US 27 to I-75 Corridor Scoping Study

Jessamine, Fayette and Madison Counties

Kentucky UNBRIDLED SPIRIT

FINAL REPORT

Submitted to:

KENTUCKY TRANSPORTATION CABINET

Division of Planning

Submitted by:

PB 100 YEARS PARSONS BRINCKERHOFF

In Association With:

HDR Engineering, Inc.
Third Rock Consultants, LLC
H. Powell and Company
Cultural Resource Analysts, Inc.

December 2008

US 27 TO I-75 CORRIDOR SCOPING STUDY
JESSAMINE, FAYETTE, AND MADISON COUNTIES

SUMMARY OF FINDINGS AND RECOMMENDATIONS

FINAL REPORT

ITEM NO. 7-249.00

Prepared for:

Kentucky Transportation Cabinet (KYTC) – Division of Planning

Kentucky Transportation Cabinet (KYTC) – District 7

Prepared by:

Parsons Brinckerhoff

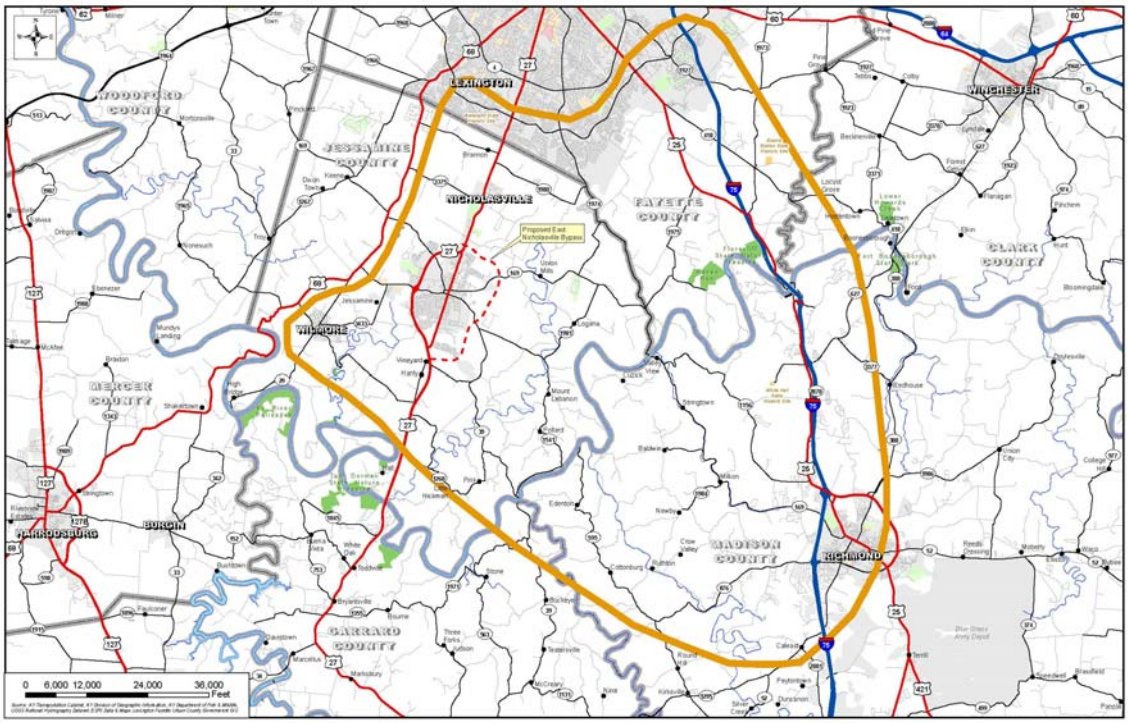
December 2008

Executive Summary – US 27 to I-75 Corridor Scoping Study

Introduction and Study Area

The Kentucky Transportation Cabinet (KYTC) has indentified the need to examine the need for and feasibility of a new highway connector from I-75 to US 27 in the Jessamine, Fayette, and/or Madison County area. The study area is shown on **Figure ES 1** below. The goals and objectives of this study are to examine transportation issues such as safety, access, mobility and travel time, as well as to evaluate long range growth management, environmental and other local and regional issues and concerns with respect to the need for and location of a new connector. In addition the type of roadway facility and project financing/funding options were also examined.

Figure ES 1: Study Area Map



Purpose and Need

The purpose and need statement for this study was developed from issues identified in field reviews, through stakeholder and public input, as well as from deficiencies identified in the Existing and Future Conditions technical analysis. The project purpose was identified as "to determine the need and explore methods to improve safety, connectivity, and regional access within Jessamine, Fayette, and/or Madison Counties between US 27 and I-75". Supporting the project purpose above is the project need. Project needs include improved connectivity, vehicle safety, reduced traffic congestion, travel time reliability / savings, economic development, improved access for truck traffic, and Homeland Security. In accordance with the Transportation Cabinet's policy on Purpose and Need statements, the following goals and objectives were developed to balance environmental and community issues with transportation issues.

- Provide solutions to meet the purpose of the project while avoiding / minimizing / mitigating impacts to farmland, historic resources, the Palisades / Valley View / White Hall Shrine, horse farms, threatened / rare / endangered species, environmental justice communities, as well as other environmental features.
- Consider pedestrian and bicycle facilities in conjunction with alternative improvement options.
- Consider cost-effective solutions to address specific deficiencies.
- Consider noise, water, and air quality concerns, as well as light pollution.

Existing and Future Conditions

Existing and future highway characteristics and geometrics, traffic volumes, truck traffic, speed, levels of service, and crash rates were all evaluated as part of the existing conditions analysis. The key transportation issues identified from this analysis are summarized below:

- Major roadways in the study area, such as US 27, I-75 and Man O' War Boulevard, currently have very high traffic volumes.
- Many roadways in the study area have high historical growth rates, indicating continuing traffic growth.
- Roads such as I-75, US 27 and KY 1980 have high truck percentages.
- Sections of US 27, US 25, KY 1980, KY 1974, KY 169, KY 876, KY 1176, KY 39, and KY 1975 currently operate at a LOS E or F.
- Many sections of Man O' War Boulevard, US 27 and I-75 currently operate at LOS D.
- In 2040, sections along the majority of roadways in the study area will be operating at a LOS E or F.
- The majority of roadways in the study area have segments with a critical crash rate factor greater than one.
- Rear end crashes are the most common type of crash in the study area.
- The Lexington MPO's Regional Bicycle and Pedestrian Master Plan has designated several roadways in the study area for potential bicycle and pedestrian facilities.

Both human and natural environmental overviews were performed as part of the existing conditions analysis. The Environmental Justice (EJ) review showed that there are several areas within the study area with high percentages of minority, low-income and/or elderly populations that were greater than county, state and national levels. Two significant historic districts are located in the area of potential effect (APE) and there are four sites currently listed on the National Register of Historic Places.

Aquatic resources including the Kentucky River and its tributaries, the Kentucky River Palisades as well natural wetlands exist in the study area. There are also threatened, rare and endangered species that live in the study area (Indiana bat, gray bat, running buffalo clover, and the American burying beetle), in addition to two nature preserves. Efforts must be made to mitigate any adverse effects to the natural environment that would be the result of a new connector roadway.

The geotechnical review noted that karst features and shaly units prone to landslides may be encountered in the study area, as well as faulted areas.

Public Involvement

The Public Involvement Program for the US 27 to I-75 Scoping Study was comprised of several key elements designed to encourage participation and obtain feedback from the stakeholders in Fayette, Jessamine and Madison Counties. The key aspects include: meetings with local elected officials, a project work group (PWG), public meetings, agency correspondence and project team meetings.

Meetings were held with locally elected officials and other stakeholders from Fayette, Jessamine, and Madison counties (one in each county). Locally elected officials include State Representatives, County Judge Executives, Mayors, and Metro Council Members. These meetings were held early in the study process to inform them about the study and solicit feedback about study issues.

A Project Work Group (PWG) was developed to provide input on issues and concerns about the project. The PWG includes representatives from KYTC District 7 and Central Office Staff including – KYTC Planning, Pre-Construction and Environmental Analysis, representatives from the Lexington MPO, Bluegrass ADD, federal, state, and local resource agencies, local elected officials from Jessamine, Fayette and Madison counties, chamber of commerce representatives, landowners, homeowners, and other representative citizens of Jessamine, Fayette and Madison counties. Five meetings were held at major study milestones.

Two public meetings were held during the course of this study. The public meetings were held in a traditional open house style format. Key goals for these meetings were to determine if the public was in favor of the project, to gather input on the issues and concerns of the project, to propose alternate corridors and to help choose the best alternate. The first meeting was held in Jessamine County at West Jessamine Middle School towards the beginning of the project to gain public feedback on support of the project and initial potential corridors. The second meeting was held towards the end of the study in Madison County at Eastern Kentucky University to allow the public to provide input on a preferred alternate as well as gain input on facility type and potential funding methods.

An agency mailing was prepared during the initial stages of this study and sent to various local, state, and federal agencies, as well as elected officials, to obtain input in the study process.

Several meetings were also held with the KYTC to discuss project issues including the PWG and public meetings (preparation and results), issues and goals, development of alternates, evaluation of alternates and a meeting to discuss project recommendations.

Alternatives Development and Evaluation

The corridor development process began at the first Public Meeting held on November 20, 2007. The general public was given background information on the study area, then given maps of the study area and asked to draw lines where they would like to see the connector built. In the interest of transparency, no corridors were drawn on the maps prior to the Public Meeting or had been predetermined by the Project Development Team. Approximately 50 – 60 corridors were drawn on the maps by the public.

The corridor evaluation procedure used in this study was a three-step process. The purpose of the three-step process was to refine the list of corridors from all possible corridors, to a short list of promising corridors, and then finally to a recommended corridor.

Level 1 Evaluation – Initial Screening

The initial screening process began with the map of corridors drawn by attendees at the first Public Meeting. Next, the Project Development Team (PDT) met to review all of the corridors drawn by the public and to find common points throughout the study area where people wanted to see a connecter. Based on this procedure, a total of eighteen corridors were retained for further analysis. A no-build scenario was included as a baseline for comparison as well as a viable alternative.

Level 2 Evaluation – Preliminary Analysis

The Level 1 analysis narrowed the 50 to 60 corridors drawn by the public down to eighteen plus the no-build. For the second level of analysis these corridors were evaluated based on system operations, traffic operations, natural environment impacts, human environment impacts and cost. These evaluations were very general and the analysis became more detailed further into the process.

The system operations evaluation took into consideration corridor length, whether or not the corridor crosses the Kentucky River, system safety improvements, study area travel time savings, and connectivity. The traffic operations evaluation looked at 2040 Average Daily Traffic (ADT), 2040 Level of Service (LOS), and the corridor truck percentage. The ADT analysis was performed using the Kentucky Statewide Traffic Model (KYSTM). Each of the eighteen corridors was also evaluated with regard to the number of streams that would be impacted in the corridor, the number and acres of potential wetlands / ponds in the corridors and acres of floodplain that would be impacted. The human environment analysis included the number of known historic sites and known archeological sites in each corridor, and landfills and other potential HAZMAT site impacts. The number of farmland impacts in acres was also evaluated. Environmental justice impacts were considered for each of the corridors. At this level, the construction cost only for each corridor was estimated. From this level of analysis, the six most promising alternative corridors along with the no-build option were retained for the final detailed level of analysis.

Level 3 Evaluation – Detailed Analysis

After the original eighteen corridors were narrowed down to six, the remaining corridors were slightly adjusted to minimize impacts to nationally registered historic sites, residential areas, to reduce the amount of earthwork that would need to be completed and to avoid the lock and dam on the Kentucky River. The Level 3 Evaluation was also based on planning level system operations, traffic operations, natural environment impacts, human environment impacts, and costs and involved a more detailed analysis (than the Level 2 evaluation) of the remaining six corridors and the no-build alternative, after minor adjustments were made. The more detailed evaluation included updating information on system operations, traffic operations, natural environment, human environment and cost. In addition, a revised traffic forecast was prepared in greater detail to more accurately estimate the volume of traffic that would use each of the remaining corridors.

