site 15LY69 is located east of Eddyville, just north of the Ford Parkway. This site is also classified as an *"open habitation without mounds"* and has an *indeterminate prehistoric* cultural period.

In Hopkins County, there are fourteen (14) archaeological sites found within the I-69 study area. None of these sites presently meet National Register criteria or have not had their National Register status assessed; however, further baseline studies of the corridor are likely to identify sites that may be considered to be eligible or potentially eligible. The Hopkins County sites include the following:

- Sites 15HK73, 15HK74, and 15HK50 are located along the Ford Parkway. These sites are all classified as an *"open habitation without mounds".* Site 15HK74 has been identified as having come from a *middle woodland/late prehistoric* cultural period. Sites 15HK73 and 15HK50 have not had their cultural period determined.
- The remaining eleven (11) sites are located along the Breathitt Parkway. These sites include: 15HK102, 15HK126, 15HK127, 15HK128, 15HK129, 15HK130, 15HK178, 15HK125, 15HK122, 15HK123, and 15HK124. Only site 15HK102 is a "stand alone" site. The remaining sites are somewhat grouped together and located near Hanson. Collectively, these sites are identified as historic Euro-American or have an indeterminate prehistoric background.

In Webster County, there are six (6) archaeological sites listed within the project area. None of these sites presently meet National Register criteria or have not had their National Register status assessed; however, further baseline studies of the corridor are likely to identify sites that may be considered to be eligible or potentially eligible.

- Sites 15WE94 and 15WE95 are located along the Breathitt Parkway in southern Webster County. These sites are both classified as an *"historic farm/residence"* and have a cultural period ranging from 1851-1950.

- Sites 15WE19, 15WE20, 15WE31, and 15WE32 are located in northern Webster County, north of Sebree. These sites are collectively classified as either *"open habitation without mounds"* or *"isolated finds"*. They all have been classified as having an *indeterminate prehistoric* cultural period.

In Henderson County, there are three (3) archaeological sites listed within the project area. None of these sites presently meet National Register criteria or have not had their National Register status assessed; however, further baseline studies of the corridor are likely to identify sites that may be considered to be eligible or potentially eligible.

- Site 15HE784 is located along the Breathitt Parkway in southern Henderson County. This site has been determined as an *"historic farm/residence"* and has a cultural period ranging from 1851-1950.
- Sites 15HE450 and 15HE451 are located in northern Henderson County, south of Henderson. These sites are collectively classified as an *"open habitation without mounds"* and have been classified as having an *indeterminate prehistoric* cultural period.

V. Hazardous Materials/Underground Storage Tanks

A search of Federal and State records, in addition to a preliminary screening/windshield survey of the project area, was performed to identify hazardous materials and underground storage tank sites that could potentially be affected by the project. The records search identified several sites on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) of potential Superfund sites but they appear far enough from the proposed corridor that they could be avoided.

Records indicate that oil and gas wells are in or near the project corridor, particularly in Henderson and Hopkins Counties. If wells are affected, a Phase II site investigation should be necessary to determine if any contamination from leaks or releases has occurred during well operation. The old wells should be closed and the wells may have to be relocated. In addition, numerous dry and abandoned wells are in or near the project corridor. If the dry and abandoned wells have been closed properly, they should not be an issue.

Abandoned landfills in Caldwell (i.e., Criders and Rogers Landfill near Princeton), Hopkins (i.e., near Slaughters and Charleston), and Webster (i.e., near Sebree) Counties are near the project corridor and efforts should be made to try and avoid these abandoned landfills. Remediation costs and monitoring for acquiring parts of a landfill could be expensive.

Record searches and the windshield survey identified underground storage tank sites at service stations (both open and closed facilities). The majority of these sites occur at the existing interchange areas. Depending on whether the existing interchanges and ramps are modified, several of these underground storage tank sites could be affected. Gasoline, oil, diesel, or other materials related to automobiles and trucks could be potential hazards from releases or spills.

Also, several aboveground storage tanks (ASTs) were noted throughout the corridor. Farm or residential use appears to be the purpose of these ASTs. Any ASTs encountered during the right-of-way acquisition phase should be accounted for during normal right-of-way acquisition procedures and should be decommissioned in accordance with state requirements. None of the ASTs appear to be a significant environmental hazard for the project.

Several sewage treatment plants appear in the vicinity of the project corridor but it appears that the project could avoid these sites. Several small auto salvage/junkyards are located along the Breathitt Parkway. These facilities contain automobiles and trucks waiting to be dismantled, tire piles, and parts. The yards are earthen and the soil may contain gasoline, oil, antifreeze, and transmission fluid, which leaked from automobiles or trucks.

In the project area, numerous coal exploration sites as well as reclaimed mine sites could be affected, particularly near the intersection of the Breathitt Parkway and Ford Parkway in Hopkins County. KYTC may encounter acid-bearing materials (e.g., coal and black shale). The project could cut coal or shale seams or encroach on mine fill areas or silt ponds. Problems may occur when water (e.g., from rain or snow) reacts with the sulfur in the coal, creating sulfuric acid. Runoff from an exposed coal seam can

be acidic. In addition, heavy metals can leach from the coal. This runoff can contaminate surface water and groundwater, and damage vegetation and aquatic life. Erosion control will be an important issue in these areas. If appropriate, excavated acid-bearing materials may have to be placed in fill areas in such a manner (e.g., buffered using limestone) as to prevent acid drainage.

A Phase I hazardous materials and underground storage tank site assessment should be conducted during any future National Environmental Policy Act (NEPA) phases of the project to confirm findings and determine potential impacts.

VI. Air Quality

The Evansville (Indiana) – Owensboro-Henderson (Kentucky) Air Quality Control Region includes Henderson and Webster Counties. The Paducah (Kentucky) – Cairo (Illinois) Air Quality Control Region includes Caldwell, Hopkins and Lyon Counties. All counties crossed by the corridors are considered in attainment for all transportation-related pollutants (carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NOx), and particulates). The project is in air quality regions where the State Implementation Plan (SIP) does not contain transportation measures. Therefore, the Amended Final Conformity Guidelines issued by the Environmental Protection Agency (EPA) do not apply to the study area. Air quality concerns routinely exist for most types of highway improvements.

For the I-69 corridor, air quality issues are of particular concern relative to where the corridors fall in close proximity to sensitive land uses, such as population centers (Eddyville, Princeton, Madisonville, and Henderson), natural areas (Lake Barkley), and recreational facilities. Sensitive areas exist in larger numbers near the populated towns and county seats. A project specific air quality analysis will be required in upcoming phases to verify potential air quality impacts.

Based on windshield surveys of the project corridor and inspections, no air quality sensitive land uses or susceptible sites were observed. With the location of the corridor being in an attainment area and traffic volumes predicted to be low, it is anticipated that concentrations of carbon monoxide will remain below both the one-hour (35 ppm) and eight-hour (9 ppm) standards regardless of which alternate is selected for the project.

VII. Traffic Noise

The existing roadways and parkways carry normal volumes of traffic and the existing receptors are already accustomed to some level of traffic noise. Depending on the alignment developed, noise levels may increase for some receptors as the roadway is moved closer but may decrease for other receptors as the roadway moves away from them.

The study area includes a number of sensitive receptors including residential areas, mobile home parks, churches, hospitals, and cemeteries. The increase in noise within the project corridor may be greater than 10 dBA Leq (which is determined to be a significant increase by the Kentucky Transportation Cabinet) for receptors within the project corridor. This may occur in various areas where roadway or interchanges are located near sensitive receptors.

The potential also exists for individual receptors to approach or exceed regulatory thresholds (e.g., 67 dBA Leq for residential receptors and 72dBA Leq for commercial receptors). If any regulatory thresholds are exceeded abatement considerations (e.g. noise barriers) would be considered as appropriate following the KYTC Noise Abatement Policy. A project specific traffic noise impact analysis will be required on upcoming phases to verify potential traffic noise impacts.

VIII. Pedestrian and Bicycle Facilities

Under 23 U.S.C. § 109(n), KYTC considers the need to provide bicycle facilities and pedestrian walkways for the project corridor. Being a limited access highway, the project anticipates no special provisions for bicycle facilities and pedestrian walkways.

IX. Visual Impacts

The aesthetic quality of a community is composed of visual resources such as those physical features that make up the landscape, including land, water, vegetation, and man-made features (e.g., buildings, roadways, and structures). Visual impacts affect communities from two perspectives: 1) the view from the road, and 2) the view of the road.

The project corridor is a mixture of rural, residential, and commercial areas. The project counties do not have comprehensive plans, transportation plans, or development regulations that contain guidelines or recommendations to limit the visual impacts of development. Since the project corridor is an existing route, it is expected to have minimal visual effects on the adjacent areas. Right-of-way expansions are expected to be minimal, except in the area of interchanges where ramp lengths and approaches may be expanded.

To minimize visual impacts, efforts should be made to only clear vegetation necessary for construction, proper sight distances, and horizontal clearance requirements. Re-vegetation with native flora will minimize the visual impacts of project construction.

X. Section 4(f) Involvement

Under Section 4(f) of the Department of Transportation Act of 1966, a federally funded highway project can be approved only after a determination is made that no prudent and feasible alternative exists to using property from Section 4(f) resources. Section 4(f) resources include historic properties listed or eligible for listing on the National Register of Historic Places. Archaeological sites only qualify as Section 4(f) resources when it is determined that a site requires preservation in place and is listed or eligible for listing on the National Register.

Recreation areas or wildlife and waterfowl refuges are also considered Section 4(f) resources. Recreation areas (e.g., Lake Barkley), parks (e.g., Pennyrile Forest, Land Between the Lakes), wildlife management areas (e.g., White City Wildlife Management Area) occur in the project area. In addition, the project corridor crosses over the Pennyrile Trail, a 75-mile loop that connects three wildlife management areas including the White City Wildlife Management Area and a state forest.

A federal-aid project can be approved only after a determination is made whether prudent and feasible alternatives exist to using property from historic sites, recreation areas, or wildlife and waterfowl refuges. If any Section 4(f) resources would be affected, a Section 4(f) evaluation and coordination with the Federal Highway Administration would be necessary.

XI. Section 6(f) Involvement

Section 6(f) resources include outdoor recreational land and water areas and facilities that were established with assistance from grants-in-aid from the Land and Water Conservation Fund (LWCF). The National Park Service and the Kentucky Department for Local Government administer these funds to local jurisdictions. Counties and cities in the project area have received funds for parks, swimming pools, boat ramps, and tennis courts, as shown in the following table:

County	Number of Section 6(f) Resources per County
Caldwell	6
Henderson	15
Hopkins	13
Lyon	7
Webster	9

Properties acquired or developed with LWCF assistance are prohibited by Section 6(f) of the Land and Water Conservation Fund Act from conversion to other than public outdoor recreation use without approval of the National Park Service. This approval can only occur after all practical alternatives have been considered. When LWCF facilities are impacted through either partial or total acquisitions, the property acquired must be replaced with property that is of equal, or greater, fair market value, and the land must be used for similar purposes.

While several recreational facilities within the project counties have received LWCF monies, it does not appear that any Section 6(f) resources have the potential to be affected within the study area.

XII. Construction

Construction impacts from this project are expected to be minimal and of short-term duration. Traffic will be maintained at all times. A maintenance-of-traffic plan will be prepared during the design phase.

Construction activities will cause some erosion because areas cleared of trees and vegetation are prone to erosion during storm events. KYTC should implement the erosion and sedimentation controls specified in Kentucky Department of Highways Standards and Specifications (KDHSS), Sections 212 and 213, develop erosion control plans during the final design, and implement best management practices during design and construction. In time, re-vegetation will stabilize the construction sites and impacts will diminish. Planting native species of vegetation within construction and right-of-way limits will stabilize highway shoulders; prevent drop-offs, rills, and gullies; beautify the roadside; and prevent sedimentation of culverts and nearby streams. Use of native species also reduces the spread of invasive species (e.g., noxious weeds).

Construction waste will be managed in accordance with KDHSS Section 204 and other applicable state regulations. Debris generated during removal of structures and obstructions will be managed in accordance with KDHSS Section 203 and other applicable state regulations.

Standard noise reducing measures will be implemented during the construction phase to prevent construction noise from becoming a public nuisance or detriment. It is standard policy on Kentucky construction projects to require the contractor to use equipment and procedures to restrict construction noise in the vicinity of sensitive receptors such as schools, hospitals, and churches.

Road construction activities have the potential to generate fugitive dust. Fugitive dust consists of particulate matter that becomes airborne directly or indirectly as a result of human activity. Road construction can generate fugitive dust from earth-moving equipment (e.g., bulldozers, graders) and trucks loading and unloading or transporting earthen materials. Wind can cause fugitive dust in areas cleared of vegetation during construction. To minimize fugitive dust generation, KYTC will follow KHDSS Section 107.01.4. During construction, KYTC or its contractor will apply water or other approved materials (chemical dust suppressants), as appropriate, to control dust.

Blasting for roadway excavation or for utility relocation has the potential to affect subsurface flow. No groundwater recharge areas are evident in the project area. Municipal water is supplied to the majority of the people in the area. All blasting operations will be done in accordance with Section 107.11 of the KDHSS and other applicable federal and state regulations.

XIII. Comments and Coordination

The United States Fish and Wildlife Service (USFWS), Kentucky Department of Fish and Wildlife Resources (KDFWR), and Kentucky State Nature Preserves Commission (KSNPC) were contacted for information on protected federal and state listed species that may be affected by the project. Information was also requested from KSNPC and Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC) concerning critical habitat areas and monitored natural areas.

The KNREPC Division of Water (DOW) was contacted for water quality impacts, groundwater information, wellhead protection locations, and well and spring locations. The United States Army Corps of Engineers (USACE) and DOW provided information on permits. The Kentucky Geological Survey (KGS) provided the topographic maps and the National Wetlands Inventory (NWI) maps for the project area quadrangles. The Federal Emergency Management Agency (FEMA) provided the Flood Insurance Rate Maps for the project corridor.

XIV. References

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U.S. Census Bureau Website (American Factfinder)

Kentucky State Data Center Website

KYTC website

APPENDIX A

RESOURCE AGENCY RESPONSE LETTERS

- Kentucky State Nature Preserves Commission
- Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water, Water Quality Branch
- Kentucky Department of Fish and Wildlife Resources
- United States Department of the Interior, Fish and Wildlife Service
- Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water, Groundwater Branch
- Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water, Groundwater Branch, Wellhead Protection Program
- United States Department of Agriculture, Natural Resources Conservation Service – Hopkins County
- United States Department of Agriculture, Natural Resources Conservation Service – Henderson County
- United States Department of Agriculture, Natural Resources Conservation Service – Webster County
- United States Department of Agriculture, Natural Resources Conservation Service – Caldwell County
- United States Department of Agriculture, Natural Resources Conservation Service – Lyon County

DONALD S. DOTT, JR.
DIRECTOR

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
KENTUCKY STATE NATURE PRESERVES COMMISSION
801 SCHENKEL LANE
FRANKFORT, KENTUCKY 40601-1403
(502) 573-2886 VOICE
(502) 573-2355 FAX

March 11, 2002

Michael Kenawell
T.H.E. Engineers
131 Prosperous Place Suite 15
Lexington, KY 40509

Data Request **02-143**

Dear Mr. Kenawell:

This letter is in response to your data request of February 19, 2002 for the Interstate 69, Lyon, Caldwell, Hopkins, Webster, and Henderson Counties, Kentucky project. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants and animals or exemplary natural communities monitored by the Kentucky State Nature Preserves Commission occur up to five miles from the project area as shown on the map provided. Based on our most current information, we have determined that twenty occurrences of the plants or animals and one occurence of the exemplary natural communities that are monitored by KSNPC are reported as occurring within one mile of the corridor. In addition, seventy-nine occurrences of the plants or animals and two occurrences of the exemplary natural communities that are monitored by KSNPC are reported as occurring within greater-than-one to five miles of the corridor. Please see the attached reports for each specified distance for detailed information about each occurrence. These species and communities should be considered in your evaluation of the area.

In addition to the species listed on the reports, you should be aware that there are occurrences of *Myotis grisescens* (Gray myotis, federally listed endangered, KSNPC endangered) in adjacent Hopkins, Caldwell, Livingston, Crittenden, Christian, Trigg and Muhlenberg Counties. Also, Myotis *sodalis* (Indiana myotis, federally listed endangered, KSNPC endangered) is recorded from adjacent Henderson, Daviess, Union, Caldwell, Livingston, Christian and Trigg Counties. A thorough survey for these species should be conducted by a qualified biologist. The survey should include a search for potential roost and winter sites, and a mistnetting census at numerous points within the proposed

corridor, particularly in preferred summer habitat. Summer foraging habitats include upland forests, bottomland forests, and riparian corridors. Suitable roost and winter sites include sandstone and limestone caves, rockhouses, clifflines, and abandoned mines. In order to avoid impacts to bats, bottomland forests and riparian corridors, particularly near caves, should not be disturbed.

You should be aware that Henderson, Webster, Hopkins, and Caldwell Counties lie within that portion of Kentucky designated as habitat for the Copperbelly water snake (*Nerodia erythrogaster neglecta*, KSNPC Special Concern). There are several occurrences of this species noted within close proximity to the project area. This region is subject to conditions outlined in the Copperbelly Water Snake Conservation Agreement and is being overseen in Kentucky by the Department of Fish and Wildlife Resources in cooperation with the U.S. Fish and Wildlife Service. The project sponsor should contact Mr. Roy Grimes, Wildlife Division, KDFWR to coordinate measures that will assess potential impacts to the Copperbelly water snake and opportunities for mitigative measures to improve habitat for the snake.

The presence of two *Haliaeetus leucocephalus* (Bald eagle, federally listed threatened, KSNPC endangered) occurrences near your project area should be noted. Please see the attached report of occurrences within two to five miles of the project area for more information.

I would like to take this opportunity to remind you of the terms of the data request license, which you agreed upon in order to submit your request. The license agreement states "Data and data products received from the Kentucky State Nature Preserves Commission, including any portion thereof, may not be reproduced in any form or by any means without the express written authorization of the Kentucky State Nature Preserves Commission." The exact location of plants, animals, and natural communities, if released by the Kentucky State Nature Preserves Commission, may not be released in any document or correspondence. These products are provided on a temporary basis for the express project (described above) of the requester, and may not be redistributed, resold or copied without the written permission of the Kentucky State Nature Preserves Commission's Data Manager (801 Schenkel Lane, Frankfort, KY, 40601. Phone: (502) 573-2886).

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed, and new plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being consid-

ered, nor should they be substituted for on-site surveys required for environmental assessments.

We would greatly appreciate receiving any pertinent information obtained as a result of on-site surveys.

If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Sara Hines
Data Manager

Enclosures: Data Reports and Interpretation Key(s)
Endangered, Threatened, and Special Concern Plants and Animals of Kentucky

Copy: C. Tom Bennett, Commissioner, KDFWR

Rare Species
recorded within one mile of the I-69 Lyon, Caldwell, Hopkins, Webster Henderson Co. project.

Kentucky State Nature Preserves Commission
Data Request No. 02-143

EOCODE	SNAME	SCOMNAME	GRANK	SRANK	SPROT	USESA	IDENT	LASTOBS	PREC	EORANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
***Vascular Plants																	
PDHPC01060*002*KY	AESCULUS PAVIA	RED BUCKEYE	G5	S2S3	T			1972-05-23	M	H	Lyon	EDDYVILLE, KY.	370453N	880459W	LAKE BARKLEY,T	[redacted]	WOODS AND THICKETS.
PDRAN07060*007*KY	CIMICIFUGA RUBIFOLIA	APPALACHIAN BUGBANE	G3	S2	T			1997-08-14	M	A	Caldwell	OLNEY, KY.	370856N	874527W	FLYNN FORK BASIN	[redacted]	MESOPHYTIC FOREST ON N FACING (?) SLOPES, RIVER BLUFFS AND RAVINES.
PDRAN07060*005*KY	CIMICIFUGA RUBIFOLIA	APPALACHIAN BUGBANE	G3	S2	T		Y	2001-08-15	S	D	Lyon	EDDYVILLE, KY.	370451N	880502W	LAKE BARKLEY,T	[redacted]	MESOPHYTIC FOREST ON N FACING (?) SLOPES, RIVER BLUFFS AND RAVINES.
PDHYD0B010*003*KY	NEMOPHILA APHYLLA	SMALL-FLOWER BABY-BLUE-EYES	G5	S2?	T		Y	1998-04-03	S	A	Henderson	EVANSVILLE SOUTH, IND.-KY	375327N	873252W	OHIO RIVER,T,D OF GREEN-WABASH	[redacted]	MESIC WOODS ON LOESS SOILS.
PDAST8P070*003*KY	SOLIDAGO BUCKLEYI	BUCKLEY'S GOLDENROD	G4	S2S3	S			1976-10-02	M	H	Caldwell	OLNEY, KY.	370829N	874751W	FLYNN FORK BASIN	[redacted]	WOODS AND BLUFFS.
***Bivalves																	
IMBIV43080*001*KY	TOXOLASMA TEXASIENSIS	TEXAS LILLIPUT	G4	S1	E		Y	1989-08-01	S	D	Hopkins, Caldwell	DAWSON SPRINGS, KY.	371045N	874350W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	LOW GRADIENT STREAMS OR SLOUGHS WITH SOFT BOTTOMS (I E., MUD OR SMALL SAND OR GRAVEL) AND ALSO RESERVOIRS (PARMALEE 1967, CUMMINGS AND MAYER 1992)
***Insects																	

Provided to T.H.E. Engineers, Michael Kacalwell

Rare Species
recorded within one mile of the I-69 Lyon, Caldwell, Hopkins, Webster Henderson Co. project.

Kentucky State Nature Preserves Commission
Data Request No. 02-143

EOCODE	SNAME	SCOMNAME	GRANK	SRANK	SPROT	USESA	IDENT	LASTOBS	PREC	EORANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
IICOL42010*001*KY	NICROPHORUS AMERICANUS	AMERICAN BURYING BEETLE	G1	SH	H	LE	Y	1921-05-15	G	H	Henderson	HENDERSON, KY.-IND.			CANOE CREEK BASIN;OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	CARRION AVAILABILITY IN A GIVEN AREA IS SUSPECTED TO BE MORE IMPORTANT THAN VEGETATIONAL STRUCTURES AND SOIL TYPES (RAITHEL 1991). HOWEVER, THESE INTERACT TO INFLUENCE THE POTENTIAL PREY BASE AVAILABLE FOR THE BEETLE.
***Amphibians																	
AAABC02030*024*KY	HYLA AVIVOCA	BIRD-VOICED TREEFROG	G5	S2S3	T		Y	2001-06-20	S	D	Hopkins	SAINT CHARLES, KY.	371040N	873543W	CANY CREEK BASIN	[redacted]	IN KENTUCKY, THE SPECIES APPEARS TO BE RESTRICTED TO FLOODPLAIN WETLANDS, ESPECIALLY THOSE DOMINATED BY BALD CYPRESS, WATER TUPELO, GREEN ASH, AND BUTTONBUSH.
AAABC02030*017*KY	HYLA AVIVOCA	BIRD-VOICED TREEFROG	G5	S2S3	T		Y	2001-06-20	S	C	Caldwell; Hopkins	DAWSON SPRINGS, KY.	371013N	874326W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	IN KENTUCKY, THE SPECIES APPEARS TO BE RESTRICTED TO FLOODPLAIN WETLANDS, ESPECIALLY THOSE DOMINATED BY BALD CYPRESS, WATER TUPELO, GREEN ASH, AND BUTTONBUSH.
AAABC02060*027*KY	HYLA CINEREA	GREEN TREEFROG	G5	S3	S		Y	1995-05-17	S	B	Henderson	EVANSVILLE SOUTH, IND.-KY.	375335N	873237W	OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	FLOODPLAIN WETLANDS, PARTICULARLY THOSE DOMINATED BY BUTTONBUSH AND HERBACEOUS EMERGENT VEGETATION.
***Reptiles																	
ARADB22023*068*KY	NERODIA ERYTHROGASTER NEGLECTA	COPPERBELLY WATER SNAKE	G5T2 T3	S3	S		Y	2000-05-02	S	C	Hopkins	DAWSON SPRINGS, KY	371056N	874206W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	FLOODPLAIN SLOUGHS, SWAMPS, HARDWOOD FOREST AND ADJACENT UPLANDS. SEEMS TO DO WELL IN KDFWR MOIST SOILS MANAGEMENT UNITS ON SLOUGHS WMA, HENDERSON CO. SEEMS TO AVOID WETLANDS IMPACTED BY ACID MINE DRAINAGE (FIDE H. BRYAN).

Provided to T.H.E. Engineers, Michael Kenowell

Rare Species
recorded within one mile of the I-69 Lyon, Caldwell, Hopkins, Webster Henderson Co. project.