At the Level 3 Evaluation phase, facility type and project funding options were explored. Whether the facility will be two lanes or four, if a multi-use path should be included, as well as if it will be limited or unlimited access, and have grade separated or at-grade intersections was examined. Tolling as a potential funding source for the roadway was also examined at this level.

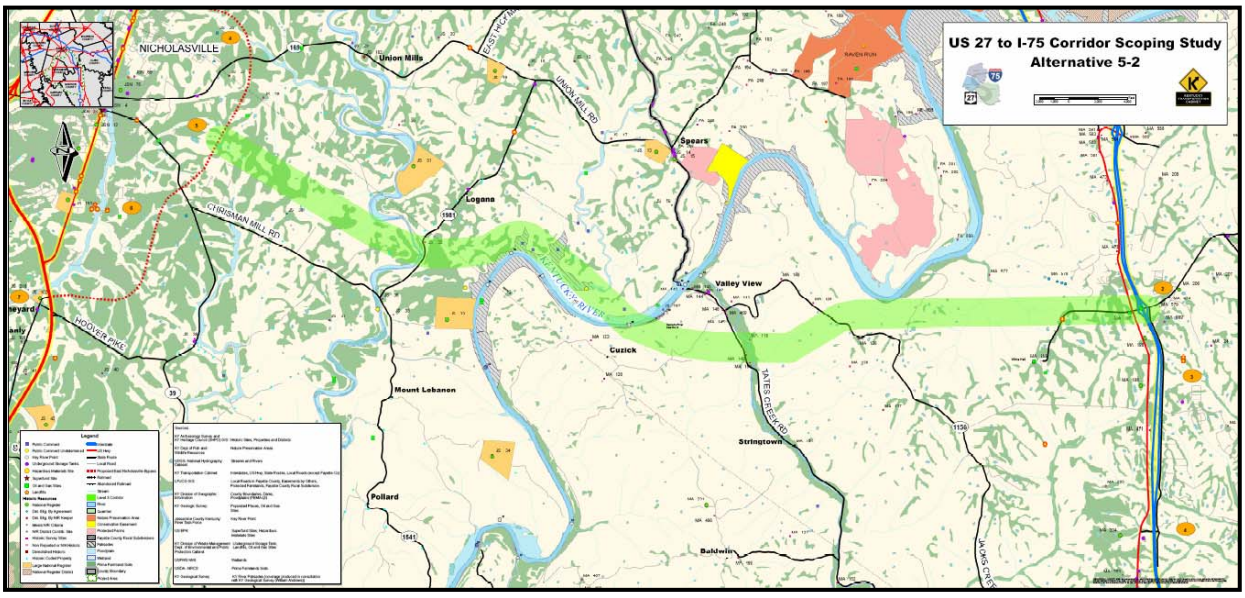
Recommendations

The recommendation for the US 27 to I-75 Corridor Scoping Study is Alternative Corridor 5-2 shown in **Figure ES 2**, with a western terminus towards the northern end of the Nicholasville Eastern Bypass and the eastern terminus at the existing KY 627 interchange on I-75. This alternative corridor was selected as the recommendation over the other alternative corridors and the no-build option for the following reasons:

- Good connectivity with KY 3055 / KY 627 interchange.
- Most public support of all alternatives.
- No known impacts to Environmental Justice areas.
- Fewer impacts to floodplains and historic sites than the similar Alternative Corridor 4-2.
- Crosses the faults in the area more perpendicular (better) than Alternative Corridor 4-2.
- Has the lowest cost of a two-lane alternative ($181 - $245 million)

With cost constraints a major concern for this project, a two-lane rural typical section with wide shoulders and alternating passing lanes is recommended for the initial construction phase. Right-of-way should be purchased at the outset of this project for the possibility of a future four-lane section. Funding the project is a challenge given limited current resources, and as such it is proposed based on initial analysis in this document that the roadway will be tolled. The general analysis performed in this report indicated that a two-lane roadway could be paid for within a thirty-year bond period by tolls, assuming $1.00 for cars and $2.00 for trucks. Generally, the new highway is expected to have limited access, with an interchange at US 27, I-75, and possibly two others in the middle at major crossings / interchanges.

Figure ES 2: Recommended Alternative Corridor 5-2



Another component of this project is a ten-foot multi-use path in conjunction with the new roadway. Additional study will be required for the path, including consideration of logical termini points, proximity of it to the roadway and the method for crossing the Kentucky River. There has been great demand for a path based on public survey response and discussion at the PWG. However, it was agreed by the PWG and PDT members that while desirable, the inclusion of the path should not limit the advancement of the entire new connector project.

The following design elements are assumed which form the basis for the cost estimate for the recommended alternative.

- Two 12-foot travel lanes (11-foot lanes could be considered as appropriate assuming 11-foot meets design speed criteria)
- 10-foot paved shoulders
- 300-foot right-of-way

For cost estimation purposes, passing lanes were assumed to occur in each of the three project sections, one in each direction, for approximately one mile in length. This equates to six miles of passing lanes, which is almost half of the entire corridor. The current proposal for the recommended new US 27 to I-75 connector begins along the bypass and is therefore dependent on the completion of the bypass prior to construction of the connector. The Kentucky River crossing will require a new bridge, which forms a significant portion of the cost of this project.

Table ES 1: Recommended Alternative Cost Estimate

Base Estimate* (Initial 2-Lane)	**Right-of-Way** (Includes Area Needed for Ultimate 4-Lane and Multi-Use Path)	**Utilities**	**Limited Access*** (4 Interchanges)	**Total**	**Add-Ons**		
						Multi-Use Path*	**Passing Lanes***
$168,000,000	$7,000,000	$3,000,000	$23,000,000	$201,000,000	cost:	$41,000,000	$22,000,000
					total with add-ons:	$264,000,000	

*Includes Design and Construction

Notes:

1) If the Eastern Nicholasville Bypass is not in place prior to the development of this project, the estimate to construct the section of bypass from the proposed intersection with Corridor 5-2 to US 27 (including the interchange at US 27, right-of-way, and utilities) was $61,000,000 in 2004 dollars. This also assumes a 4-lane section.

While ultimately it would be desired to construct the new facility in one stage, the lack of available funding may make that difficult. Therefore, a recommended phasing schedule is provided below to ensure the highest priority segments are completed first. It was decided that the most logical project sections are:

1. US 27 to KY 1981
2. KY 1981 to Tates Creek Road
3. Tates Creek Road to I-75

The prioritization for these segments is from west to east as indicated by the numbers above. Design could be completed for all segments at the same time with the phasing schedule implemented during construction.

TABLE OF CONTENTS

APPENDICES

TABLE OF TABLES

TABLE OF FIGURES

1.0 INTRODUCTION

The Kentucky Transportation Cabinet (KYTC) initiated the I-75 to US 27 Corridor Scoping Study in July 2007 to examine the need for and feasibility of a new highway connector from I-75 to US 27 in the Jessamine, Fayette, and/or Madison County area. Transportation issues such as safety, access, mobility, and travel time were examined. In addition, long range transportation system, land use, environmental and other local and regional issues and concerns were also evaluated with respect to the need for and location of a new connector. Along with the examination of a new corridor between I-75 and US 27, the study also examined what type of roadway facility and project funding / financing options were applicable to the proposed project.

Members of the project team included: KYTC District 7, KYTC Central Office Division of Planning, the Bluegrass Area Development District (BGADD), and the Lexington Area Metropolitan Planning Organization (LAMPO). KYTC selected the consulting firm of Parsons Brinckerhoff (PB) to lead the study effort. PB is supported by HDR Engineering, Inc., Third Rock Consultants, LLC, Cultural Resource Analysts, Inc., and H. Powell and Company.

1.1 Study Objectives

Based on the initial direction provided by the KYTC, six primary study objectives were developed as summarized below.

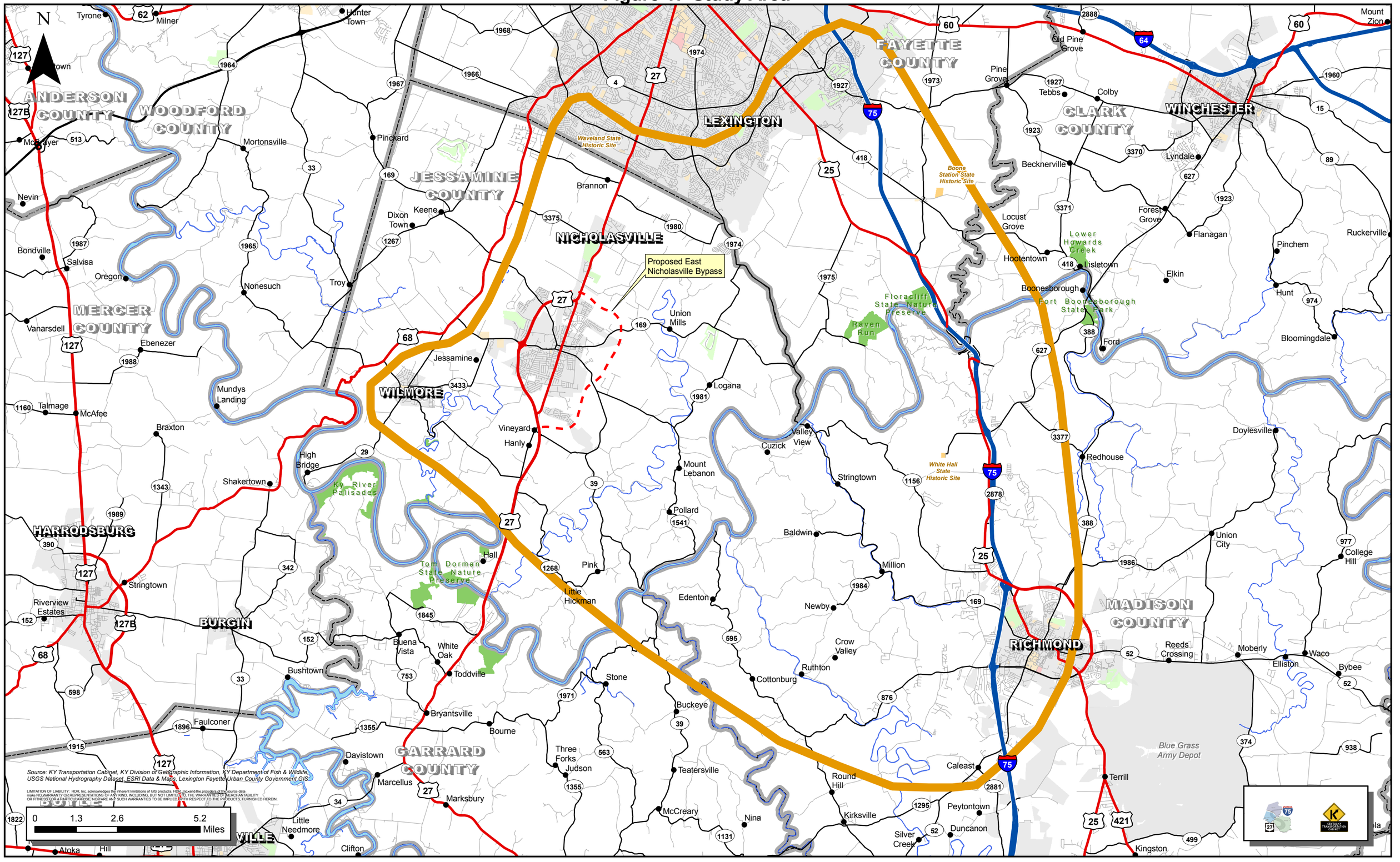
1. Examine existing traffic, highway, environmental, and geotechnical conditions in the study area;
2. Determine where (or if) there are problems or deficiencies;
3. Define project purpose and need;
4. Develop a range of alternates (including a no-build option) to satisfy the project purpose and need and address the identified problems;
5. Evaluate and compare all the proposed alternates, considering public input as well as transportation, community, environmental, and economic benefits and impacts; and
6. Recommend an alternate or set of alternates for implementation, if they are warranted and feasible.

While KYTC has the ultimate responsibility for constructing and maintaining safe and efficient highways, KYTC desires to incorporate public and agency input into the evaluation and decision-making process. Therefore, all six of these study objectives were completed in coordination with a comprehensive public and agency involvement program.