Kentucky State Nature Preserves Commission
Data Request No. 02-143

EOCODE	SNAME	SCOMNAME	GRANK	SRANK	SPROT	USESA	IDENT	LASTOBS	PREC	EORANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
ARADB22023*043*KY	NERODIA ERYTHROGASTER NEGLECTA	COPPERBELLY WATER SNAKE	G5T2 T3	S3	S		Y	1986-	S	C	Webster	BEECH GROVE, KY	373356N	872842W	GREEN RIVER,M,D OF POND-PANTHER	[redacted]	FLOODPLAIN SLOUGHS, SWAMPS, HARDWOOD FOREST AND ADJACENT UPLANDS. SEEMS TO DO WELL IN KDFWR MOIST SOILS MANAGEMENT UNITS ON SLOUGHS WMA, HENDERSON CO. SEEMS TO AVOID WETLANDS IMPACTED BY ACID MINE DRAINAGE (FIDE H. BRYAN).
ARADB22023*063*KY	NERODIA ERYTHROGASTER NEGLECTA	COPPERBELLY WATER SNAKE	G5T2 T3	S3	S		Y	2000-04-28	S	C	Henderson	EVANSVILLE SOUTH, IND.-KY	375313N	873306W	OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	FLOODPLAIN SLOUGHS, SWAMPS, HARDWOOD FOREST AND ADJACENT UPLANDS. SEEMS TO DO WELL IN KDFWR MOIST SOILS MANAGEMENT UNITS ON SLOUGHS WMA, HENDERSON CO. SEEMS TO AVOID WETLANDS IMPACTED BY ACID MINE DRAINAGE (FIDE H. BRYAN).
ARADB22023*058*KY	NERODIA ERYTHROGASTER NEGLECTA	COPPERBELLY WATER SNAKE	G5T2 T3	S3	S		Y	1998-04-23	M	C	Caldwell, Hopkins	DAWSON SPRINGS, KY	371013N	874326W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	FLOODPLAIN SLOUGHS, SWAMPS, HARDWOOD FOREST AND ADJACENT UPLANDS. SEEMS TO DO WELL IN KDFWR MOIST SOILS MANAGEMENT UNITS ON SLOUGHS WMA, HENDERSON CO. SEEMS TO AVOID WETLANDS IMPACTED BY ACID MINE DRAINAGE (FIDE H. BRYAN).
ARADB36123*023*KY	THAMNOPHIS SAURITUS SAURITUS	EASTERN RIBBON SNAKE	G5T5	S3	S		Y	1998-05-04	S	C	Caldwell, Hopkins	DAWSON SPRINGS, KY	371012N	874326W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	VARIETY OF SEMI-OPEN HABITATS, GENERALLY IN WEEDY OR BRUSHY GROWTH ALONG THE MARGINS OF SLOUGHS, MARSHES AND OTHER AQUATIC HABITATS.
***Birds																	
ABNGA04040*010*KY	ARDEA ALBA	GREAT EGRET	G5	S1B	E		Y	2000-05-09	S	C	Henderson	EVANSVILLE SOUTH, IND.-KY	375335N	873237W	OHIO RIVER,T,D OF GREEN-WABASH	[redacted]	MARSHES, SWAMPY WOODS, TIDAL ESTUARIES, LAGOONS, MANGROVES, ALONG STREAM, LAKES, AND PONDS

Provided to T H E Engineers, Michael Kenawell

Rare Species
recorded within one mile of the I-69 Lyon, Caldwell, Hopkins, Webster Henderson Co. project

Kentucky State Nature Preserves Commission
Data Request No. 02-143

EOCODE	SNAME	SCOMNAME	GRANK	SRANK	SPROT	USESA	IDENT	LASTOBS	PREC	EORANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
ABNGA04010*035*KY	ARDEA HERODIAS	GREAT BLUE HERON	G5	S3B,S4N	S		Y	1999-06-05	S	C	Caldwell	DAWSON SPRINGS, KY	371013N	874326W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	FRESHWATER AND BRACKISH MARSHES, ALONG LAKES, RIVERS, BAYS, LAGOONS, OCEAN BEACHES, MANGROVES, FIELDS, AND MEADOWS.
ABNGA04010*053*KY	ARDEA HERODIAS	GREAT BLUE HERON	G5	S3B,S4N	S		Y	1999-05-26	S	C	Henderson	EVANSVILLE SOUTH, IND.-KY	375335N	873237W	OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	FRESHWATER AND BRACKISH MARSHES, ALONG LAKES, RIVERS, BAYS, LAGOONS, OCEAN BEACHES, MANGROVES, FIELDS, AND MEADOWS.
ABPAV10080*012*KY	CORVUS OSSIFRAGUS	FISH CROW	G5	S3B	S		Y	1988-06-16	O	E	Henderson	EVANSVILLE SOUTH, IND.-KY			OHIO RIVER FROM GREEN RIVER TO WABASH RIVER	[redacted]	BEACHES, BAYS, LAGOONS, INLETS, SWAMPS, NEAR MARSHES, AND, LESS FREQUENTLY, DECIDUOUS OR CONIFEROUS WOODLAND, IN INLAND SITUATIONS PRIMARILY IN BALDCYPRESS SWAMPS AND ALONG MAJOR WATERCOURSES. ALSO GARBAGE DUMPS.
***Mammals																	
AMABA01010*057*KY	SOREX CINEREUS	MASKED SHREW	G5	S3	S		Y	1978-11-28	M	H	Henderson	EVANSVILLE SOUTH, IND.-KY	375335N	873321W	OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	MOIST FORESTS AND MEADOWS, RICH WOODS.
***Terrestrial Communities																	
CTFOR00110*002*KY	ACIDIC MESOPHYTIC FOREST			S5	N		Y	1980-10-10	S	H	Caldwell	OLNEY, KY	370850N	874630W	FLYNN FORK BASIN	[redacted]	

21 Records Processed

Provided to T H E Engineers Michael Kennedy

JAMES E. BICKFORD
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

February 18, 2002

Mr. Michael E. Kenawell
THE Engineers Inc.
131 Prosperous Place, Suite 15
Lexington, Kentucky 40509

RE: Interstate 69 Environmental Scoping Study
Lyon, Caldwell, Hopkins, Webster and Henderson counties

Dear Mr. Kenawell:

The Water Quality Branch has reviewed your request for information. There are no Wild Rivers, Outstanding Resource Waters or Exceptional Waters in the project area. The National Wetland Inventory maps indicate some wetlands within the project area. These areas may need to be investigated.

If you have any questions or need further information, please contact me by phone (502/564-3410 x433) or e-mail (Mike.Mills@mail.state.ky.us).

Sincerely,

Michael R. Mills

Michael R. Mills, Supervisor
Ecological Support Section
Water Quality Branch

C: file

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF FISH AND WILDLIFE RESOURCES
C. THOMAS BENNETT, COMMISSIONER

February 19, 2002

Michael E. Kenawell
Biologist
T.H. E. Engineers, Inc.
131 Prosperous Place
Lexington, KY 40509

Re: Threatened/Endangered species review; Environmental Scoping Study, Interstate 69, Lyon, Caldwell, Hopkins, Webster, and Henderson Counties, Kentucky

Dear Mr. Kenawell:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for the above-referenced information. The Kentucky Fish and Wildlife Information System indicates that no federally threatened or endangered (T&E) fish and wildlife are known to occur in the Evansville, Henderson, Robards, Sebree, Beech Grove, Hanson, Nortonville, Saint Charles, Dawson Springs, Olney, Princeton West, and Eddyville 7.5 minute USGS quadrangle(s). The bald eagle **is known to occur** in the Madisonville 7.5 minute USGS quadrangle (please see attached sheets). Please be aware that our database system is a dynamic one that only represents our current knowledge of the various species distributions.

The proposed area for the project may include wetland areas. KDFWR recommends that you look at the appropriate US Department of the Interior National Wetlands Inventory Map to determine where the proposed project may impact these wetlands. The appropriate US Army Corps of Engineers office and the Kentucky Division of Water should be contacted before any construction takes place in jurisdictional wetlands. Additionally, KDFWR will recommend at least 2:1 mitigation for any permanent loss or degradation of wetland acreage. Any planning should include measures designed to reduce or eliminate impacts to these areas. If impacts cannot be avoided, mitigation should be properly designed and proposed to offset these losses.

I hope this information will be helpful to you. Should you require additional information, please contact me at (502) 564-7109, ext. 367.

Sincerely,

Marla T. Barbour
Fisheries Biologist III

cc: Environmental Section File

Federally Threatened & Endangered Species Reported from MADISONVILLE W. Quadrangle

Common Name	Scientific Name	Status Code	Reference
bald eagle	Haliaeetus leucocephalus (Linnaeus, 1766)	223,101,121,601,102	Reference

KFWIS HOME

Federally Threatened & Endangered Species Reported from MADISONVILLE E. Quadrangle

Common Name	Scientific Name	Status Code	Reference
bald eagle	Haliaeetus leucocephalus (Linnaeus, 1766)	223,101,121,601,102	Reference

KFWIS HOME

United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

March 20, 2002

Michael E. Kenawell
T.H.E. Engineers, Inc.
131 Prosperous Place, Suite 15
Lexington, Kentucky 40509

Dear Mr. Kenawell:

Thank you for your letter and enclosures of February 15, 2002, concerning the proposed reconstruction of portions of the Pennyrile Parkway and Western Kentucky Parkway in Henderson, Webster, Hopkins, Caldwell, and Lyon Counties, Kentucky. The reconstructed stretch of highway would be renamed Interstate 69. Fish and Wildlife Service personnel have reviewed the information submitted and offer the following comments.

According to our records, the following threatened and endangered species are known to occur in the affected counties, and may occur in the project impact area:

Indiana bat - Myotis sodalis
Gray bat - Myotis grisescens
American burying beetle - Nicrophorus americanus
Bald eagle - Haliaeetus leucocephalus
Price's potato-bean - Apios priceana

You should assess potential impacts and determine if the proposed project may affect these species. A finding of "may affect" could require initiation of formal consultation. We would appreciate a copy of any survey report on these species done for this project, as well as your determination of effect.

The copperbelly water snake (Nerodia erythrogaster neglecta) was proposed for listing as threatened under the Endangered Species Act. However, listing of the copperbelly water snake has been at least temporarily avoided in Kentucky through the implementation of a Copperbelly Water Snake Conservation Plan. The Plan involves maintenance of existing wetlands and adjacent wooded

floodplains and uplands. Further, the plan calls for restoration of wetlands and wooded corridors that link these important habitats. With cooperation between various development and natural resource interests, future listing of the copperbelly water snake as threatened will hopefully be precluded. Even though the copperbelly water snake is no longer proposed for federal listing, it is known to occur in the vicinity of the proposed project and we would appreciate your cooperation in implementing conservation measures that benefit this rare snake.

Thank you for the opportunity to comment on this proposal. Please contact Timothy Merritt (telephone 931/528-6481, ext. 211) of my staff if you have questions regarding the information provided in this letter.

Sincerely,

for Lee A. Barclay, Ph.D.
Field Supervisor

JAMES E. BICKFORD
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

April 18, 2002

Michael E. Kenawell
Biologist
T.H.E. Engineers, Inc.
131 Prosperous Place, Suite 15
Lexington, KY 40509

Dear Mr. Kenawell:

Subject: Lyon, Caldwell, Hopkins, Webster, and Henderson counties, KY
Interstate 69
Item Number: N/A
Environmental Scoping Study

The above study area is located on a variety of hydrogeologic settings. The northern portion, within the Western Coalfield Provence crosses alluvial terrain and sandstone & shale terrain. Karst hydrology is found in the southwestern portion of the project. In the vicinity of Princeton, I have circled sinkholes and sinking streams and illustrated the minor amount of dye-trace data known for the area. A few water wells are located in this karst area. A thorough survey for karst springs and domestic water wells along the project should be made.

Sincerely,

Joseph A. Ray, P.G.
Groundwater Hydrologist III
Groundwater Branch
Division of Water

Michael,

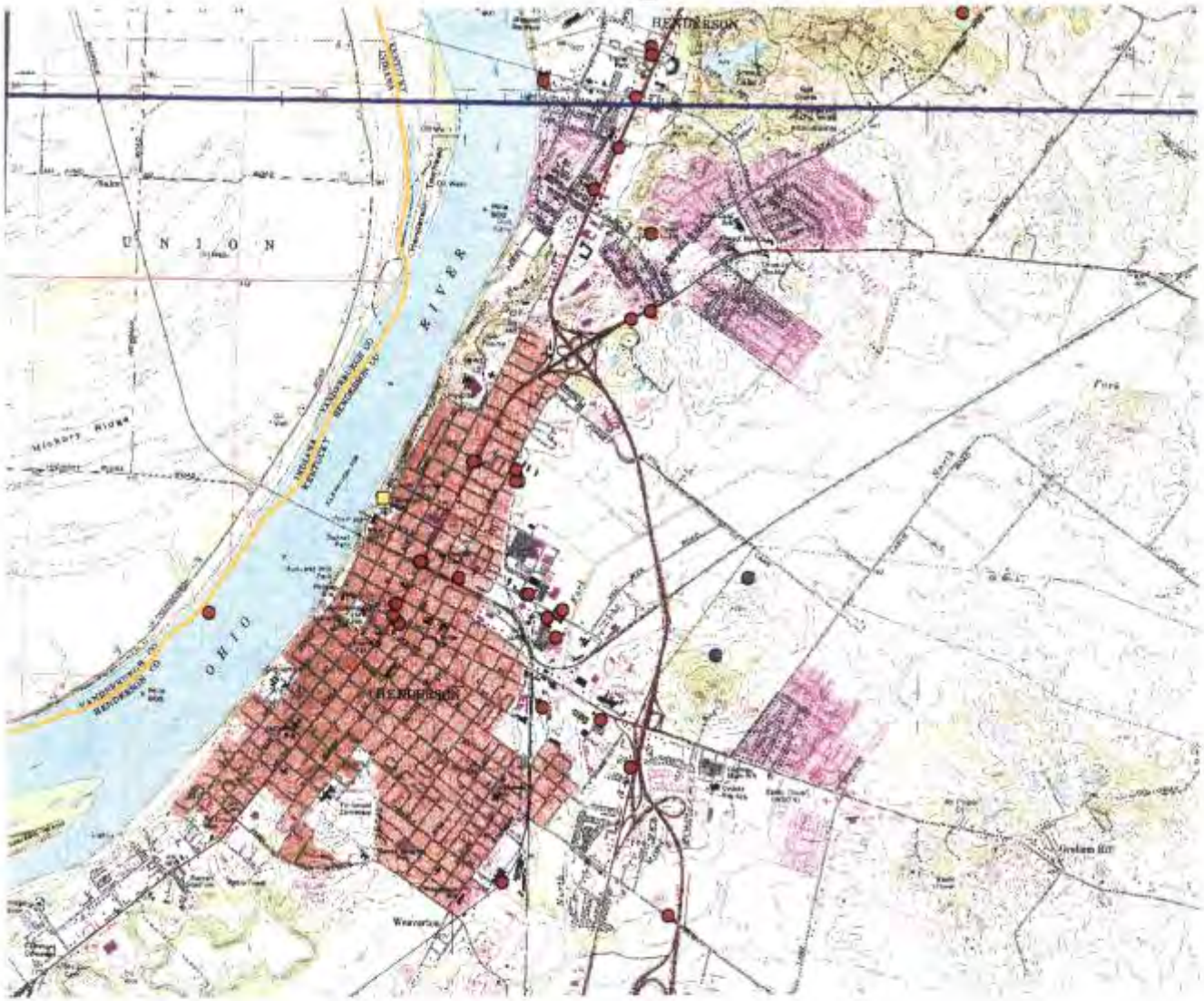
Sorry it took so long to get the information back to you. I have sent a legend that shows the different wells, springs, and public water supplies. The public water supplies are not differentiated as to ground or surface water but you can tell that if there is not a surface water body around the site it is probably a groundwater system.

If you need any additional information just let me know.

Thanks

Bruce McKinney
Wellhead Protection Program

Legend



- domestic well
- monitoring well
- Public Water Supply
- Spring

2 0 2 4 Miles

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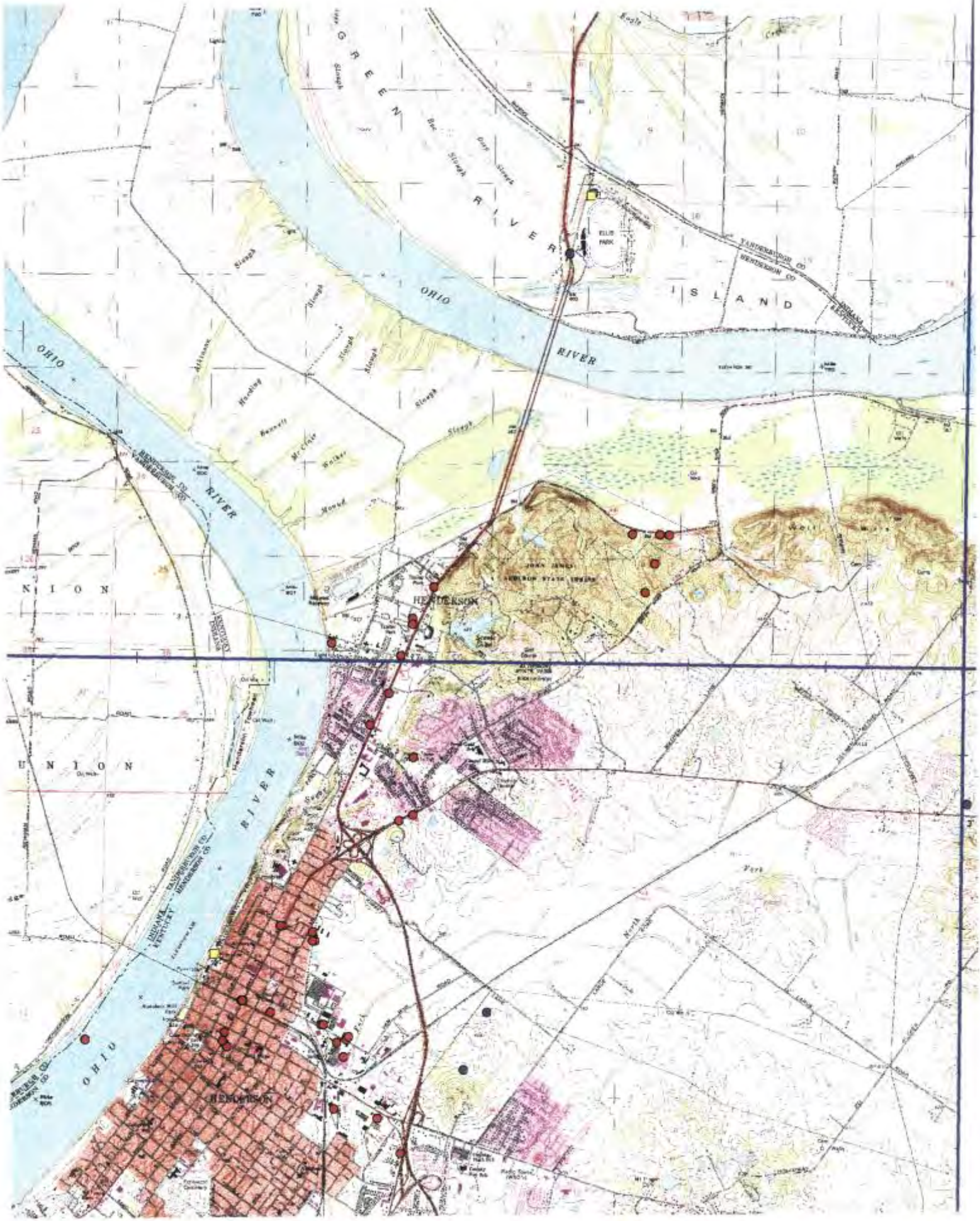
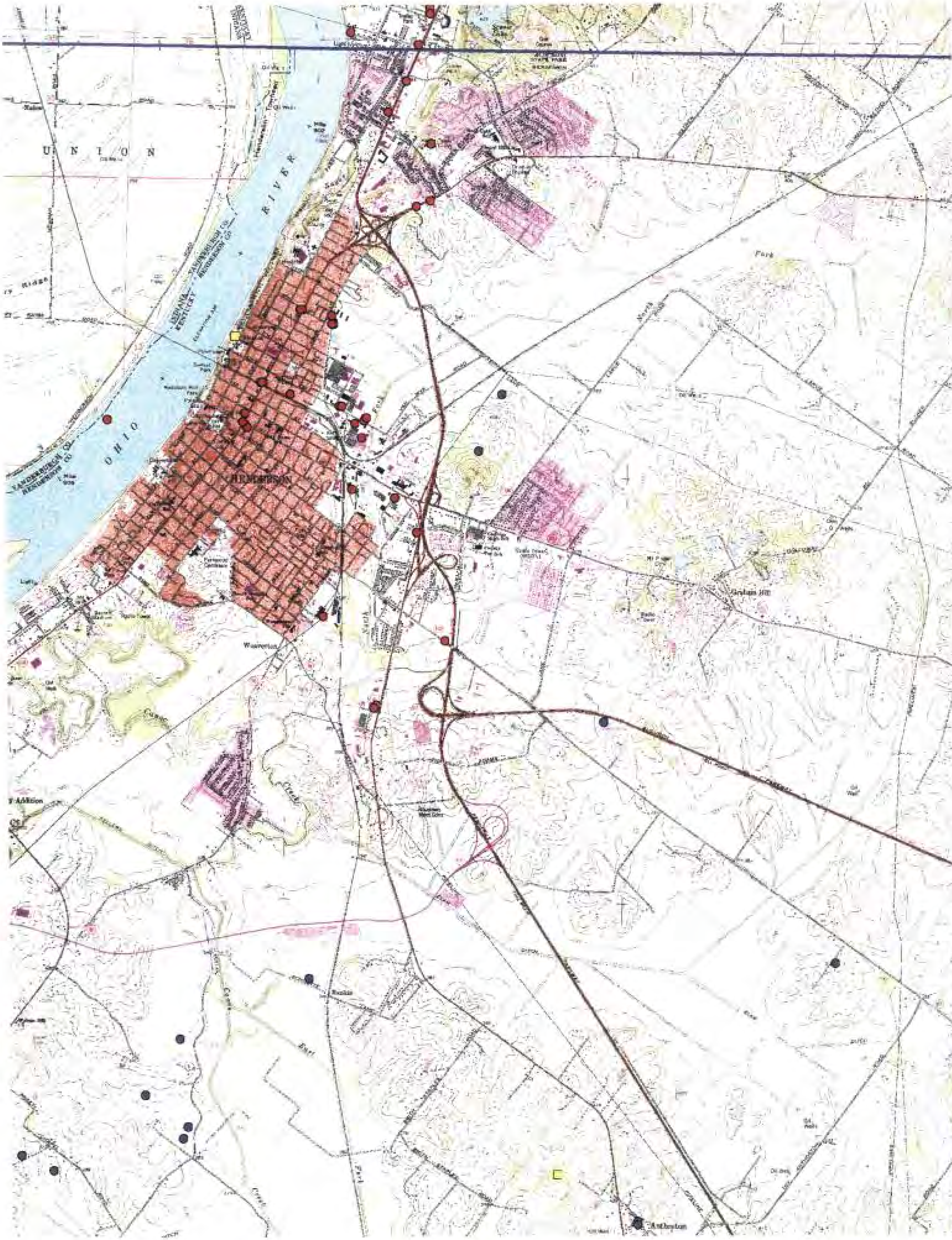

GREEN RIVER
OHIO RIVER
OHIO RIVER
OHIO RIVER
OHIO RIVER
ISLAND
UNION
UNION
HENDERSON
HENDERSON
ELLIS PARK
JOHN JAMES AUDUBON STATE MEMORIAL