1.2 Project Location and Study Area

The study area is between I-75 and US 27 in Fayette, Jessamine, and Madison Counties. Refer to **Figure 1** for more details. The study area limits on the east and west were based on the project description. Historically scoping and feasibility studies to address connectivity from I-75 to areas west of US 27 have been met with much public opposition.

Figure 1: Study Area



1.3 Study Process

The study process used to evaluate potential alternates consisted of four major elements: 1) Define the purpose and need of the study, 2) Develop alternates, 3) Evaluate the alternates, and 4) Recommend an alternate(s).

The subsequent chapters in this report follow these steps, beginning with the development of the purpose and need for the study. The following five chapters contain the technical analysis and documentation used to confirm the purpose and need and then develop the alternates. These chapters include an analysis of existing and future No-Build highway conditions, a review of related studies, a summary of the human environment, a summary of the natural environment, and a geotechnical overview.

In addition to the technical analysis, public input and feedback was gathered throughout the study process. The framework for including the public in the study process is presented in the section following the technical analysis. Next, the discussion of the alternates development procedure and evaluation is presented. The final stage in the study process was to provide a recommendation, which is also the final section in this report.

2.0 PURPOSE AND NEED

It is important to establish the Purpose and Need for a project during its early stages since it defines the actual reason(s) for doing the study and provides the basis for the development, evaluation, and comparison of all alternates. According to current KYTC policy, there are three parts to a complete Purpose and Need statement: (1) the Purpose, (2) the Need, and (3) Goals and Objectives. The Purpose identifies the problem to be solved by the study and is supported by the Need. Goals and Objectives are other elements of the study that go beyond the transportation issues in the study and should be considered and addressed as part of a successful solution to the problem.

The Purpose and Need statement for this study was developed from issues identified in field reviews, through stakeholder and public input, as well as from deficiencies identified in the Existing and Future Conditions technical analysis. A complete description of these project phases is included in the following chapters of this report.

2.1 Purpose

The purpose of this study is to determine the need and explore methods to improve safety, connectivity, and regional access within Jessamine, Fayette, and/or Madison Counties between US 27 and I-75.

2.2 Need

Supporting the study purpose above is the study need. Extensive input was requested regarding project issues, goals and objectives from several sources. Meetings with local elected officials were held at the beginning of the study in part to solicit input on project issues and goals. A breakout session was performed during the first Project Work Group (PWG) meeting to solicit input regarding issues and goals for the project. Additional input was requested about project issues and goals during the first Public Meeting held on November 20, 2007. Attendees were given the opportunity to voice their thoughts at the meeting by listing issues and goals on available notepads as well as on the survey forms provided. This input, along with the initial technical analysis has shown a documented need exists. The supporting need is discussed below.

Connectivity – There is no direct route centrally located between US 27 and I-75 through Jessamine, Fayette, or Madison Counties. A network of rural roads does provide poor access between the two facilities but deficiencies in this system are discussed below. Additionally, Man O' War Boulevard in Lexington also provides indirect access but there are issues making it a poor connection as well that are also discussed later in this report. As such, there is no easy or convenient way to travel between Nicholasville and Richmond without having to travel through Lexington. Better east-west connectivity would provide increased access to numerous destinations including points north and south on I-75 for traffic to and from US 27, regional industrial

and commercial centers, as well as Asbury College and Eastern Kentucky University. The lack of connectivity is especially apparent when there is a crash or other incident on I-75 which either causes the interstate to be closed, or have a limited number of lanes open. US 25 is available as a parallel alternative route, but shares the Kentucky River crossing with I-75. There is additionally an alternate bridge to I-75 in the vicinity (KY 3055), but it is geometrically substandard and not rated for heavy truck traffic. Minor rural routes through Jessamine and Madison Counties provide poor connectivity between the two facilities. To access I-75 from US 27 via these routes requires using a ferry to cross the Kentucky River. Furthermore, connectivity between US 27 and I-75 was the highest rated highway issue by the public, with the majority of respondents in favor of a new east-west connector.

Vehicle Safety – This was the second highest rated highway issue identified by the public based on survey response forms from the first public meeting. Some of the local roads that are used to travel between US 27 and I-75 have been identified as narrow, curvy, and have sight distance issues. The crash analysis showed that a number of these roadways have high crash rates (critical crash rate factor is greater than one). These highways include KY 1980, KY 1981, and portions of US 27 in downtown Nicholasville, US 25, KY 1974, KY 169, KY 39, KY 1541, KY 876, KY 1156, and Man O' War Boulevard.

Traffic Congestion – In order to go between Nicholasville and Richmond, many people travel through Lexington, thereby having to travel through heavily congested areas, particularly the portion of US 27 north of Nicholasville and along Man O' War Boulevard. Providing a new direct route between US 27 and I-75 could reduce some of the traffic on these heavily traveled roads, thereby improving traffic operations around Lexington. In addition to the congestion around Lexington, some of the other roads used to travel between US 27 and I-75 have poor levels of service (LOS E/F). These include portions of US 27 (north of Nicholasville), US 25, KY 1980, KY 1974, KY 1975, KY 169, KY 39, KY 876, and KY 1156.

Travel Time Reliability – Travel times between US 27 and I-75 are inconsistent due to the unknowns of congestion (particularly on Man O' War Boulevard), incidents, as well as at the Valley View Ferry. Also, a lack of passing lanes / areas on the highways between US 27 and I-75 often slows traffic.

Economic Development – Providing direct access between US 27 and I-75 may lead to economic development in the region, but not necessarily along a new route. Direct interstate access may provide the business community with quicker access to I-75, thereby both retaining current industry and attracting new industry to the area. Economic development directly related to a new highway would be dependent on planning and zoning regulations in each local jurisdiction.

Improved Access for Truck Traffic – There are currently no federal or state designated truck routes between US 27 and I-75. In order to access I-75 from US 27, trucks are routed on New Circle Road through Lexington. However, due to congestion

along US 27 and New Circle Road, trucks may be using alternate routes that are not rated for truck traffic. An east-west connector built to handle truck traffic would greatly improve access and reduce travel time for trucks by eliminating the need to travel through Lexington. This could improve efficiency as well as allow for improved "just in time" service in the region.

Homeland Security – The Clays Ferry Bridge is a major structure over the Kentucky River on I-75. From a Homeland Security perspective, if the Clays Ferry Bridge were to be closed for any period of time for any reason, a critical link in I-75 (a major north-south link between Canada and Miami, Florida and a NAFTA corridor) would be missing. This would impede a major flow of traffic and cause much disruption. The alternative options to cross the river would be to take the Valley View Ferry to the west or go through local or regional roads via Boonesboro to the east. The Valley View Ferry operates as a shuttle across the river but can only accommodate up to three vehicles at a time, thereby leading to long queues waiting to cross the river. Also, heavy trucks would not have this option for crossing the river. An alternate route in the region would also be desirable to provide for increased evacuation routes in the vicinity of the Bluegrass Army Depot, particularly in case of an incident with nerve gas or other chemical agents that are currently stored at the facility. It should be noted that discussions with Homeland Security Personnel at either the Federal or State Level were not a part of this scoping study. The KYTC has not received any commitment of Homeland Security Funds.

2.3 Goals and Objectives

In accordance with the Transportation Cabinet's policy on Purpose and Need statements, the following goals and objectives were developed to balance environmental and community issues with transportation issues.

- Provide solutions to meet the purpose of the project while avoiding / minimizing / mitigating impacts to farmland, historic resources, the Palisades / Valley View / White Hall Shrine areas, horse farms, threatened / rare / endangered species, environmental justice communities, as well as other environmental features.
- Consider pedestrian and bicycle facilities in conjunction with alternative improvement options.
- Consider cost-effective solutions to address specific deficiencies.
- Consider noise, water, and air quality concerns, as well as light pollution.

3.0 EXISTING AND FUTURE NO-BUILD CONDITIONS

To determine if there are deficiencies or problems with the existing highway system, a detailed analysis was completed examining the existing highway characteristics and geometrics, traffic volumes, truck traffic, levels of service, travel times, crash rates, and other key issues. The analysis considered current and future traffic conditions assuming no changes to the existing highway. In support of the analysis, highway and traffic data was collected from a variety of sources including:

- KYTC Highway Information System database
- KYTC District 7 data sources
- Study area field reviews
- 24-hours vehicle classification counts
- Various KYTC Division of Planning data sources

3.1 Existing Highway Characteristics and Geometrics

Within the study area, the major interstate and US highways include:

- I-75
- US 27
- US 25

Other state maintained roads that were evaluated as part of this study include:

- KY 169
- KY 1974
- KY 1156
- KY 1975
- KY 876
- KY 595
- KY 1541
- KY 1980
- KY 1981
- KY 39
- KY 1984
- KY 3055
- KY 1985

Also, Man O' War Boulevard in Fayette County, owned and maintained by the Lexington-Fayette Urban County Government, was included in the analysis.

A highway characteristics summary is included as **Table 1**. **Figure 2** shows the functional classification for all major study area highways.

Table 1: Study Area Highway Characteristics Summary

Route	Section	County	Begin Milepoint	End Milepoint	Section Length (miles)	Functional Class	Facility Type	Lane Width (feet)	Shoulder Width (feet)	Median Type	Median Width (feet)	% No Passing Zones	Posted Speed Limit (MPH)	HCS Speed	Most Recent ADT	Count Station	Year	Growth Rate	2007 ADT	% Trucks	Year of Truck Data	2040 ADT	2040 % Trucks
US 27X (Downtown Nicholasville	1	Jessamine	0.0 (South of Nicholasville)	0.23 (Southbrook Drive)	0.23	Rural Minor Arterial	2 Lane Undivided Hwy	12	8	none	0	0%	55		10,200	A62	2006	0.9%	10,300	10.3%	2004	13,800	16.8%
	2	Jessamine	0.23 (Southbrook Drive)	0.835 (John C Watts Drive)	0.61	Urban Minor Arterial Street		11	1				45-55	55									
	3	Jessamine	0.835 (John C Watts Drive)	1.075 (Longview Drive)	0.24			11-15	0-1				35-45	45	11,300	A40	2006	0.7%	11,400			14,400	
	4	Jessamine	1.075 (Longview Drive)	1.305 (Edgewood Drive)	0.23			15	0			N/A	35		16,400	A64	2006	0.2%	16,400			17,500	
	5	Jessamine	1.305 (Edgewood Drive)	1.586 (Natchez Trace)	0.28										21,500	A24	2006	1.3%	21,800			33,400	
	6	Jessamine	1.586 (Natchez Trace)	1.88 (Brown Street)	0.29			12	1														
	7	Jessamine	1.88 (Brown Street)	2.112 (Chestnut Street)	0.23			12-18					25-35	35	20,000	A16	2005	0.5%	20,200			23,800	
	8	Jessamine	2.112 (Chestnut Street)	2.18 (KY 39/KY 29)	0.07			14-16					25										
	9	Jessamine	2.18 (KY 39/KY 29)	2.38 (KY 169)	0.20										24,700	A32	2005	0.6%	25,000			30,500	
	10	Jessamine	2.38 (KY 169)	2.882 (Duncan Street)	0.50			13-16					35		26,000	A07	2004	0.9%	26,700			35,900	
	11	Jessamine	2.882 (Duncan Street)	3.89 (US 27 Bypass)	1.01			12-13	1-3						25,800	A81	2004	2.4%	27,700			60,600	
US 27 (South and North of Downtown)	1	Jessamine	0.0 (Garrard-Jessamine County Line)	1.115 (South of Old Danville Road)	1.12	Urban Principal Arterial	4 Lane Divided Highway	12	10	Concrete Barrier and Raised Mountable	2	100%	55		19,100	P65	2006	0.3%	19,200	8.9%	2004	21,200	14.5%
	2	Jessamine	1.115 (South of Old Danville Road)	3.826 (Greystone Drive/KY 1268)	2.71					Depressed	16-28												
	3	Jessamine	3.826 (Greystone Drive/KY 1268)	6.011 (US 27 Bypass)	2.19										21,000	538	2005	3.7%	22,600			75,000	
	4	Jessamine	10.827 (US 27 Bypass)	11.016 (South of Old US 27 ROW)	0.19	Urban Principal Arterial	4 Lane Divided Highway			Raised Mountable	12-24	100%											
	5	Jessamine	11.016 (South of Old US 27 ROW)	13.695 (Industry Parkway)	2.68		4 Lane Undivided Highway	12	10	none	0		55		37,200	006	2005	2.0%	38,700			74,400	
	6	Jessamine	13.695 (Industry Parkway)	14.807 (KY 1980)	1.11	Rural Principal Arterial						42%											
	7	Jessamine	14.807 (KY 1980)	15.278 (Jessamine-Fayette County Line)	0.47										35,500	009	2004	1.5%	37,100			60,600	
	8	Fayette	0.0 (Fayette-Jessamine Co. Line)	0.465 (Cobblestone Road)	0.47	Urban Principal Arterial	4 Lane Undivided Highway	12	10	none	0	N/A	55		53,700	C85	2006	3.0%	55,300			146,700	0.0%
	9	Fayette	0.465 (Cobblestone Road)	0.808 (South of Toronto Road)	0.34		4 Lane Divided Highway	11-12	0	Raised Mountable	15		55										
	10	Fayette	0.808 (South of Toronto Road)	0.956 (Man O War)	0.15		4 or 5 Lane Undivided Highway	11-12		none	0		45-55										
I-75	1	Madison	87.185 (KY 876)	89.802 (US 25)	2.62	Urban Interstate	6 Lane Divided Highway	12	10	Depressed	3	N/A	65		53,700	607	2007	2.4%	53,700	16.0%	2004	117,500	26.2%
	2	Madison	89.802 (US 25)	91.1 (North of US 25)	1.30	Rural Interstate									65,900	753	2007	3.3%	65,900			192,400	
	3	Madison	91.1 (North of US 25)	92.1 (North of Lexington Access Road)	1.00					Guardrail Barrier	30												
	4	Madison	92.1 (North of Lexington Access Road)	94.295 (South of KY 627)	2.20					Depressed	60-200												
	5	Madison	94.295 (South of KY 627)	94.73 (KY 627)	0.44					Concrete Barrier	3												
	6	Madison	94.73 (KY 627)	97.038 (US 25)	2.31					Concrete Barrier or Depressed	3 or 50-100				62,200	757	2007	2.8%	62,200	19.1%	2004	154,700	31.2%
	7	Madison	97.038 (US 25)	97.703 (Madison-Fayette County Line)	0.67					Concrete Barrier	3				65,700	353	2007	3.6%	65,700			211,100	
	8	Fayette	97.703 (Madison-Fayette County Line)	98.516 (US 25)	0.81					Concrete Barrier	3												
	9	Fayette	98.516 (US 25)	103.89 (KY 418)	5.37					Concrete Barrier or Depressed	3 or 36-87				64,300	P90	2006	1.7%	65,400			114,100	
	10	Fayette	103.89 (KY 418)	108.21 (KY 1425 Man-O-War Underpass)	4.32					Concrete Barrier	3				53,100	336	2007	3.0%	53,100			140,800	

*Truck Percentages in italics were found based on 2004 Traffic Forecasting Report

Table 1: Study Area Highway Characteristics Summary (Cont.)

Route	Section	County	Begin Milepoint	End Milepoint	Section Length (miles)	Functional Class	Facility Type	Lane Width (feet)	Shoulder Width (feet)	Median Type	Median Width (feet)	% No Passing Zones	Posted Speed Limit (MPH)	HCS Speed	Most Recent ADT	Count Station	Year	Growth Rate	2007 ADT	% Trucks	Year of Truck Data	2040 ADT	2040 % Trucks
US 25	1	Madison	20.255 (I-75 Bridge)	20.342 (North of I-75 Bridge)	0.09	Urban Principal Arterial	5 Lane Divided Highway	12	10	Raised Non-mountable	4	100%	45		13,400	B01	2006	3.0%	13,800	*6.9%*		36,600	11.3%
	2	Madison	20.342 (North of I-75 Bridge)	20.49 (Keeneland Drive)	0.09		4 Lane Divided Highway	12	2-10	Raised Non-mountable	4												
	3	Madison	20.49 (Keeneland Drive)	20.573 (Brandy Lane)	0.08		4 Lane Undivided Highway	12	2	none	0												
	4	Madison	20.573 (Brandy Lane)	20.771 (Keystone Drive)	0.20		2 Lane Undivided Highway	12	2			0%											
	5	Madison	20.771 (Keystone Drive)	20.964 (KY 1156)	0.19			11	1														
	6	Madison	20.964 (KY 1156)	21.139 (North of KY 1156)	0.18								45-55	45	5,790	780	2005	2.5%	6,100			13,800	
	7	Madison	21.139 (North of KY 1156)	24.076 (Clay Lane)	2.94	Rural Major Collector						25%	55							*12.4%*			20.3%
	8	Madison	24.076 (Clay Lane)	25.373 (KY 627/KY 3055)	1.30							60%	55		3,470	778	2006	2.4%	3,600			7,900	
	9	Madison	25.373 (KY 627/KY 3055)	28.161 (KY 2884)	2.79							29%	55		2,620	756	2004	2.4%	2,800			6,100	
	10	Fayette	0 (South Limits of I-75 Interchange)	.366 (North of I-75 NB Ramps)	0.37	Rural Minor Arterial	2 Lane Undivided Highway	12	10	none	0	20%	55		3,120	367	2006	0.7%	3,100	*10.3%*		3,900	16.8%
	11	Fayette	.366 (North of I-75 NB Ramps)	1.829 (South of Elk Lick Falls Road)	1.46			11	1														
	12	Fayette	1.829 (South of Elk Lick Falls Road)	2.876 (North of Turner Station Road)	1.05			12	10														
	13	Fayette	2.876 (North of Turner Station Road)	4.832 (KY 1975)	1.96			11	10														
	14	Fayette	4.832 (KY 1975)	8.144 (KY 418)	3.31							40%			4,310	404	2006	1.4%	4,400			7,000	
	15	Fayette	8.144 (KY 418)	9.734 (Man O War Boulevard)	1.59	Urban Principal Arterial	4 Lane Divided Highway	12	0-10	Raised Non-mountable/depressed	16-34	N/A	45 -55	55	29,600	G32	2005	1.7%	30,600			53,400	0.0%
KY 1980	1	Jessamine	3.025 (US 27)	3.68 (West of Leeburton Road)	0.66	Rural Major Collector	2 Lane Undivided Highway	8	3	none	0	N/A	55		3,110	008	2004	1.7%	3,300	10.2%	2004	5,800	16.7%
	2	Jessamine	3.68 (West of Leeburton Road)	4.06 (East of Noland Drive)	0.38								45										
	3	Jessamine	4.06 (East of Noland Drive)	4.69 (Ashgrove Lane)	0.63								35-55	55									
	4	Jessamine	4.69 (Ashgrove Lane)	5.06 (East of Young Drive)	0.37								35		2,320	001	2005	4.0%	2,500			9,100	
	5	Jessamine	5.06 (East of Young Drive)	6.02 (West of Spurlock Lane)	0.96								55										
	6	Jessamine	6.02 (West of Spurlock Lane)	6.69 (East of Mackey Pike)	0.67								45										
	7	Jessamine	6.69 (East of Mackey Pike)	7.451 (Fayette County Line)	0.76								55										
KY 1974	1	Fayette	0.00 (KY 169)	.16 (South of KY 1975)	0.16	Rural Minor Arterial	2 Lane Undivided Highway	9	1	none	0	N/A	35		859	359	2006	0.8%	900	*14.0%*		1,200	22.9%
	2	Fayette	.16 (South of KY 1975)	1.667 (Crawley Lane)	1.51								55										
	3	Fayette	1.667 (Crawley Lane)	4.228 (Delong Road)	3.04										1,430	379	2006	1.5%	1,500			2,500	
	4	Fayette	4.228 (Delong Road)	4.711 (South of Hickman Creek Bridge)	0.48	Urban Minor Arterial Street									6,250	G23	2005	2.1%	6,500	*8.7%*		12,900	14.2%
	5	Fayette	4.711 (South of Hickman Creek Bridge)	5.443 (KY 1980)	0.73																		
	6	Fayette	5.443 (KY 1980)	7.782 (Man O War Boulevard)	2.34		2-4 Lane Unidivided Highway	12	8-10	none	0	100%	55		8,990	D90	2004	3.5%	10,000			31,100	
KY 1975	1	Fayette	0.00 (KY 1974)	4.463 (Whites Lane)	4.46	Rural Minor Collector	2 Lane Undivided Highway	8	3	none	0	N/A	55		1,190	357	2004	3.2%	1,300	6.1%	2004	3,700	10.0%
	2	Fayette	4.463 (Whites Lane)	5.410 (US 25)											2,940	368	2006	2.7%	3,000			7,200	
KY 1981	1	Jessamine	0.00 (KY 1541)	2.365 (Marble Creek Lane)	2.37	Rural Minor Collector	2 Lane Undivided Highway	7	3	none	0	N/A	55		648	262	2006	-0.4%	600	*10.3%*		600	16.8%
	2	Jessamine	2.365 (Marble Creek Lane)	3.30 (South of KY 169)	0.94			8															
	3	Jessamine	3.30 (South of KY 169)	3.668 (KY 169)	0.37								35										
	4	Jessamine	3.668 (KY 169)	3.998 (North of Caveson Way)	0.30	Rural Local		9					55		1,980	259	2004	3.6%	2,200	*8.6%*		7,100	14.1%
	5	Jessamine	3.998 (North of Caveson Way)	6.13 (KY 1974 @ Fayette County Line)	2.13			7															

*Truck Percentages in italics were found based on 2004 Traffic Forecasting Report

Table 1: Study Area Highway Characteristics Summary (Cont.)