UNION
OHIO
RIVER
HENDERSON
Graham Hill
Weaverton
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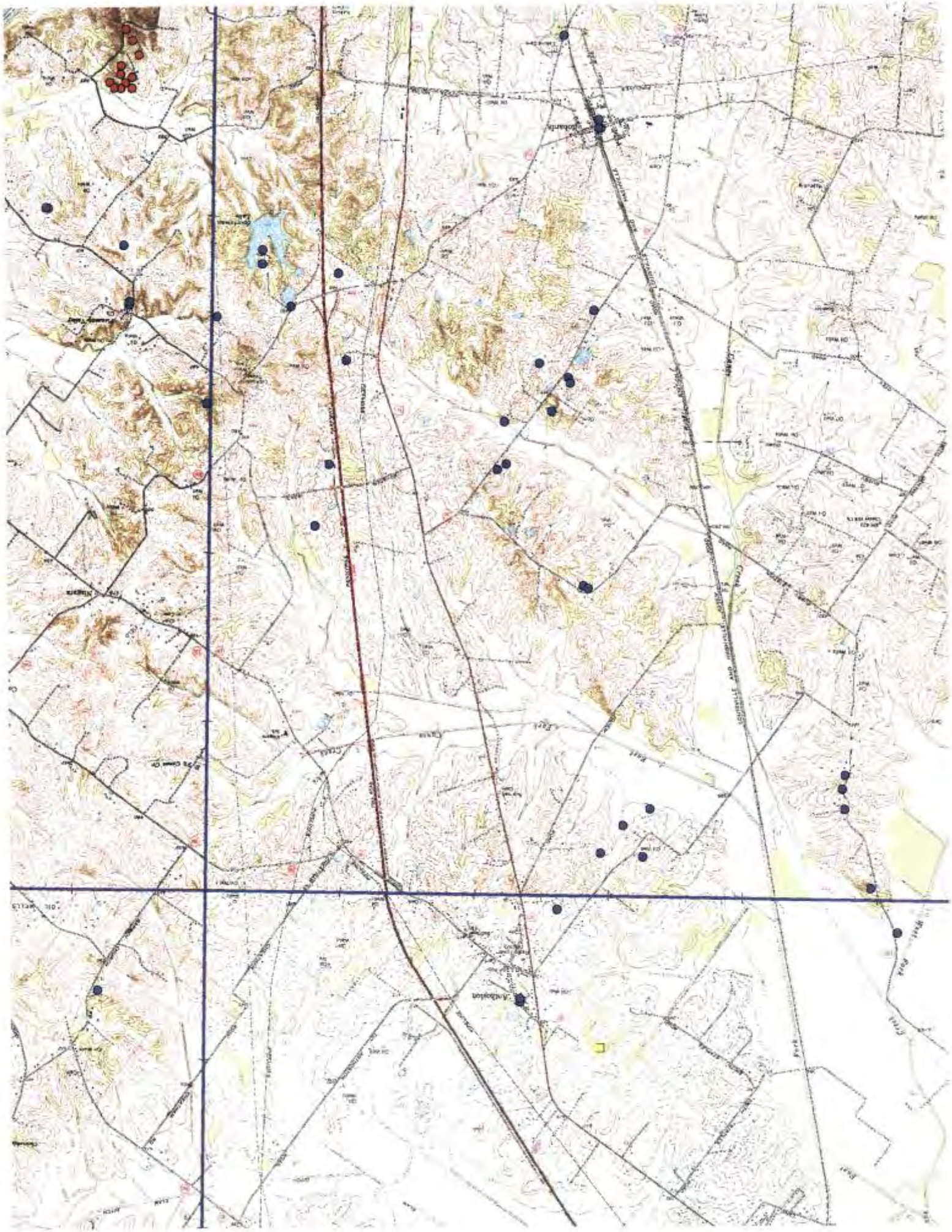
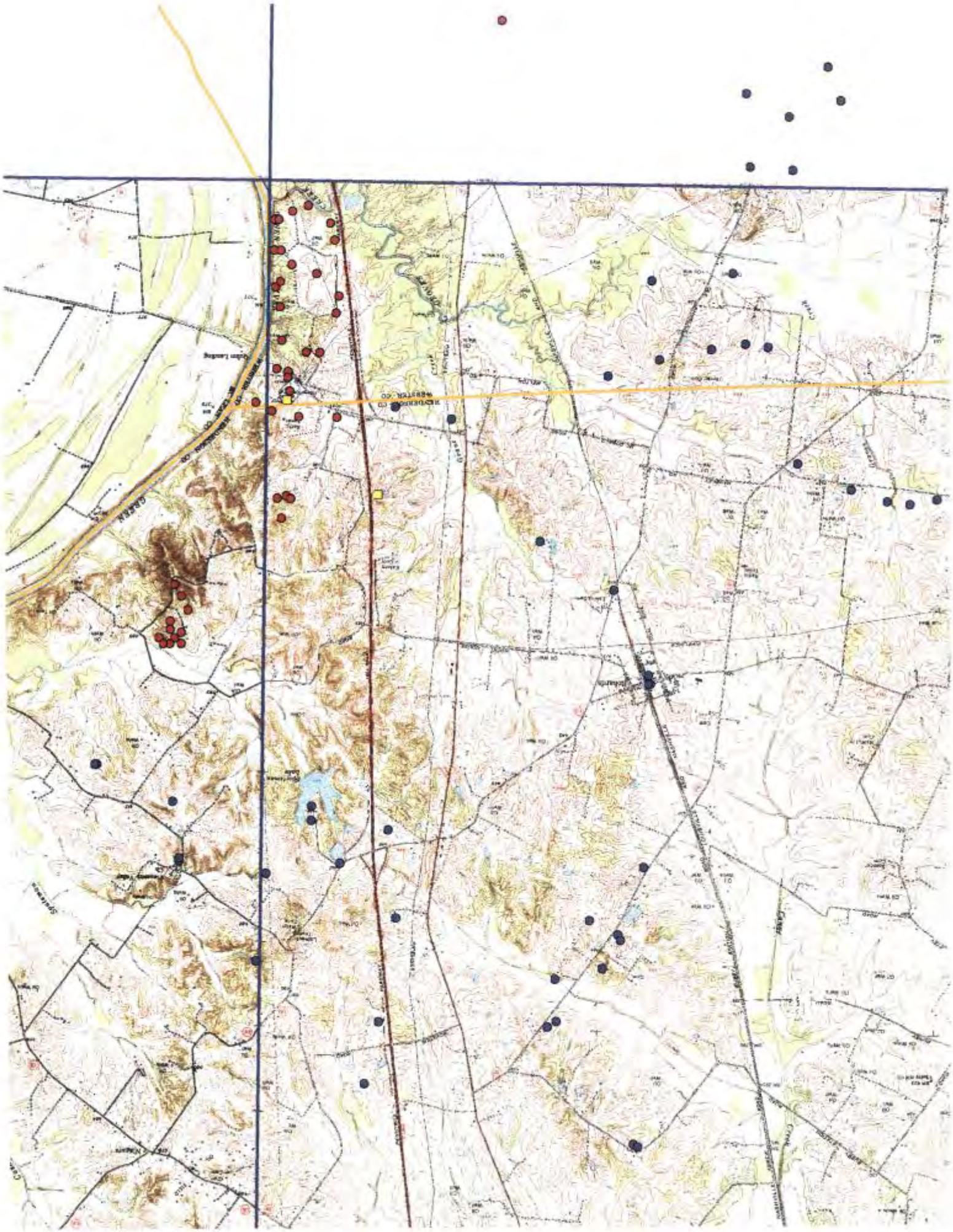
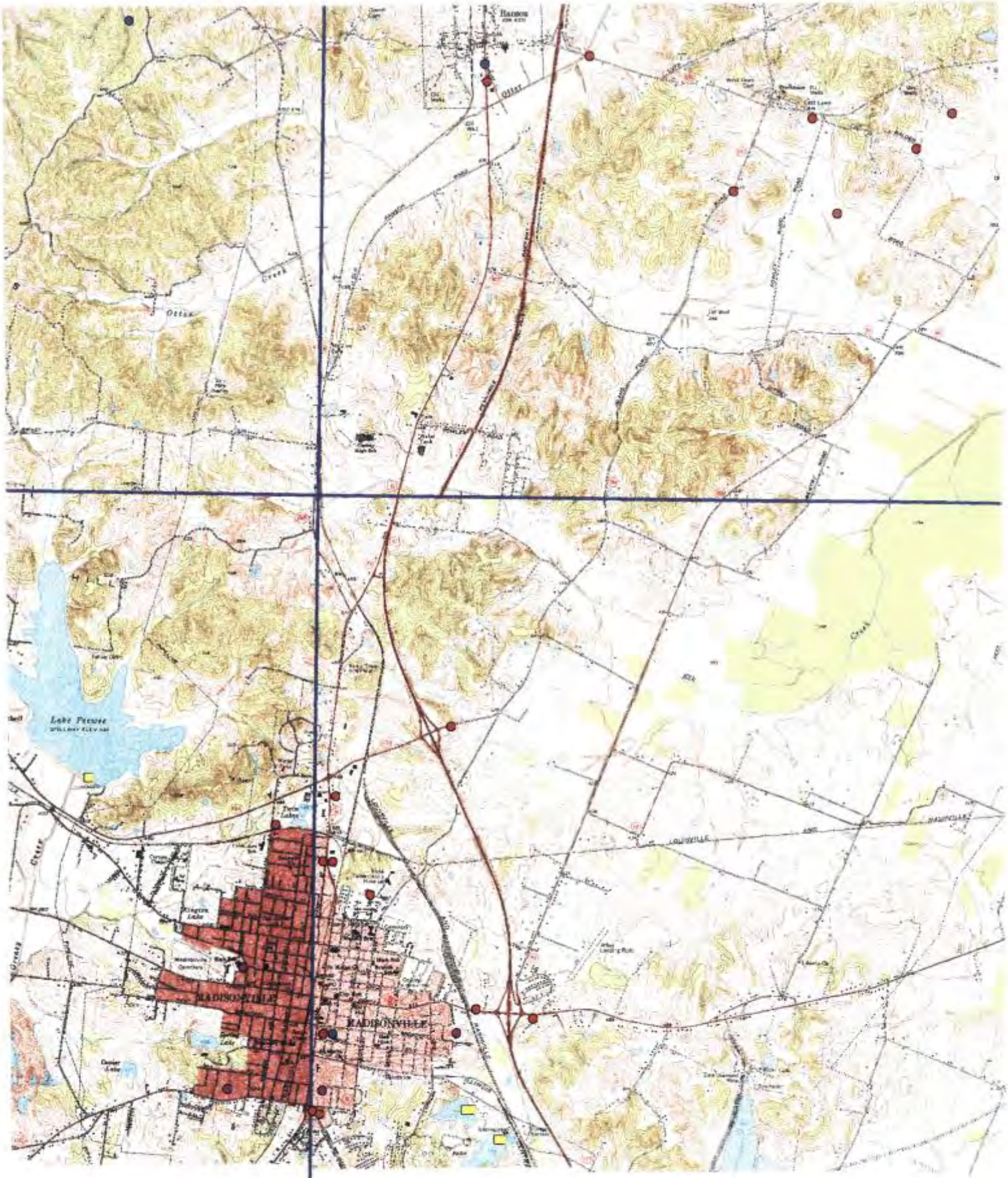
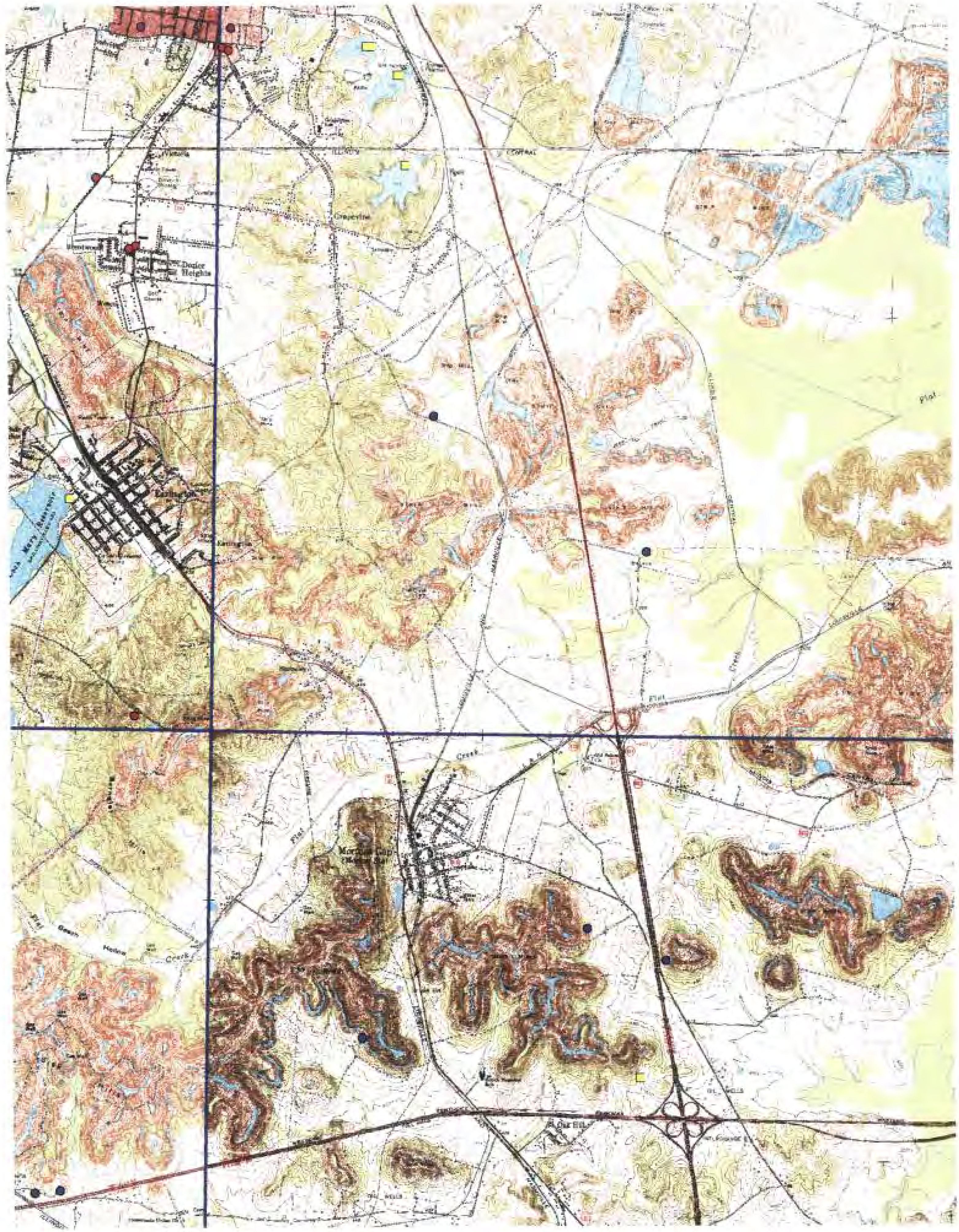
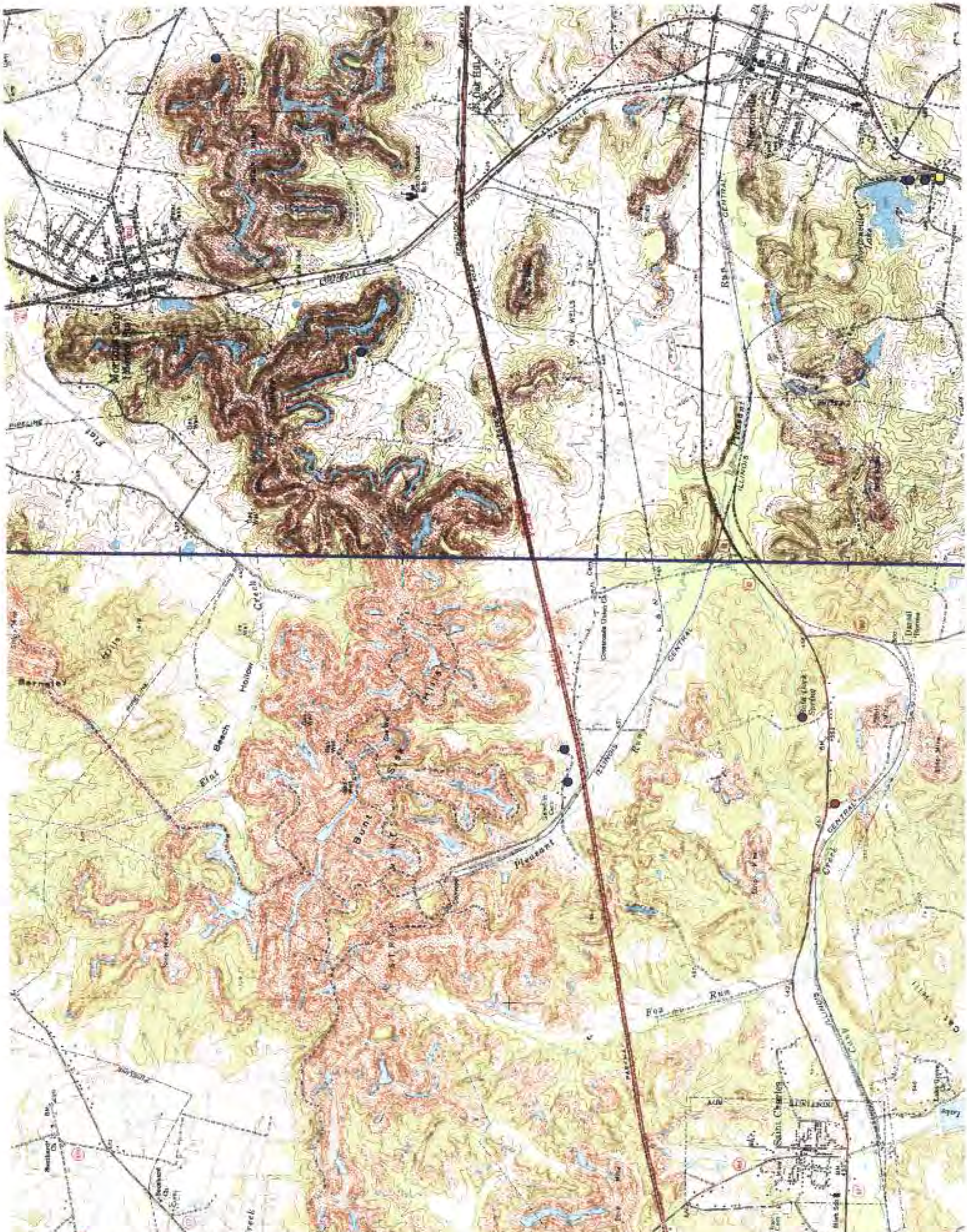