Route	Section	County	Begin Milepoint	End Milepoint	Section Length (miles)	Functional Class	Facility Type	Lane Width (feet)	Shoulder Width (feet)	Median Type	Median Width (feet)	% No Passing Zones	Posted Speed Limit (MPH)	HCS Speed	Most Recent ADT	Count Station	Year	Growth Rate	2007 ADT	% Trucks	Year of Truck Data	2040 ADT	2040 % Trucks
KY 1984	1	Madison	0.00 (Newby Road)	.751 (West of Kanatzar Lane)	0.75	Rural Local	2 Lane Undivided Highway	7	1	none	0	N/A	55		574	796	2004	4.7%	700	*8.6%*		3,200	14.1%
	2	Madison	.751 (West of Kanatzar Lane)	1.051 (West of Haden Heights)	0.30				3														
	3	Madison	1.051 (West of Haden Heights)	2.06 (KY 169)	1.01				1														
KY 169	1	Madison	1.349 (I-75 Underpass)	2.240 (Goggins Lane)	0.89	Urban Collector Street	2 Lane Undivided Highway	10	2	none	0	40%	55		5,190	A82	2004	3.0%	5,700	7.8%	2004	15,100	12.7%
	2	Madison	2.240 (Goggins Lane)	3.082 (Boone Way)	0.84										3,960	799	2005	4.0%	4,300			15,700	
	3	Madison	3.082 (Boone Way)	4.877 (Crutcher Pike)	1.80	Rural Major Collector																	
	4	Madison	4.877 (Crutcher Pike)	6.184 (KY 1984)	1.31							0%			1,360	797	2006	1.4%	1,400			2,200	
	5	Madison	6.184 (KY 1984)	8.051 (KY 1985)	1.87										990	795	2004	1.0%	1,000			1,400	
	6	Madison	8.051 (KY 1985)	8.478 (Buffalo Road)	0.43			8							586	794	2005	0.5%	600			700	
	7	Madison	8.478 (Buffalo Road)	11.74 (Ervin Sloan East Road)	3.26				1														
	8	Madison	11.74 (Ervin Sloan East Road)	11.869 (KY 1156 / Carvers Ferry Road)	0.13							N/A											
	9	Madison	11.869 (KY 1156 / Carvers Ferry Road)	12.511 (Approach to Valley View Ferry)	0.64										414	786	2006	0.2%	400			400	
	10	Jessamine	0.00 (Approach to Valley View Ferry)	1.939 (South of Newman Road)	1.94	Rural Major Collector	2 Lane Undivided Highway	10	3			10%			549	265	2006	0.9%	600	5.2%	2004	800	8.5%
	11	Jessamine	1.939 (South of Newman Road)	2.030 (North of KY 1974)	0.09							N/A											
	12	Jessamine	2.030 (North of KY 1974)	3.598 (South of Burnside Drive)	1.57							10%	35-55	55	1,140	264	2004	2.7%	1,200			2,900	
	13	Jessamine	3.598 (South of Burnside Drive)	4.218 (KY 1981)	0.62							0% or N/A	35										
	14	Jessamine	4.218 (KY 1981)	7.733 (Vince Road / Bethany Road)	3.52							0 - 20%	35-55	55	3,460	291	2006	3.6%	3,600			11,600	
	15	Jessamine	7.733 (Vince Road / Bethany Road)	9.482 (Locust Heights)	1.75							10%	45-55	55	4,360	290	2006	3.1%	4,500			12,300	
	16	Jessamine	9.482 (Locust Heights)	9.918 (North of Glencove Ave)	0.44	Urban Minor Arterial Street		11	2			N/A	35-45	45									
	17	Jessamine	9.918 (North of Glencove Ave)	10.028 (Liberty Street)	0.11				2-3				35										
	18	Jessamine	10.028 (Liberty Street)	10.362 (Bell Court)	0.33			11-14	2				25-35	35	3,670	A45	2005	1.7%	3,800			6,600	
	19	Jessamine	10.362 (Bell Court)	10.458 (US 27)	0.10			11	1-2				25										
KY 595	1	Madison	16.014 (KY 876)	17.03 (Dry Branch Road)	1.02	Rural Local	2 Lane Undivided Highway	8	1	none	0	N/A	55		629	587	2004	0.4%	600	*8.6%*		700	14.1%
	2	Madison	17.03 (Dry Branch Road)	20.78 (North of Sledd Branch Road)	3.75			7							645	808	2005	4.0%	700			2,600	
	3	Madison	20.78 (North of Sledd Branch Road)	22.212 (New Road)	1.43		1 Lane Highway	12															
	4	Madison	22.212 (New Road)	24.55 (South of Poosey Ridge Road)	2.34										107	800	2006	1.4%	100			200	
	5	Madison	24.55 (South of Poosey Ridge Road)	24.604 (Poosey Ridge Road)	0.05			10															
KY 876	1	Madison	0.00 (KY 595)	2.387 (Bogie Mill Road)	2.39	Rural Minor Collector	2 Lane Undivided Highway	8	3	none	0	N/A	55		643	586	2004	2.8%	700	*10.3%*		1,700	16.8%
	2	Madison	2.387 (Bogie Mill Road)	3.99 (West of Redwood Drive)	1.60				1						1,340	578	2006	0.2%	1,300			1,400	
	3	Madison	3.99 (West of Redwood Drive)	4.77 (Old Pond Way/Mule Shed Road)	0.78			8-9	1-3				45										
	4	Madison	4.77 (Old Pond Way/Mule Shed Road)	5.15 (West of Curtis Pike)	0.38			9	1						2,330	576	2004	2.4%	2,500			5,500	
	5	Madison	5.15 (West of Curtis Pike)	6.528 (Willis Branch Road)	1.38			10															
	6	Madison	6.528 (Willis Branch Road)	6.95 (West of Amberly Way)	0.42										12,200	A03	2005	2.3%	12,800			27,100	
	7	Madison	6.95 (West of Amberly Way)	7.097 (I-75 Ramp)	0.15				6														

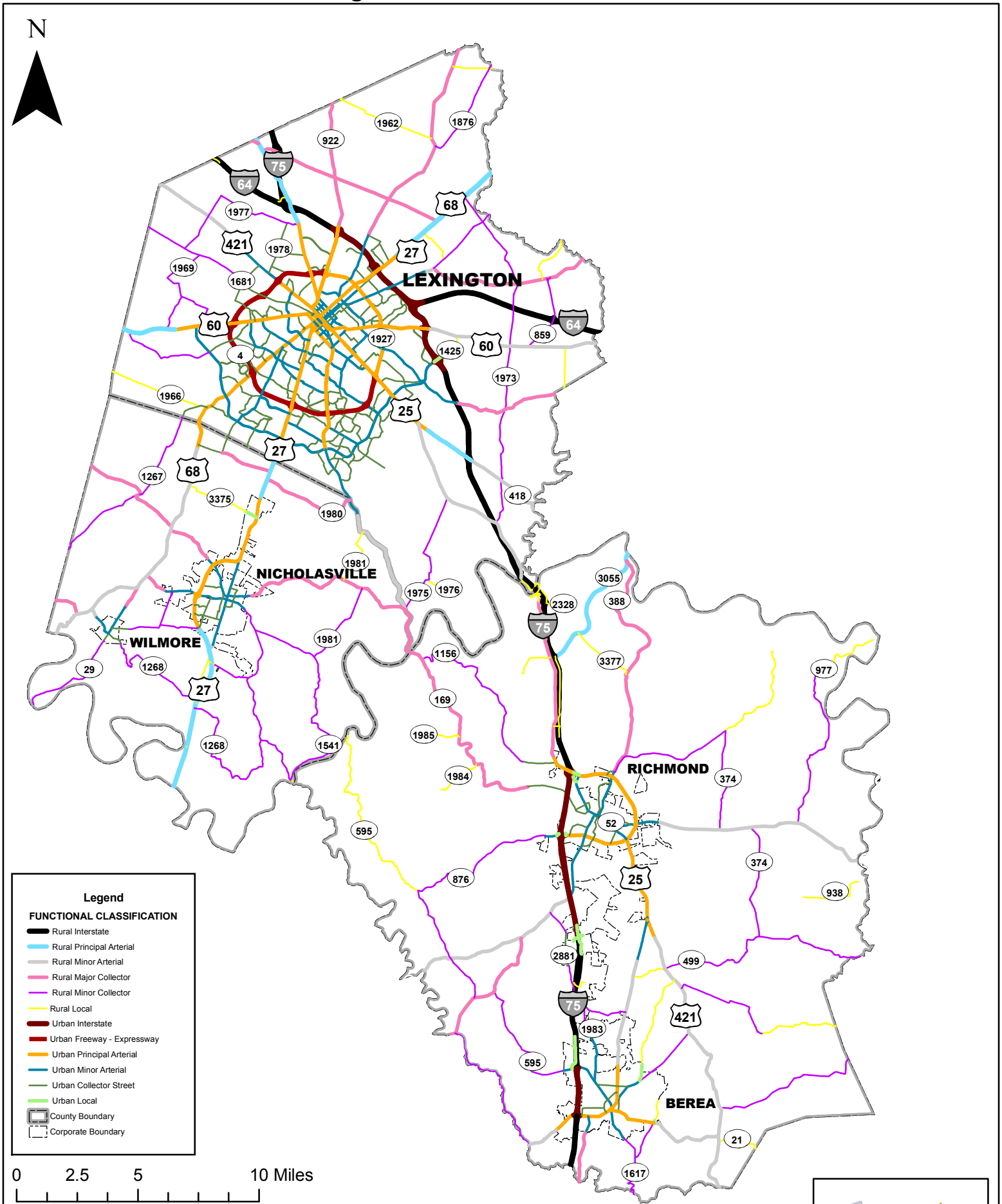
*Truck Percentages in italics were found based on 2004 Traffic Forecasting Report

Table 1: Study Area Highway Characteristics Summary (Cont.)

Route	Section	County	Begin Milepoint	End Milepoint	Section Length (miles)	Functional Class	Facility Type	Lane Width (feet)	Shoulder Width (feet)	Median Type	Median Width (feet)	% No Passing Zones	Posted Speed Limit (MPH)	HCS Speed	Most Recent ADT	Count Station	Year	Growth Rate	2007 ADT	% Trucks	Year of Truck Data	2040 ADT	2040 % Trucks
KY 1541	1	Jessamine	0 (KY 39)	3.556 (Kissing Ridge Road)	3.56	Rural Minor Collector	2 Lane Undivided Highway	8	3	none	0	N/A	55		90	298	2006	-1.2%	100	*10.3%*		100	16.8%
	2	Jessamine	3.556 (Kissing Ridge Road)	4.500 (North of Pollard Pike)	0.94										446	277	2006	2.5%	500			1,100	
	3	Jessamine	4.500 (North of Pollard Pike)	7.000 (North of KY 1981)	2.50										1,240	295	2004	1.9%	1,300			2,400	
	4	Jessamine	7.000 (North of KY 1981)	9.668 (KY 39)	2.67			9															
KY 39	1	Jessamine	0.00 (North Bank of Kentucky River)	0.12 (KY 1541)	0.12	Rural Local	2 Lane Undivided Highway	8	3	none	0	N/A	55		111	281	2006	-3.4%	100	7.4%	2004	100	12.1%
	2	Jessamine	0.12 (KY 1541)	2.454 (KY 1268)	2.33	Rural Minor Collector																	
	3	Jessamine	2.454 (KY 1268)	3.747 (Big Hickman Creek Bridge)	1.29										853	280	2006	1.9%	900			1,700	
	4	Jessamine	3.747 (Big Hickman Creek Bridge)	5.56 (North of Old Sulphur Well Road)	1.81			10															
	5	Jessamine	5.56 (North of Old Sulphur Well Road)	5.83 (North of Elmfork Road)	0.27								45										
	6	Jessamine	5.83 (North of Elmfork Road)	7.550 (KY 1541)	1.72								55										
	7	Jessamine	7.550 (KY 1541)	8.38 (South of Ash Drive)	0.83										3,210	A27	2004	1.5%	3,400			5,600	
	8	Jessamine	8.38 (South of Ash Drive)	8.548 (Ash Drive)	0.17																		
	9	Jessamine	8.548 (Ash Drive)	8.875 (Miles Road)	0.33	Urban Minor Arterial Street							35										
	10	Jessamine	8.875 (Miles Road)	9.29 (Hager Lane)	0.42			9-10	0-3						7,020	A13	2004	2.6%	7,600			17,700	
	11	Jessamine	9.29 (Hager Lane)	9.404 (KY 29 / US 27)	0.11			9	0				25										
KY 1156	1	Madison	0.00 (US 25)	.64 (South of Secretariat Drive)	0.64	Urban Collector Street	2 Lane Undivided Highway	8	1	none	0	N/A	35		1,670	781	2004	3.4%	1,800	5.1%	2004	5,400	8.3%
	2	Madison	.64 (South of Secretariat Drive)	1.352 (Boone Way)	0.71								55										
	3	Madison	1.352 (Boone Way)	4.5 (South of Clay Lane)	3.15	Rural Minor Collector																	
	4	Madison	4.5 (South of Clay Lane)	5.68 (South of Kentucky River Road)	1.18			7							724	782	2005	4.1%	800			3,000	
	5	Madison	5.68 (South of Kentucky River Road)	6.278 (Kentucky River Road)	0.60			8															
	6	Madison	6.278 (Kentucky River Road)	8.7 (South of Tate Creek Bridge)	2.42										233	784	2006	0.8%	200			300	
	7	Madison	8.7 (South of Tate Creek Bridge)	9.376 (KY 169)	0.68			9															
KY 3055	1	Madison	0.00 (White Hall Shrine Road)	1.54 (South of KY 627/US 25)	1.54	Rural Local	2 Lane Undivided Highway	11	3	none	0	N/A	55		107	829	2006	-0.4%	100	*8.6%*		100	14.1%
	2	Madison	1.54 (South of KY 627/US 25)	1.593 (KY 627/US 25)	0.05				0														
KY 1985	1	Madison	0.00 (Whitlock Road / Baldwin Road)	.85 (East of Whitlock and Baldwin)	0.85	Rural Local	2 Lane Undivided Highway	8	1	none	0	N/A	55		365	793	2006	0.6%	400	*8.6%*		500	14.1%
	2	Madison	.85 (East of Whitlock and Baldwin)	1.399 (West of Tate Creek Bridge)	0.55			7															
	3	Madison	1.399 (West of Tate Creek Bridge)	1.499 (KY 169)	0.10			8	3														
CS 4524 (Man O' War Blvd)	1	Fayette	6.561 (Nicholasville Road)	8.566 (Tates Creek Road)	2.01	Urban Minor Arterial	4 Lane Divided Highway	12	0	Raised Non-mountable	16	N/A	45		31,900	G57	2007	2.7%	31,900	*8.7%*		77,600	14.2%
	2	Fayette	8.566 (Tates Creek Road)	10.285 (Armstrong Mill Road)	1.72										25,600	G78	2005	2.0%	26,600			51,300	
	3	Fayette	10.285 (Armstrong Mill Road)	11.821 (Alumni Drive)	1.54										35,200	F14	2005	3.0%	37,300			98,900	
	4	Fayette	11.821 (Alumni Drive)	12.792 (US 25 / Richmond Road)	0.97										44,800	F99	2007	3.4%	44,800			135,900	
	5	Fayette	12.792 (US 25 / Richmond Road)	13.454 (Palumbo Drive)	0.66										32,800	D18	2005	2.3%	34,300			73,300	
	6	Fayette	13.454 (Palumbo Drive)	14.254 (KY 1927 / Todds Road)	0.80										41,600	G73	2007	1.3%	41,600			63,900	
	7	Fayette	14.254 (KY 1927 / Todds Road)	15.241 (I-75 / KY 1425)	0.99										39,100	D79	2007	1.1%	39,100			56,100	

*Truck Percentages in italics were found based on 2004 Traffic Forecasting Report

Figure 2: Functional Classification



Source: KY Transportation Cabinet, KY Office of Geographic Information, KY Infrastructure Authority

3.2 Current and Historical Traffic Volumes

The average daily traffic volumes used for this project included traffic counts from the KYTC CTS database. These counts were conducted during the years of 2004 – 2007.

The counts from 2004 to 2006 were forecasted to a base year of 2007. Growth rates for the study were based upon a historical traffic growth analysis along all study area routes. The analysis utilized traffic counts obtained from the KYTC's 'CTS' traffic count program which includes counts from 1963 to 2007.

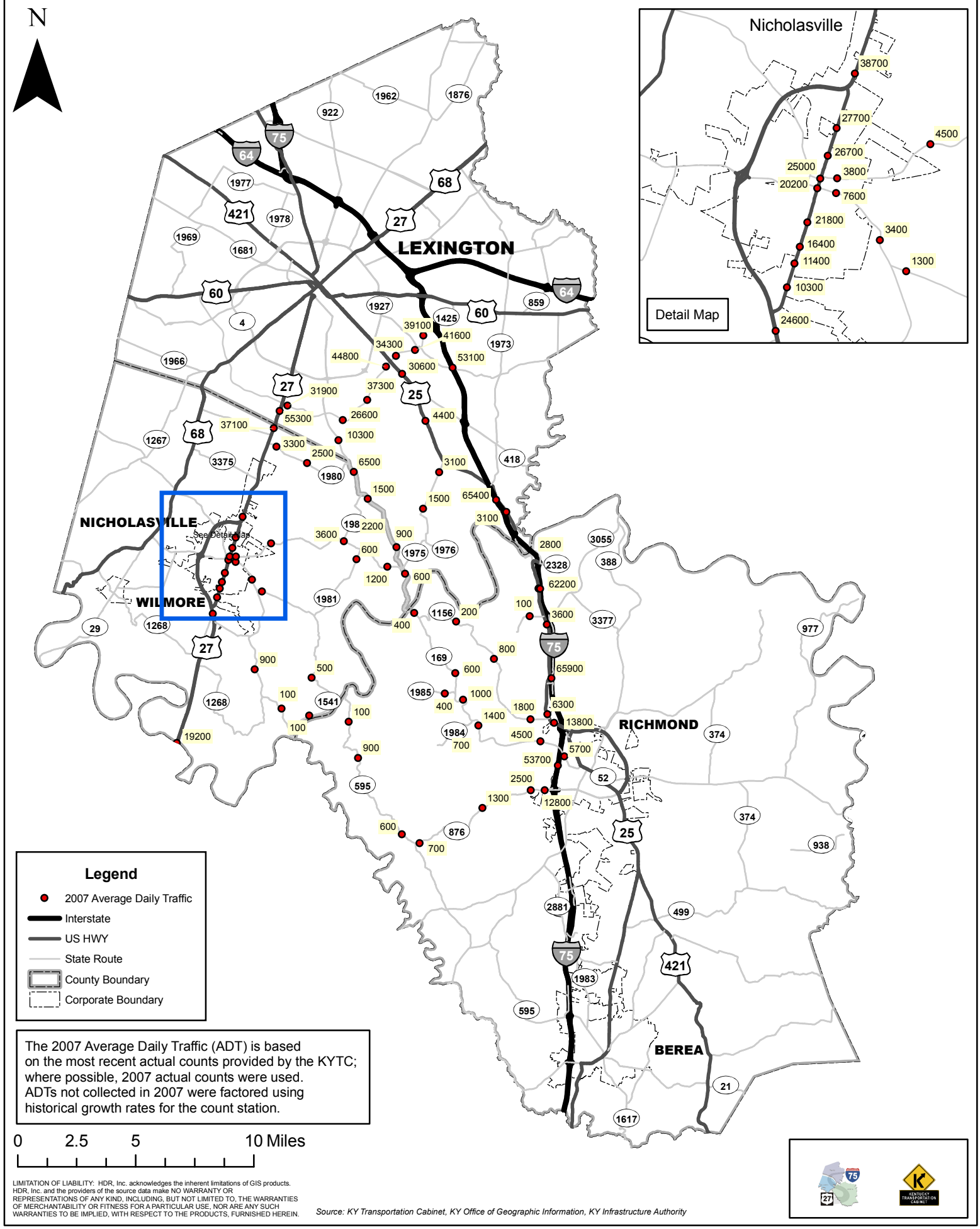
The historical counts were entered into a spreadsheet provided by KYTC Division of Planning. The spreadsheet calculates growth rates using both exponential and trend line analyses. The historical growth rates are shown in **Table 1**.

In selecting an appropriate traffic growth rate, several factors were considered including the historical growth, recent traffic volumes, and geography. The growth rates reflect historical trends along each segment, but do not include specific developments that may be constructed within or adjacent to the project area.

Current (2007) average daily traffic volumes are shown in **Figure 3**.

Truck percentages were determined from the vehicle classification database where available. If truck percentages were not available for a specific roadway section, then a truck percentage was assumed based on the 2004 Traffic Forecasting Report developed by the Kentucky Transportation Cabinet. These truck percentages are shown in **Table 1**.

Figure 3: 2007 Average Daily Traffic Volumes



Source: KY Transportation Cabinet, KY Office of Geographic Information, KY Infrastructure Authority

3.3 Travel Time Study

Travel time runs were performed to obtain a baseline comparison for the travel time savings of a new corridor, as well as to compare and calibrate the Kentucky Statewide Traffic Model (KYSTM) for use in determining new connector volumes. Two routes between US 27 and I-75 were chosen to do travel time runs. The first route began on KY 39 at US 27 and ended at US 25 where it crosses over I-75. This route did not involve a river crossing, and took 27 minutes to complete. The second route began on KY 169 where it crosses I-75, and ended on KY 169 at US 27. This path crossed the Kentucky River using the Valley View Ferry and took 35 and one-half minutes. Each run was completed according to guidelines set forth in the Institute of Transportation Engineers Traffic Engineering Handbook. **Table 2** shows travel times for individual segments along each route.

Table 2: Travel Time Results

Route	Distance	Time	Avg. Speed
KY 39 @ US 27 to KY 1541	1.84	3:57	28.0
KY 1541 @ KY 39 to KY 1981	2.67	4:24	36.4
KY 1981 @ KY 1541 to Old Railroad Road	1.83	2:54	37.9
KY 1981 @ Old Railroad Road to KY 169	1.74	2:29	42.1
KY 169 @ KY 1981 to KY 1975	2.2	2:52	45.9
KY 1975 @ KY 169 to Jack's Creek Pike	1.65	2:27	40.4
KY 1975 @ Jack's Creek Pike to Crawley Lane	1.26	2:05	36.3
KY 1975 @ Crawley Lane to US 25	2.45	3:22	43.7
US 25 @ KY 1975 to I-75	2.11	2:30	50.6
Total	17.75	27:00	40.5
KY 169 @ I-75 to Crutcher Pike	3.33	3:54	51.2
KY 169 @ Crutcher Pike to KY 1985	3.02	3:59	45.5
KY 169 @ KY 1985 to KY 1156	3.74	5:07	43.9
KY 169 @ KY 1156 to Valley View Ferry	0.71	7:16	5.9
KY 169 @ Valley View Ferry to KY 1974	1.97	3:39	32.4
KY 169 @ KY 1974 to E. Hickman Road	2.99	4:11	42.9
KY 169 @ E. Hickman Road to Bethany Road	2.58	3:24	45.5
KY 169 @ Bethany Road to US 27	2.68	4:07	39.1
Total	21.02	35:37	42.4

3.4 Current Level of Service (LOS) Analysis

3.4.1 Methodology

Two-Lane Highway Analysis

For the two-lane highways (KY 39, KY 169, KY 595, KY 876, KY 1156, KY 1541, KY 1974, KY 1975, KY 1980, KY 1981, KY 1984, KY 1985, KY 3055, and portions of US 25, and US 27), a corridor level of service analysis was prepared using the Highway Capacity Software Plus (HCS+) two-lane road analysis module. This is based on the 2000 Highway Capacity Manual (HCM). For this method, there are two classes of

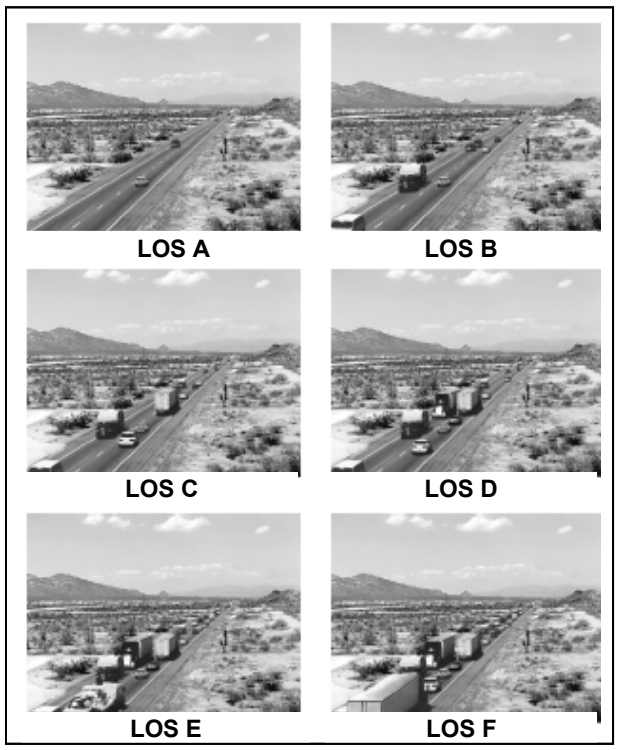
roadways: Class I highways which include higher speed arterials and daily commuter routes, and Class II highways which include lower speed collector roadways and roads primarily designed to provide access. Driver expectations regarding speed and flow are important in determining a highway's class. All state routes were assumed to be major through routes in the study area, and were therefore considered to be Class I highways. Levels of service for Class I highways are based on the estimated average travel speeds and percent time vehicles spend following other vehicles as shown in **Table 3**. Levels of service for Class II highways are defined only in terms of the percent time vehicles spend following other vehicles. Average travel speed is not considered since drivers typically will tolerate lower speeds on a Class II facility because of its function as an access roadway (serving shorter trips and fewer through trips). Refer to the HCM for more details.