Slaughtersville
WEBSTER CO
HOPKINS CO
East Fork
Deer
Creek
Hanson


Otter
Otter
Lake Pewee
MADISONVILLE
MADISONVILLE


Dozier Heights
Flat
Creek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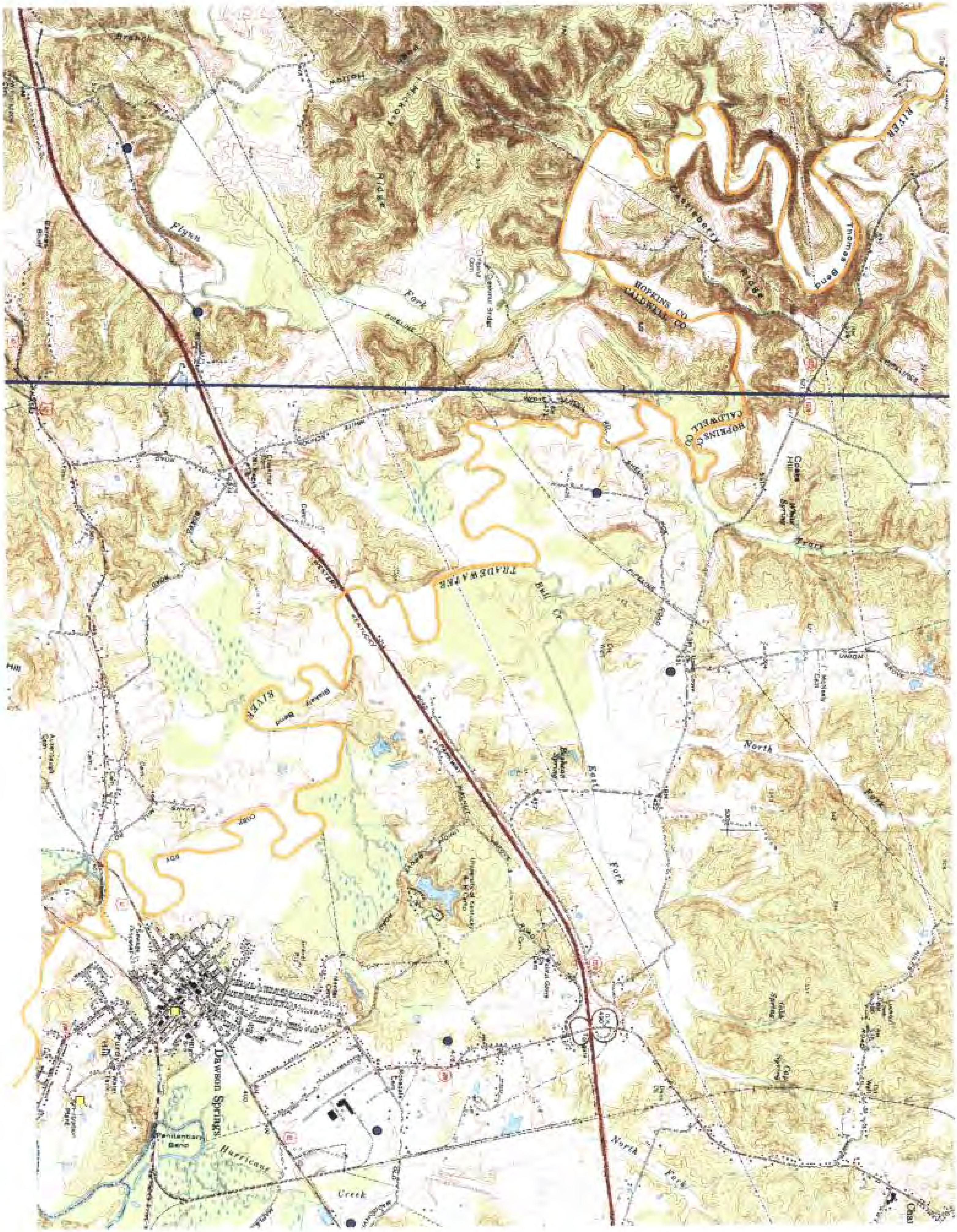
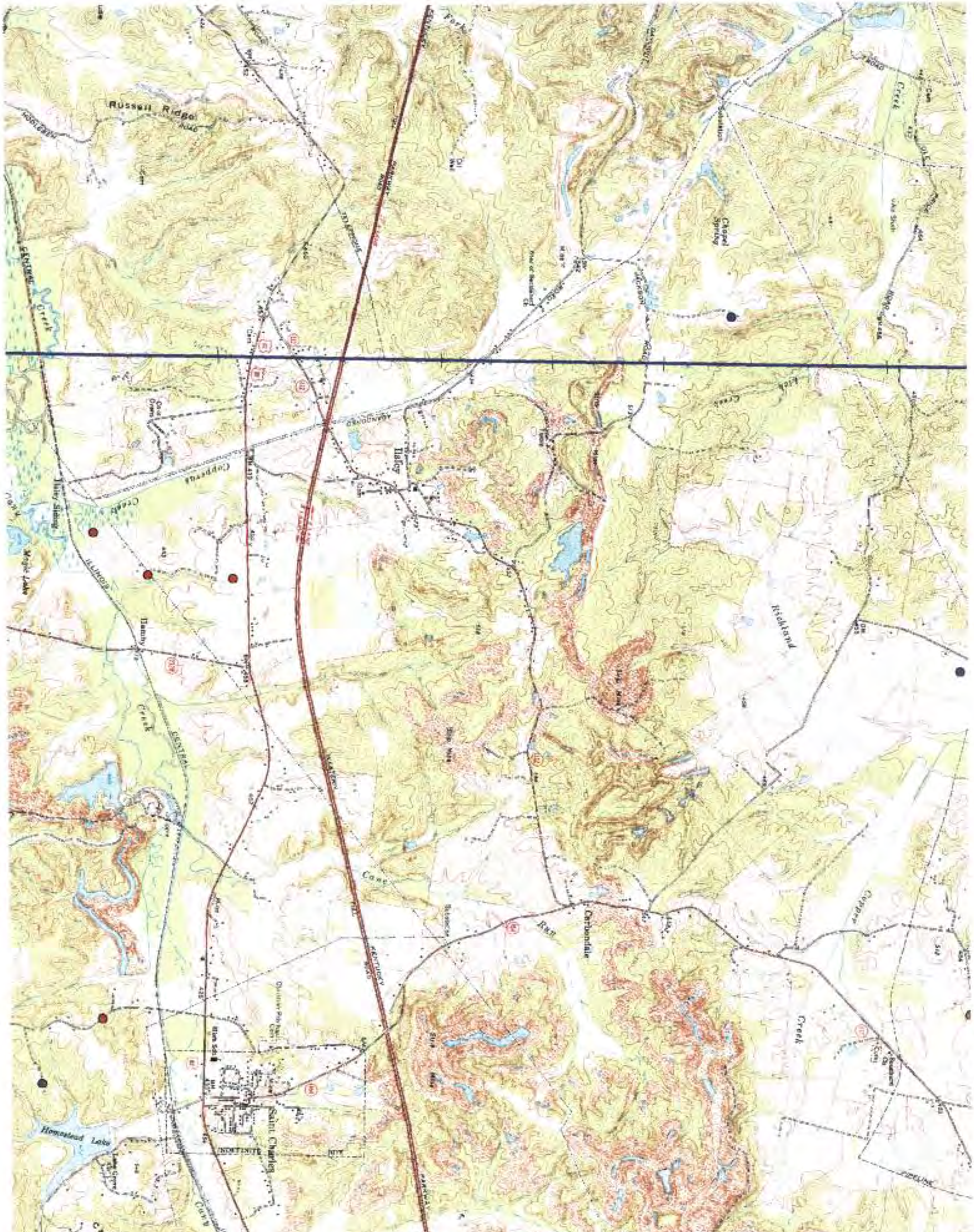
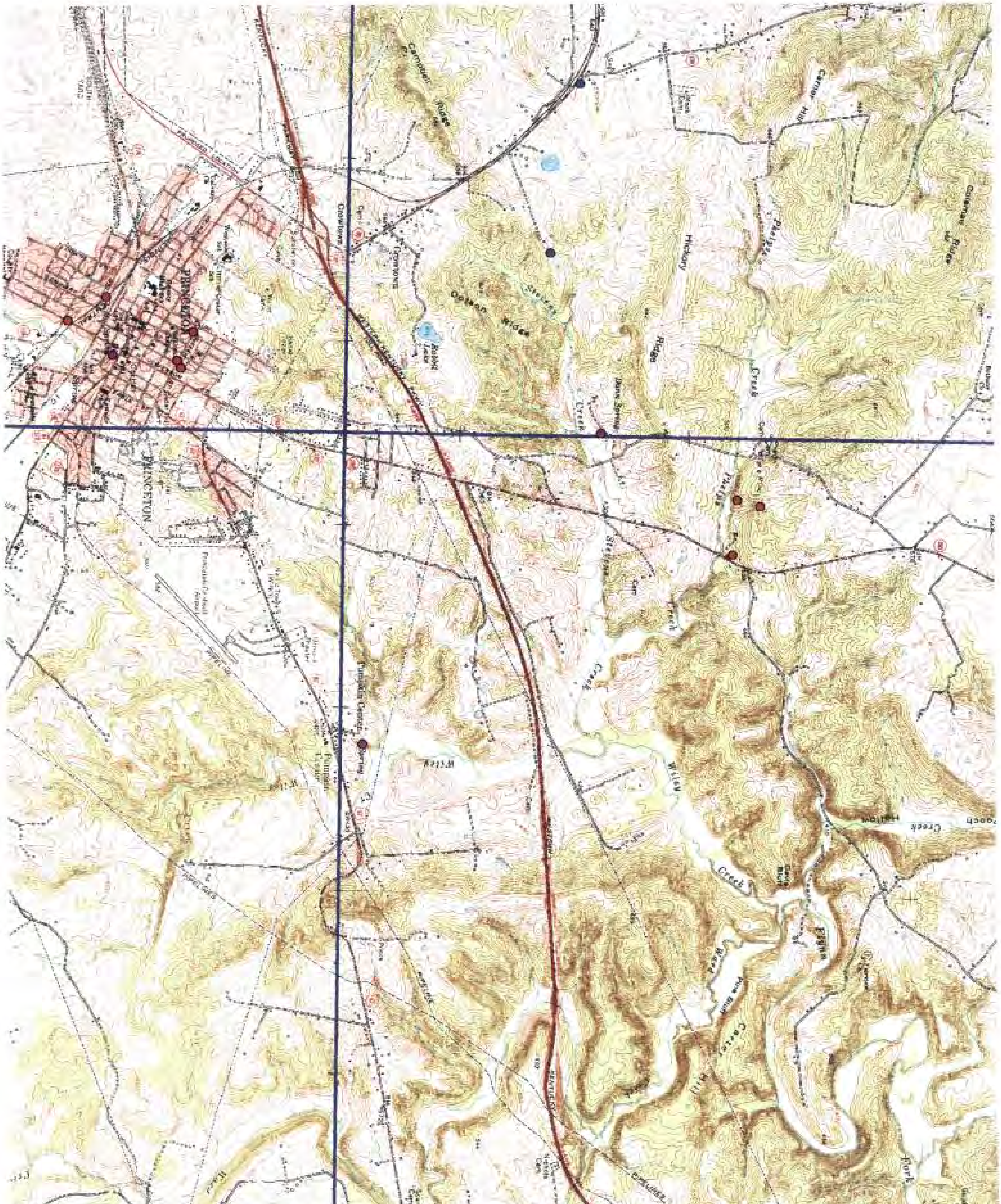
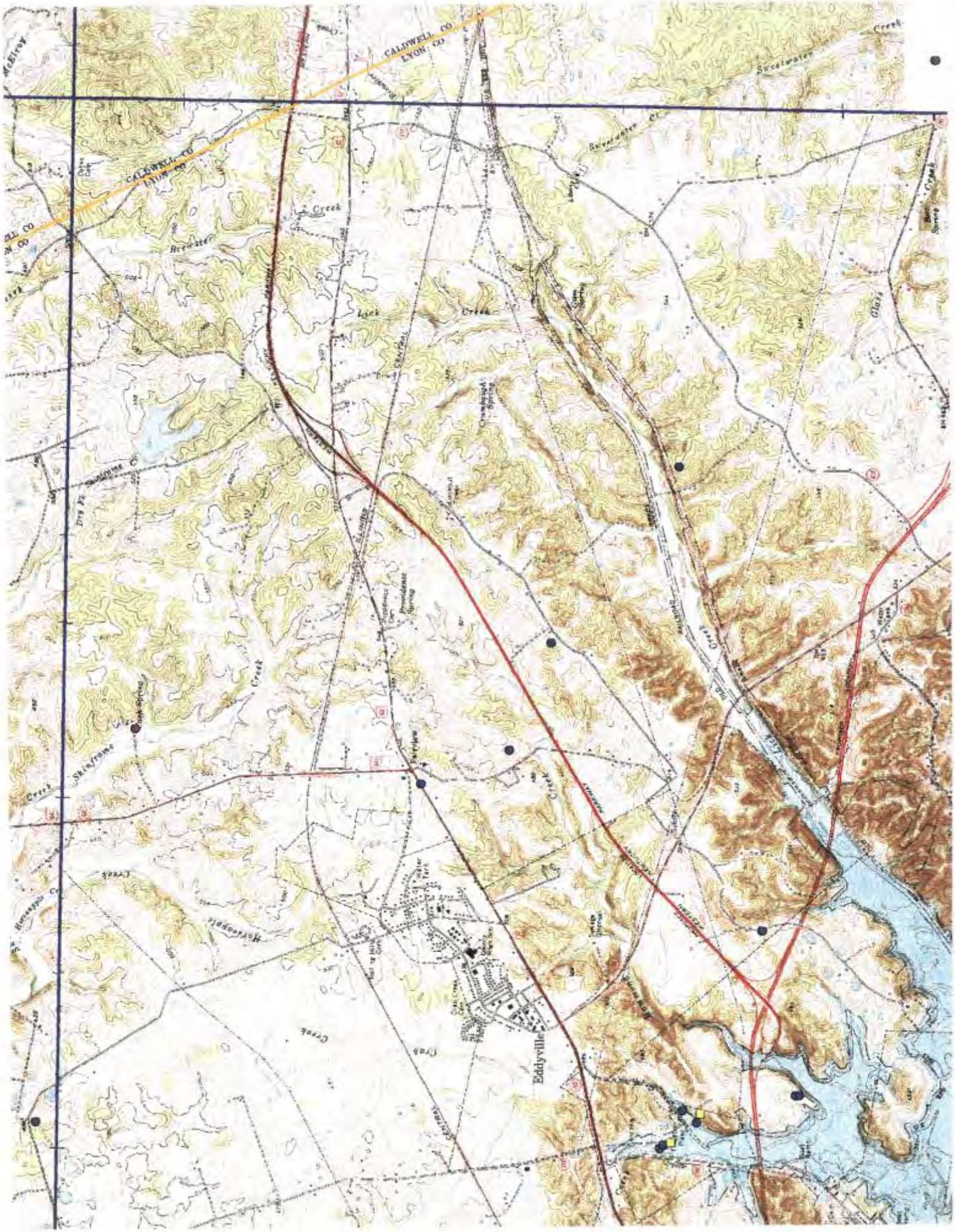
Fox Run
Pleasant
Flat Beech Hollow Creek