Table 3: LOS Criteria for Two-Lane Highways

LOS	Class I Highways		Class II Highways
	Percent Time Spent Following	Average Travel Speed	Percent Time Spent Following
A	≤ 35	>55	≤ 40
B	>35 – 50	>50 – 55	>40 – 55
C	>50 – 65	>45 – 50	>55 – 70
D	>65 – 80	>40 – 45	>70 – 85
E	>80	≤40	>85
F	LOS F applies whenever the flow rate exceeds the capacity		

Source: Highway Capacity Manual (2000)

Figure 4: Levels of Service



Level of service A represents a free flowing facility with little time spent following another vehicle and plenty of opportunities for passing. Percent time following increases and opportunities to pass and travel speeds decrease with Level of service down to LOS F which represents a congested roadway that is over capacity with no opportunities to pass and low travel spends. LOS D is the threshold for desirable traffic operations in this study, based on guidance from the AASHTO Policy on Geometric Design of Highways and Streets. While there are various roadway types in the study area, including urban and suburban freeways and arterials, as well as rural freeways, (which have a desired LOS of B or C), the majority of roadways fall under the categories of urban and suburban collector and local roads, as well as rural rolling local roads, which have a desired LOS D. It was determined that all roadways should be

evaluated using the same criteria and that operations below this threshold be noted as undesirable and warrant improvement. For Class I highways, the LOS D threshold corresponds to an average travel speed of >40 miles per hour with ≤80 percent time spent following another vehicle. Refer to **Figure 4** for a graphical representation of what a LOS D looks like.

Multilane Highway Analysis

To analyze traffic operations for the four-lane or greater highway sections (US 25, US 27 and Man O' War Boulevard), the HCS+ multilane analysis package was used. This is also based on the 2000 HCM methodology. For each section, the estimated travel speed and the resulting levels of service (LOS) were calculated.

Levels of service for multilane highway sections are based on density in terms of passenger cars per mile per lane (pc/mi/ln) as shown in **Table 4**. Density is used to define level of service because it is an indicator of freedom to maneuver within the traffic stream and the proximity to other vehicles. Speed in terms of mean passenger-car speed and volume-to-capacity (v/c) ratios are interrelated with density and can be used to characterize a multilane highway segment.

Table 4: LOS Criteria for Multilane Highways

LOS	Density Range (pc/mi/ln)
A	0 – 11
B	> 11 – 18
C	> 18 – 26
D	>26 – 35
E	> 35 – 45
F	> 45

Source: Highway Capacity Manual (2000)

Similar to the two-lane highway analysis, LOS D is the threshold for desirable traffic operations used in this study. For multilane highways, a LOS D corresponds to a density between 26 and 35 passenger cars per mile per lane. (Refer to the HCM for more specific information.)

Freeway Analysis

To analyze peak hour traffic operations for I-75, the HCS+ freeway analysis package was used, also based on the 2000 HCM. For each section, the estimated travel speed and the resulting levels of service (LOS) were calculated.

Levels of service for freeway sections are based on density in terms of passenger cars per mile per lane (pc/mi/ln) as shown in **Table 5**. Similar to multilane highways, density is used to define level of service because it is an indicator of freedom to maneuver within the traffic stream and the proximity to other vehicles. Speed in terms of mean passenger-car speed and volume-to-capacity (v/c) ratios are interrelated with density and can be used to characterize a freeway segment.

Table 5: LOS Criteria for Freeways

LOS	Density Range (pc/mi/ln)
A	0 – 11
B	> 11 – 18
C	> 18 – 26
D	>26 – 35
E	> 35 – 45
F	> 45

Source: Highway Capacity Manual (2000)

Again, LOS D is the threshold for desirable traffic operations used in this study. For freeways, a LOS D corresponds to a density between 26 and 35 passenger cars per mile per lane. (Refer to the HCM for more specific information.)

3.4.2 Existing Traffic Operating Conditions

The most recent 24-hour KYTC traffic counts were used to evaluate corridor operating conditions. Peak hour traffic volumes for highway segments were estimated based on the average daily traffic volumes for those segments using K-factors (factor based on the 30th highest hour of the year) derived from the KYTC counts. The current lane widths, shoulder widths, percent passing, and other design factors were also used.

The segment levels of service are listed in **Table 6** and are shown on **Figure 5**.

Table 6: 2007 Corridor Levels of Service

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2007 ADT	K-Factor	2007 DHV	Off Peak Direction %	Peak Direction %	Posted Speed Limit (MPH)	% Trucks	Estimated Travel Speed	% Time Spent Following	Density (pc/mi/ln)	LOS
US 27X	1	0.0 (South of Nicholasville)	0.23 (Southbrook Drive)	0.23	10,300	0.112	1150	43	57	55	10.3	40.5	77.4	N/A	D
	2	0.23 (Southbrook Drive)	0.835 (John C Watts Drive)	0.61	10,300	0.1	1030	44	56	55	10.3	74.9	74.9	N/A	D
	3	0.835 (John C Watts Drive)	1.075 (Longview Drive)	0.24	11,400	0.1	1140	44	56	45	10.3	77.2	77.2	N/A	D
	4	1.075 (Longview Drive)	1.305 (Edgewood Drive)	0.23	16,400	0.1	1640	44	56	35	10.3				
	5	1.305 (Edgewood Drive)	1.586 (Natchez Trace)	0.28	21,800	0.1	2180	44	56	35	10.3				
	6	1.586 (Natchez Trace)	1.88 (Brown Street)	0.29	21,800	0.1	2180	44	56	35	10.3				
	7	1.88 (Brown Street)	2.112 (Chestnut Street)	0.23	20,200	0.1	2020	44	56	35	10.3				
	8	2.112 (Chestnut Street)	2.18 (KY 39/KY 29)	0.07	20,200	0.1	2020	44	56	25	10.3				
	9	2.18 (KY 39/KY 29)	2.38 (KY 169)	0.20	25,000	0.1	2500	44	56	25	10.3				
	10	2.38 (KY 169)	2.882 (Duncan Street)	0.50	26,700	0.1	2670	44	56	35	10.3				
	11	2.882 (Duncan Street)	3.89 (US 27 Bypass)	1.01	27,700	0.1	2770	44	56	35	10.3				
US 27 (South and North of Downtown)	1	0.0 (Garrard-Jessamine County Line)	1.115 (South of Old Danville Road)	1.12	19,200	0.101	1940	44	56	55	8.9	51	N/A	13.4	B
	2	1.115 (South of Old Danville Road)	3.826 (Greystone Drive/KY 1268)	2.71	19,200	0.101	1940	44	56	55	8.9	51	N/A	13.4	B
	3	3.826 (Greystone Drive/KY 1268)	6.011 (US 27 Bypass)	2.19	22,600	0.101	2280	44	56	55	8.9	51	N/A	15.8	B
	4	10.827 (US 27 Bypass)	11.016 (South of Old US 27 ROW)	0.19	38,700	0.101	3910	44	56	55	8.9	51	N/A	27.1	D
	5	11.016 (South of Old US 27 ROW)	13.695 (Industry Parkway)	2.68	38,700	0.101	3910	44	56	55	8.9	49.4	N/A	27.9	D
	6	13.695 (Industry Parkway)	14.807 (KY 1980)	1.11	38,700	0.106	4100	40	60	55	8.9	51.3	N/A	28	D
	7	14.807 (KY 1980)	15.278 (Jessamine-Fayette County Line)	0.47	37,100	0.106	3930	40	60	55	8.9	51.4	N/A	26.8	D
	8	0.0 (Fayette-Jessamine Co. Line)	0.956 (Man O War)	0.96	55,300	0.101	5590	44	56	55	*6.9*	50.1	N/A	N/A	F
I-75	1	87.185 (KY 876)	89.802 (US 25)	2.62	53,700	0.1	5370	44	56	65	16	62	N/A	22.3	C
	2	89.802 (US 25)	91.1 (North of US 25)	1.30	65,900	0.104	6850	43	57	65	16	63.4	N/A	29.2	D
	3	91.1 (North of US 25)	92.1 (North of Lexington Access Road)	1.00	65,900	0.104	6850	43	57	65	16	63.4	N/A	29.2	D
	4	92.1 (North of Lexington Access Road)	94.295 (South of KY 627)	2.20	65,900	0.104	6850	43	57	65	16	63.4	N/A	29.2	D
	5	94.295 (South of KY 627)	94.73 (KY 627)	0.44	65,900	0.104	6850	43	57	65	16	63.4	N/A	29.2	D
	6	94.73 (KY 627)	97.038 (US 25)	2.31	62,200	0.104	6470	43	57	65	19.1	63.8	N/A	28.4	D
	7	97.038 (US 25)	97.703 (Madison-Fayette County Line)	0.67	65,700	0.104	6830	43	57	65	19.1	62.8	N/A	30.4	D
	8	97.703 (Madison-Fayette County Line)	98.516 (US 25)	0.81	65,700	0.104	6830	43	57	65	19.1	62.8	N/A	30.4	D
	9	98.516 (US 25)	103.89 (KY 418)	5.37	65,400	0.104	6800	43	57	65	19.1	62.9	N/A	30.3	D
	10	103.89 (KY 418)	108.21 (KY 1425 Man-O-War Underpass)	4.32	53,100	0.104	5520	43	57	65	19.1	65	N/A	23.8	C
KY 1541	1	0 (KY 39)	3.556 (Kissing Ridge Road)	3.56	100	0.11	10	43	57	55	*10.3*	47.7	24.7	N/A	C
	2	3.556 (Kissing Ridge Road)	4.500 (North of Pollard Pike)	0.94	500	0.11	60	43	57	55	*10.3*	45.4	31.3	N/A	C
	3	4.500 (North of Pollard Pike)	7.000 (North of KY 1981)	2.50	1,300	0.11	140	43	57	55	*10.3*	42.4	40.9	N/A	D
	4	7.000 (North of KY 1981)	9.668 (KY 39)	2.67	1,300	0.11	140	43	57	55	*10.3*	42.4	40.9	N/A	D

LOS E - F
LOS D
LOS A - C
Speed <45, Not Analyzed

Notes:
ADT = 2007 Average Daily Traffic (count or estimate) from CTS Traffic Count Information
K-Factor = Design Hour Factor obtained from KYTC 2004 Traffic Forecasting Report
DHV = 2007 Design Hour Volume (Average Daily Traffic x K-Factor)
Speed Limit obtained from Highway Information System
% Trucks and Buses obtained from 2004 Vehicle Classification System Database. Roadways where data did not exist were estimated using KYTC 2004 Traffic Forecasting Report, and are italicized.
Level of Service (LOS) and % Time Spent Following calculated using Highway Capacity Software Plus.
% RVs were obtained from exhibit 12-14 of the HCM.
Number of access points per mile were obtained from exhibit 12-4 of the HCM.

*45 mph was used as the posted speed since that is the lowest value HCS + accepts for two-lane highway analysis.
** Lane widths less than 9 ft were entered in as 9 ft since that is the HCS+ minimum.