Flynn
Fork
Hickory
Ridge
HOPKINS CO
CALDWELL CO
Thomas Bend
RIVER
TRADEWATER
RIVER
Coates Hill
North
Fork
East
Fork
Dawson Springs
Penitentiary Bend
Hurricane
Creek
North
Fork


Russell Ridge
Daley
Chapel Spring
Richland
Carbondale
Saint Charles
Homestead Lake
Creek


PRINCETON
Pumpkin Center
Hickory Ridge


CALDWELL CO
LYON CO
Eddyville

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
1105 National Mine Drive
Madisonville, Ky. 42431
270-821-4464 - Telephone
270-821-6942 - Fax

March 28, 2002

Michael E. Kenawell
131 Prosperous Place, Suite 15
Lexington, Ky. 40509

Dear Mr. Kenawell,

Per your request, I have enclosed a soil survey for Hopkins County, as well as listings of hydric and inclusion soils, highly erodible soils and prime farmland soils for Hopkins County. If you need any further assistance, please feel free to contact this office.

Sincerely,

Tommy L. Ratliff FOR

Robert N. Bush Jr.
District Conservationist

UNITED STATES
DEPARTMENT OF
AGRICULTURE

NATURAL RESOURCES
CONSERVATION
SERVICE

706-B N. GREEN STREET
HENDERSON, KY 42420
(270)827-5157

April 9, 2002

Mr. Michael Kenawell, Biologist
T.H.E. T-E Engineers, Inc.
131 Prosperous Place
Suite 15
Lexington, KY 40509

Mr. Kenawell.

Enclosed is the information you requested on the soils in Henderson County. Soils sheets 6, 15, 24, 32, 40, 41, 49, 56 and 61 will cover the area in question. The parkways do not show up on these maps.

If you have any questions as to the abbreviations on the list, please let me know.

Sincerely,

Rodney Bozarth
District Conservationist

Enclosure

United States Department of Agriculture

NRCS Natural Resources Conservation Service

Box 158
990 US 41-A South
Dixon, KY 42409
270-639-5763 fax-270-639-9177

March 7, 2002

Michael E. Kenawell – Biologist
T.H.E Engineering, Inc.
131 Prosperous Place
Suite 15
Lexington, KY 40509

Subject: Soil Information for Interstate 69 in Webster County

I am responding to your letter dated February 15, 2002 requesting soil information in which your engineering firm is conducting an environmental scoping study on the reconstructed stretch of Pennyrile and Western Kentucky Parkways that will be named Interstate 69 that is located in Webster County.

I have enclosed a copy of the Webster-Union County Soil Survey and the individual soil survey sheets number 25, 33, 34, 43 and 8 of the concern area in Webster County. I have also enclosed a list of Prime Farmland soils, Hydric soils, HEL-Highly Erodible Land soils, and NHEL (Non-Highly Erodible Land Soils).

If you need further information please feel free to contact me at the above address.

Sincerely,

Michael J. Andrews
District Conservationist

United States
Department of
Agriculture

Natural Resources
Conservation
Service

503 Parkway Drive
Princeton, KY 42445
Phone: (270) 365-5533

February 20, 2002

Michael E. Kenawell
131 Prosperous Place
Suite 15
Lexington, KY 40509

Dear Mr. Kenawell:

This letter is in response to your request for soils information relative to the construction of I-69. Enclosed are a soil survey for Caldwell County along with lists for prime farmland soils, hydric soils, and highly erodible soils.

If further information is needed, please give us a call at (270) 365-5533 Ext. 3.

Sincerely,

George Ballard
District Conservationist

USDA NRCS
Natural Resources Conservation Service

Baccus Building
Commerce St., P.O. BOX 160
Eddyville, KY 42038
(270)388-7653

February 21, 2002

T.H.E. Engineers, Inc.
131 Prosperous Place, Suite 15
Lexington, KY 40509

Dear Mr. Kenawell:

In response to you letter concerning proposed I-69 I have enclosed a copy of the Lyon County soil survey, the Lyon hydric soils list including hydric inclusions, the Lyon highly erodible soils list and a prime farmland list.

If you need more information, please advise.

Sincerely,

Sue Stone

SUE STONE
Resource Conservationist

APPENDIX B
SOIL SURVEY SUMMARY

Soil Survey Summary by County

Henderson County	
Soil Unit	**Description**
Calloway silt loam (0-2%)	-somewhat poorly drained, strongly acidic soil found on flat ridgetops in the loess uplands and on terraces
Collins silt loam (0-3%)	-moderately well drained silty soil on bottom lands along primary drains
Dekoven silt loam	-dark-colored, very poorly drained soil that formed in sediment derived from alkaline loess is found on wide bottoms
Dekoven and Wakeland silt loams	-very poorly drained, wet soils found on broad, flat bottoms
Falaya silt loam (0-4%)	-poorly drained soil formed in sediment derived from acid loess
Grenada silt loam (0-2%)	-moderately well drained soil with a fragipan that developed in loess that are found on broad uplands
Grenada silt loam (2-6%)	-moderately well drained soil with a fragipan found on broad uplands
Grenada silt loam (2-6%), eroded	-moderately well drained soil with a fragipan with some original surface layer washed away
Grenada silt loam (6-12%), severely eroded	-moderately well drained soil with a fragipan found on sloping areas in central part of county, much of surface layer removed
Gullied land (6-20%)	-miscellaneous land type consisting of small severely eroded areas of the uplands
Henshaw silt loam (0-4%)	-somewhat poorly drained soil on wide, level terraces near major streams
Loring silt loam (2-6%)	-well drained/moderately well drained soil with a fragipan found on broad ridgetops and side slopes of loess uplands
Loring silt loam (2-6%), eroded	-well drained/moderately well drained soil with a fragipan found on broad ridgetops and side slopes of loess uplands, partially eroded surface layer
Loring silt loam (6-12%), eroded	-well drained/moderately well drained soil with a fragipan found on broad ridgetops and side slopes of loess uplands, partially eroded surface layer
Loring silt loam (12-20%), eroded	-well drained/moderately well drained, strongly sloping soil with a fragipan found on loess hills, partially eroded surface layer

Loring silty clay loam (6-12%), severely eroded	-well drained/moderately well drained soil with a fragipan found on long, narrow ridgetops of loess uplands, most of surface layer has been removed by erosion
Loring silty clay loam (12-20%), severely eroded	- well drained/moderately well drained soil with a fragipan found on long, narrow ridgetops of loess uplands, most of surface layer has been removed by erosion
Markland silt loam (2-6%)	-well drained/moderately well drained soil found along the edge of the floodplain of Green and Ohio River, infrequent flooding
Memphis silt loam (2-6%)	-deep, well drained, silty soil of the loess uplands
Memphis silt loam (2-6%), eroded	-deep, well drained, silty soil of the loess uplands, partially eroded surface layer
Memphis silt loam (6-12%), eroded	-deep, well drained, silty soil of the loess uplands, found on ridgetops and bluffs, partially eroded surface layer
Memphis silty clay loam (6-12%), severely eroded	-deep, well drained, silty soil of the loess uplands, most of surface layer is eroded away
Sharkey silty clay (0-1%)	-very poorly drained soils formed by fine-textured sediment deposited by slack water of Ohio R. tributaries, subject to flooding, found along level bottoms near Canoe Creek
Sharkey silty clay loam, overwash	-very poorly drained, wet soils found along broad, level areas along tributaries of the Ohio River
Uniontown silt loam (2-6%)	-deep, gently sloping, well drained to moderately well drained soil on terraces along the flood plain of major streams
Uniontown silt loam (2-6%), eroded	-deep, gently sloping, well drained to moderately well drained soil on terraces along the flood plain of major streams, partially eroded surface layer
Wakeland silt loam (0-3%)	-somewhat poorly drained soils derived from natural loess found on wide floodplains
Waverly silt loam	-poorly drained soil formed of loess sediment found on bottom lands
Wellston silt loam (12-20%), eroded	-sloping to strongly sloping, well drained acidic soils found on sandstone and shale uplands, partially eroded surface layer
Wellston silty clay loam (12-20%), severely eroded	-sloping to strongly sloping, well drained acidic soils found on sandstone and shale uplands, most of the surface layer is eroded away

Zanesville silt loam (6-12%), severely eroded	-well drained and moderately well drained soil found on uplands, has a fragipan, most of the surface soil eroded away
Zanesville silt loam (12-20%), eroded	-well drained and moderately well drained soil found on uplands, has a fragipan, partially eroded surface layer
Zanesville silt loam (12-20%), severely eroded	-well drained and moderately well drained soil found on uplands, has a fragipan, most of the surface layer is eroded away

Webster County	
Soil Unit	**Description**
Belknap silt loam, (0-2%)	-deep, somewhat poorly drained, nearly level soil is on floodplains along small streams, subject to occasional flooding
Calloway silt loam, (0-2%)	-deep, somewhat poorly drained, nearly level soil is on broad upland divides and old stream terraces
Collins silt loam, (0-2%)	-deep, moderately well drained, nearly level soil is in valleys along small streams, subject to occasional flooding
Grenada silt loam, (2-6%)	-deep, moderately well drained, gently sloping soil is found on broad uplands
Karnak silt loam, overwash, (0-2%)	-deep, poorly drained, nearly level soil is found on floodplains, subject to occasional flooding during high water events
Karnak silty clay, (0-2%)	-deep, poorly drained, nearly level soil formed by clayey, slack-water deposits is found on floodplains, subject to rare flooding
Loring silt loam, (2-6%)	-deep, moderately well drained, gently sloping soil is found on uplands, fragipan is present
Markland silty clay loam, (6-12%)	-deep, moderately well drained to well drained, sloping soil is on short side slopes of stream terraces, subject to occasional flooding
Markland-Collins complex	-consists of small areas of Markland an Collins soils; deep, well drained Markland soil on sides of dissected areas; deep, well drained Collins soils on nearly level floodplains, subject to occasional flooding
McGary silt loam, (0-3%)	-deep, somewhat poorly drained, nearly level soil is on stream terraces, formed in clayey alluvium deposited in slack water
Memphis silt loam, (2-6%)	-deep, well drained, gently sloping soil found on uplands

Memphis silt loam, (6-12%)	-deep, well drained, gently sloping soil found on uplands, well dissected by shallow drainageways and small streams
Otwell silt loam, (2-6%)	-deep, moderately well drained, gently sloping soil if found
Steinsburg-Frondorf complex, (20-50%)	-soils are moderately deep and well drained found on upland hillsides dissected by intermittent drainageways, severe hazard of erosion
Wellston silt loam, (6-12%)	-deep, well drained, sloping soil found on uplands, erosion control measures needed during construction
Wellston silt loam, (12-20%)	-deep, well drained, moderately steep soil found on side slopes of uplands with slopes commonly dissected by drainageways
Wellston silty clay loam, (12-20%), severely eroded	-deep, well drained, moderately steep soil found on uplands, original surface layer has been removed by erosion
Zanesville silt loam, (6-12)	-deep, moderately well drained to well drained, sloping soil found on side slopes of uplands, fragipan present, slopes dissected by drainageways
Zanesville silty clay loam, (6-12%), severely eroded	-deep, moderately well drained to well drained, sloping soil found on hillsides of uplands, fragipan present, original surface layer removed by erosion

Hopkins County	
Soil Unit	**Descriptions**
Belknap silt loam, (0-2%)	-deep, somewhat poorly drained, nearly level soil found near streams and in narrow valleys, subject to occasional flooding
Bonnie silt loam, (0-2%)	-deep, poorly drained, nearly level soil in broad, low-lying valleys along streams that carry acid mine waste, subject to occasional flooding
Calloway silt loam, (0-2%)	-somewhat poorly drained, nearly level soil found on broad ridgetops and on old stream terraces, fragipan present
Collins silt loam, (0-2%)	-deep, moderately well drained, nearly level soil found along streams and in narrow valleys,
Frondorf-Lenberg silt loams, (12-30%)	-moderately deep, well drained, steep soil found on hillsides on uplands, highly dissected by drainageways

Grenada silt loam, (2-6%)	-moderately well drained, gently sloping soil found on broad, smooth uplands and on long, winding terraces, fragipan present
Grenada silt loam, (2-6%), severely eroded	-moderately well drained, gently sloping soil found on broad, smooth uplands and on long winding terraces, fragipan present, most of original surface layer lost to erosion
Loring silt loam, (2-6%)	-moderately well drained, gently sloping to sloping soil found on narrow ridgetops and side slopes on uplands, fragipan present
Loring silt loam, (6-12%)	-moderately well drained, gently sloping to sloping soil found on narrow ridgetops and side slopes on uplands, fragipan present, dissected by drainageways in areas
Mine dump	-waste material from coal mines, mostly coal dust and black, slatelike fragments
Sadler silt loam, (2-6%)	-moderately well drained, gently sloping soil found broad ridgetops on uplands, fragipan present,
Steff silt loam, (0-2%)	-deep, moderately well drained, nearly level soil found along streams and in narrow valleys, subject to occasional flooding
Steinsburg-Ramsey loams, (20-30%)	-moderately deep, well drained, steep soil found on uplands on hillsides dissected by intermittent drainageways
Stendal silt loam, (0-2%)	-deep, somewhat poorly drained, nearly level soil found along streams and in narrow valleys, subject to occasional flooding
Strip mine	-consists of a mixture of stones and unconsolidated material, slopes are short and range from gently sloping to very steep
Waverly silt loam, (0-2%)	-deep, poorly drained, nearly level soil found in slightly concave areas along streams, flooding is a severe hazard
Wellston silt loam, (12-20%)	-deep, well drained, sloping to moderately steep soil found on narrow ridgetops and hillsides on uplands, dissected by drainageways
Wellston silty clay loam, (6-12%), severely eroded	-deep, well drained, sloping to moderately steep soil found on convex ridgetops and side slopes, most of the surface layer has been removed by erosion
Zanesville silt loam, (2-6%)	-moderately well drained to well drained, gently sloping to moderately steep soil found on narrow ridgetops and hillsides on uplands, fragipan present,

Zanesville silt loam, (6-12%)	-moderately well drained to well drained, gently sloping to moderately steep soil found on convex ridgetops and side slopes, fragipan present
Zanesville silt loam, (6-12%), severely eroded	-moderately well drained to well drained, gently sloping to moderately steep soil found on side slopes dissected by drainageways, fragipan present, original surface layer removed by erosion

Caldwell County	
Soil Unit	**Descriptions**
Baxter cherty silt loam, (12-20%), eroded	-well drained, strongly sloping to moderately steep soil found on short, irregular slopes near sinkholes and limestone basins, erosion has removed half of the surface layer
Baxter cherty silt loam, (20-30%)	-well drained, strongly sloping to moderately steep soil found on side slopes below narrow ridgetops
Caneyville silt loam, (6-12%)	-well drained soil developed from residuum that weathered from limestone and partly from sandstone and shale
Caneyville very rocky soils, (12-20%)	-partly exposed outcrops of limestone and sandstone, most of the original surface layer has been removed by erosion
Caneyville very rocky soils, (20-30%)	-partly exposed outcrops of limestone and sandstone cover up to 25% of unit, erosion removed original surface layer
Collins silt loam	-deep, well drained soils found along bottom lands near the Tradewater River, subject to occasional flooding
Crider silt loam, (2-6%)	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst),
Crider silt loam, (2-6%), eroded	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), partially eroded surface layer
Crider silt loam, (6-12%)	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst)
Crider silt loam, (6-12%), eroded	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), partially eroded surface layer

Crider silt loam, (12-20%)	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), erosion potential is high
Crider silt loam, (12-20%), eroded	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), partially eroded surface layer
Crider silty clay loam, (12-20%), severely eroded	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), erosion has removed all of the original surface layer
Dekalb,Ramsey, and Muskingum stoney soils, (12-20%)	-excessively drained upland soils that developed in residuum weathered from sandstone, siltstone, and shale, moderately high erosion hazard
Dekalb,Ramsey, and Muskingum stoney soils, (20-40%)	-excessively drained upland soils that developed in residuum weathered from sandstone, siltstone, and shale,high erosion hazard
Falaya silt loam	-somewhat poorly drained soils on bottom lands
Fredonia silty clay loam, (6-12%), eroded	-well-drained upland soils, moderate erosion hazard
Fredonia silty clay loam, (12-20%), eroded	-well-drained upland soils, moderate erosion hazard
Gilpin,Litz,and Muskingum silt loams, (20-30%)	-strongly sloping to steep, well-drained to excessively drained upland soils
Hayter silt loam, (12-20%)	-well-drained soils that developed in old local alluvium, moderate erosion hazard
Huntington silt loam	-well-drained soils on bottom lands
Lindside silt loam	-deep, moderately well-drained soils on bottom lands
Newark silt loam	-somewhat poorly drained soils on bottom lands, high water table in winter and spring
Pembroke silt loam, (2-6%), eroded	-fertile upland soils that are deep and well-drained, contains severely eroded spots
Rock land, sandstone	-consists of areas in which sandstone of various sizes cover 25 to 90 percent of the surface
Russellville silt loam, (2-6%)	-well-drained and moderately well-drained uplands soils with a weak fragipan
Russellville silt loam, (2-6%), eroded	-well-drained and moderately well-drained uplands soils with a weak fragipan, eroded spots
Russellville silt loam, (6-12%)	-well-drained and moderately well-drained uplands soils with a weak fragipan
Russellville silt loam, (6-12%), eroded	-well-drained and moderately well-drained uplands soils with a weak fragipan, eroded spots
Tilsit silt loam, (2-6%)	-moderately well-drained upland soils
Tilsit silt loam, (2-6%), eroded	-moderately well-drained upland soils, eroded areas

Vicksburg gravelly silt loam	--well-drained to excessively drained soils on bottom lands
Wellston silt loam, (6-12%)	-well-drained upland soils
Wellston silt loam, (12-20%)	-well-drained upland soils
Wellston silt loam, (12-20%), eroded	-well-drained upland soils, eroded
Wellston silt loam, (6-12%), severely eroded	-well-drained upland soils, severely eroded
Zanesville silt loam, (2-6%)	-well-drained and moderately well-drained upland soils with a fragipan
Zanesville silt loam, (2-6%), eroded	-well-drained and moderately well-drained upland soils with a fragipan, eroded
Zanesville silt loam, (6-12%)	-well-drained and moderately well-drained upland soils with a fragipan
Zanesville silt loam, (6-12%), eroded	-well-drained and moderately well-drained upland soils with a fragipan, eroded
Zanesville silt loam, (6-12%), severely eroded	-well-drained and moderately well-drained upland soils with a fragipan, severely eroded area
Zanesville silt loam, (12-20%), eroded	-well-drained and moderately well-drained upland soils with a fragipan, eroded

Lyon County	
Soil Unit	**Descriptions**
Baxter-Hammack complex, (20 to 30%)	-well drained, deep soils found along tributaries of the Cumberland River within a few miles of Lake Barkley
Hammack-Baxter complex, (6-12%)	-well-drained, deep soils found in karst areas, characterized by basins and on adjacent side slopes and narrow ridgetops
Hammack-Baxter complex, (12-20%)	-well-drained, deep soils found in karst areas, characterized by basins and on adjacent side slopes and narrow ridgetops
Lindside silt loam, (0-3%)	-deep, moderately well-drained nearly level soils are found on flood plains and upland depressions
Melvin silt loam, (0-2%)	-nearly level, poorly drained soil is found on floodplains along streams and in depressions throughout the survey area
Nicholson silt loam (2-6%)	-deep, moderately well drained, gently sloping soil found on broad ridges on uplands
Nicholson silt loam (6-12%)	-deep, moderately well drained, gently sloping soil found on side slopes on uplands

Nicholson silty clay loam, (6-12%), severely eroded	-deep, moderately well drained sloping soil found on side slopes of uplands, severely eroded portions
Nolin silt loam, (0-2%)	-deep, well drained nearly level soil found on floodplains and in depressions on uplands, some hazard of flooding

ADDENDUM

KENTUCKY TRANSPORTATION CABINET
FRANKFORT, KENTUCKY 40622
WWW.KENTUCKY.GOV

ERNIE FLETCHER
GOVERNOR

MAXWELL C. BAILEY
SECRETARY

MEMORANDUM

To: Jimmy Wilson
Division of Planning

From: Tony Vinegar
Division of Environmental Analysis

Date: March 10, 2005

Re: Strategic Corridor Planning Study - Eddyville to Henderson
Henderson, Caldwell, Webster, Hopkins and Lyon Counties, Kentucky
Item #2-69.10

The Strategic Corridor Planning Study has been evaluated by the Division of Environmental Analysis for any potential environmental challenges that would need to be addressed during future design stages. The following comments are based solely upon the corridor study data presented; additional comments could be provided if/when the scope of the project is narrowed:

1. Base studies will be required for noise issues if the project is to be federally funded.
2. If the project were to be federally funded then limited base studies would be required to determine any air impacts. The planning study should also clearly state that the project originates from the latest conforming STIP.
3. There is potential for channel changes and wetland impacts if the project extends away from current right-of way limits; impacts to these resources should be avoided. These areas if impacted would require 401 and 404 permits and special precautions that limit impacts during construction. They would also pose mitigation challenges with regard to the design process; expenditures for stream restoration and wetland mitigation could be very costly. Excess waste sites, if any should be considered and assessed early in the design process. Floodplain impacts could be costly and hinder project schedules; every effort should be made to avoid construction in the floodplains.

4. Any impacts to the listed endangered species should be avoided; if unavoidable would require costly mitigation and could hinder the project schedule. Base studies would likely recommend mist netting surveys for endangered bats, as part of a biological assessment that would likely be required. Contrary to what is discussed in the report Coach Cave is not located near the project. Impacts to the Pennyrile trail should be avoided and/or minimized.
5. Specific details concerning HAZMAT and storage tanks would need to be obtained through a thorough site assessment later once alignments are developed.
6. Potential section 4(f) and 106 issues exist due to the presence of many potentially historic structures and should be evaluated along with a detailed base study by a qualified historian.
7. A base study for archaeology will be required. Impact to Cemeteries should be limited/avoided if at all possible.
8. Environmental Justice issues will require mitigation if the design of the road is shown to directly impact the areas of concern. Every effort should be made to coordinate those mitigation efforts with local officials, KYTC and FHWA.

Our staff appreciates the opportunity to provide early comments on projects during the planning stage. If you should have any questions regarding these comments please contact me at 564-7250.

TV
Attachments

C: Files