Sources: Highway Information System Database, KYTC 2004 Traffic Forecasting Report, KYTC Vehicle Classification Database

Table 6: 2007 Corridor Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2007 ADT	K-Factor	2007 DHV	Off Peak Direction %	Peak Direction %	Posted Speed Limit (MPH)	% Trucks	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
US 25	1	20.255 (I-75 Bridge)	20.342 (North of I-75 Bridge)	0.09	13,800	0.101	1390	44	56	45	*6.9*	45	N/A	10.6	A
	2	20.342 (North of I-75 Bridge)	20.49 (Keeneland Drive)	0.09	13,800	0.101	1390	44	56	45	*6.9*	45	N/A	10.6	A
	3	20.49 (Keeneland Drive)	20.573 (Brandy Lane)	0.08	13,800	0.101	1390	44	56	45	*6.9*	45	N/A	10.6	A
	4	20.573 (Brandy Lane)	20.771 (Keystone Drive)	0.20	13,800	0.101	1390	44	56	45	*6.9*	24.1	82	N/A	D
	5	20.771 (Keystone Drive)	20.964 (KY 1156)	0.19	13,800	0.101	1390	44	56	45	*6.9*	22	82	N/A	D
	6	20.964 (KY 1156)	21.139 (North of KY 1156)	0.18	6,100	0.101	620	44	56	45	*6.9*	27.1	64.9	N/A	C
	7	21.139 (North of KY 1156)	24.076 (Clay Lane)	2.94	6,100	0.115	700	36	64	55	*12.4*	38.7	67.2	N/A	E
	8	24.076 (Clay Lane)	25.373 (KY 627/KY 3055)	1.30	3,600	0.115	410	36	64	55	*12.4*	41.5	52.8	N/A	D
	9	25.373 (KY 627/KY 3055)	28.161 (KY 2884)	2.79	2,800	0.115	320	36	64	55	*12.4*	41.3	56.9	N/A	D
	10	0 (South Limits of I-75 Interchange)	.366 (North of I-75 NB Ramps)	0.37	3,100	0.112	350	43	57	55	*10.3*	45.6	59	N/A	C
	11	.366 (North of I-75 NB Ramps)	1.829 (South of Elk Lick Falls Road)	1.46	3,100	0.112	350	43	57	55	*10.3*	40.9	59	N/A	D
	12	1.829 (South of Elk Lick Falls Road)	2.876 (North of Turner Station Road)	1.05	3,100	0.112	350	43	57	55	*10.3*	45.6	59	N/A	C
	13	2.876 (North of Turner Station Road)	4.832 (KY 1975)	1.96	3,100	0.112	350	43	57	55	*10.3*	45.2	59	N/A	C
	14	4.832 (KY 1975)	8.144 (KY 418)	3.31	4,400	0.112	490	43	57	55	*10.3*	44.7	60.4	N/A	D
	15	8.144 (KY 418)	9.734 (Man O War Boulevard)	1.59	30,600	0.101	3090	44	56	55	*6.9*	53	N/A	20.8	C
KY 1980	1	3.025 (US 27)	3.68 (West of Leeburton Road)	0.66	3,300	0.115	380	36	64	55	10.2	40.1	56.4	N/A	D
	2	3.68 (West of Leeburton Road)	4.06 (East of Noland Drive)	0.38	3,300	0.115	380	36	64	45	10.2	30.1	56.4	N/A	E
	3	4.06 (East of Noland Drive)	4.69 (Ashgrove Lane)	0.63	3,300	0.115	380	36	64	55	10.2	40.1	56.4	N/A	D
	4	4.69 (Ashgrove Lane)	5.06 (East of Young Drive)	0.37	2,500	0.115	290	36	64	35	10.2				
	5	5.06 (East of Young Drive)	6.02 (West of Spurlock Lane)	0.96	2,500	0.115	290	36	64	55	10.2	39.9	55.4	N/A	E
	6	6.02 (West of Spurlock Lane)	6.69 (East of Mackey Pike)	0.67	2,500	0.115	290	36	64	45	10.2	29.9	55.4	N/A	E
	7	6.69 (East of Mackey Pike)	7.451 (Fayette County Line)	0.76	2,500	0.115	290	36	64	55	10.2	39.9	55.4	N/A	E
KY 1974	1	0.00 (KY 169)	.16 (South of KY 1975)	0.16	900	0.112	100	43	57	35	*14*				
	2	.16 (South of KY 1975)	1.667 (Crawley Lane)	1.51	900	0.112	100	43	57	55	*14*	41.7	36.6	N/A	D
	3	1.667 (Crawley Lane)	4.228 (Delong Road)	3.04	1,500	0.112	170	43	57	55	*14*	39.9	44.8	N/A	E
	4	4.228 (Delong Road)	4.711 (South of Hickman Creek Bridge)	0.48	6,500	0.1	650	44	56	55	*8.7*	35.1	66	N/A	E
	5	4.711 (South of Hickman Creek Bridge)	5.443 (KY 1980)	0.73	6,500	0.1	650	44	56	55	*8.7*	35.1	66	N/A	E
	6	5.443 (KY 1980)	7.782 (Man O War Boulevard)	2.34	10,000	0.1	1000	44	56	55	*8.7*	45	N/A	8.1	A
KY 1981	1	0.00 (KY 1541)	2.365 (Marble Creek Lane)	2.37	600	0.11	70	43	57	55	*10.3*	44.9	32.6	N/A	D
	2	2.365 (Marble Creek Lane)	3.30 (South of KY 169)	0.94	600	0.11	70	43	57	55	*10.3*	44.9	32.6	N/A	D
	3	3.30 (South of KY 169)	3.668 (KY 169)	0.37	600	0.11	70	43	57	35	*10.3*				
	4	3.668 (KY 169)	3.998 (North of Caveson Way)	0.30	2,200	0.11	240	43	57	55	*8.6*	40.4	51.4	N/A	D
	5	3.998 (North of Caveson Way)	6.13 (KY 1974 @ Fayette County Line)	2.13	2,200	0.11	240	43	57	55	*8.6*	40.4	51.4	N/A	D

LOS E - F

LOS D

LOS A - C

Speed <45, Not Analyzed

Notes:
ADT = 2007 Average Daily Traffic (count or estimate) from CTS Traffic Count Information
K-Factor = Design Hour Factor obtained from KYTC 2004 Traffic Forecasting Report
DHV = 2007 Design Hour Volume (Average Daily Traffic x K-Factor)
Speed Limit obtained from Highway Information System
% Trucks and Buses obtained from 2004 Vehicle Classification System Database. Roadways where data did not exist were estimated using KYTC 2004 Traffic Forecasting Report, and are italicized.
Level of Service (LOS) and % Time Spent Following calculated using Highway Capacity Software Plus.
% RVs were obtained from exhibit 12-14 of the HCM.
Number of access points per mile were obtained from exhibit 12-4 of the HCM.

*45 mph was used as the posted speed since that is the lowest value HCS + accepts for two-lane highway analysis.
** Lane widths less than 9 ft were entered in as 9 ft since that is the HCS+ minimum.

Sources: Highway Information System Database, KYTC 2004 Traffic Forecasting Report, KYTC Vehicle Classification Database

Table 6: 2007 Corridor Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2007 ADT	K-Factor	2007 DHV	Off Peak Direction %	Peak Direction %	Posted Speed Limit (MPH)	% Trucks	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
KY 169	1	1.349 (I-75 Underpass)	2.240 (Goggins Lane)	0.89	5,700	0.12	680	42	58	55	7.8	38.2	65.5	N/A	E
	2	2.240 (Goggins Lane)	3.082 (Boone Way)	0.84	4,300	0.12	520	42	58	55	7.8	39.3	61.1	N/A	E
	3	3.082 (Boone Way)	4.877 (Crutcher Pike)	1.80	4,300	0.115	490	36	64	55	7.8	41.4	60.3	N/A	D
	4	4.877 (Crutcher Pike)	6.184 (KY 1984)	1.31	1,400	0.115	160	36	64	55	7.8	43.1	43.8	N/A	D
	5	6.184 (KY 1984)	8.051 (KY 1985)	1.87	1,000	0.115	120	36	64	55	7.8	44	39.8	N/A	D
	6	8.051 (KY 1985)	8.478 (Buffalo Road)	0.43	600	0.115	70	36	64	55	7.8	45	34.5	N/A	C
	7	8.478 (Buffalo Road)	11.74 (Ervin Sloan East Road)	3.26	600	0.115	70	36	64	55	7.8	43.4	34.5	N/A	D
	8	11.74 (Ervin Sloan East Road)	11.869 (KY 1156 / Carvers Ferry Road)	0.13	600	0.115	70	36	64	55	7.8	43.4	34.5	N/A	D
	9	11.869 (KY 1156 / Carvers Ferry Road)	12.511 (Approach to Valley View Ferry)	0.64	400	0.115	50	36	64	55	7.8	44.3	32.2	N/A	D
	10	0.00 (Approach to Valley View Ferry)	1.939 (South of Newman Road)	1.94	600	0.115	70	36	64	55	5.2	46.5	34	N/A	C
	11	1.939 (South of Newman Road)	2.030 (North of KY 1974)	0.09	600	0.115	70	36	64	55	5.2	46.2	34.2	N/A	C
	12	2.030 (North of KY 1974)	3.598 (South of Burnside Drive)	1.57	1,200	0.115	140	36	64	55	5.2	44.1	41.3	N/A	D
	13	3.598 (South of Burnside Drive)	4.218 (KY 1981)	0.62	1,200	0.115	140	36	64	35	5.2				
	14	4.218 (KY 1981)	7.733 (Vince Road / Bethany Road)	3.52	3,600	0.115	410	36	64	55	5.2	41.6	56.8	N/A	D
	15	7.733 (Vince Road / Bethany Road)	9.482 (Locust Heights)	1.75	4,500	0.115	520	36	64	55	5.2	40.7	62.2	N/A	D
	16	9.482 (Locust Heights)	9.918 (North of Glencove Ave)	0.44	4,500	0.1	450	44	56	45	5.2	29.6	59.9	N/A	E
	17	9.918 (North of Glencove Ave)	10.028 (Liberty Street)	0.11	4,500	0.1	450	44	56	35	5.2				
	18	10.028 (Liberty Street)	10.362 (Bell Court)	0.33	3,800	0.1	380	44	56	35	5.2				
	19	10.362 (Bell Court)	10.458 (US 27)	0.10	3,800	0.1	380	44	56	25	5.2				
KY 876	1	0.00 (KY 595)	2.387 (Bogie Mill Road)	2.39	700	0.11	80	43	57	55	*10.3*	44.5	33.8	N/A	D
	2	2.387 (Bogie Mill Road)	3.99 (West of Redwood Drive)	1.60	1,300	0.11	140	43	57	55	*10.3*	40.8	40.9	N/A	D
	3	3.99 (West of Redwood Drive)	4.77 (Old Pond Way/Mule Shed Road)	0.78	1,300	0.11	140	43	57	45	*10.3*	32.4	40.9	N/A	E
	4	4.77 (Old Pond Way/Mule Shed Road)	5.15 (West of Curtis Pike)	0.38	2,500	0.11	280	43	57	45	*10.3*	28.4	54.9	N/A	E
	5	5.15 (West of Curtis Pike)	6.528 (Willis Branch Road)	1.38	2,500	0.11	280	43	57	45	*10.3*	29.5	54.9	N/A	E
	6	6.528 (Willis Branch Road)	6.95 (West of Amberly Way)	0.42	12,800	0.11	1410	43	57	45	*10.3*	23.1	82.3	N/A	E
	7	6.95 (West of Amberly Way)	7.097 (I-75 Ramp)	0.15	12,800	0.11	1410	43	57	45	*10.3*	27.3	82.3	N/A	E
KY 1156	1	0.00 (US 25)	.64 (South of Secretariat Drive)	0.64	1,800	0.12	220	42	58	35	5.1				
	2	.64 (South of Secretariat Drive)	1.352 (Boone Way)	0.71	1,800	0.12	220	42	58	55	5.1	37.3	48.6	N/A	E
	3	1.352 (Boone Way)	4.5 (South of Clay Lane)	3.15	800	0.11	90	43	57	55	5.1	42.7	34.6	N/A	D
	4	4.5 (South of Clay Lane)	5.68 (South of Kentucky River Road)	1.18	800	0.11	90	43	57	55	5.1	42.7	34.6	N/A	D
	5	5.68 (South of Kentucky River Road)	6.278 (Kentucky River Road)	0.60	800	0.11	90	43	57	55	5.1	42.7	34.6	N/A	D
	6	6.278 (Kentucky River Road)	8.7 (South of Tate Creek Bridge)	2.42	200	0.11	20	43	57	55	5.1	45.7	25.9	N/A	C
	7	8.7 (South of Tate Creek Bridge)	9.376 (KY 169)	0.68	200	0.11	20	43	57	55	5.1	45.7	25.9	N/A	C

LOS E - F

LOS D

LOS A - C

Speed <45, Not Analyzed

Notes:
ADT = 2007 Average Daily Traffic (count or estimate) from CTS Traffic Count Information
K-Factor = Design Hour Factor obtained from KYTC 2004 Traffic Forecasting Report
DHV = 2007 Design Hour Volume (Average Daily Traffic x K-Factor)
Speed Limit obtained from Highway Information System
% Trucks and Buses obtained from 2004 Vehicle Classification System Database. Roadways where data did not exist were estimated using KYTC 2004 Traffic Forecasting Report, and are italicized.
Level of Service (LOS) and % Time Spent Following calculated using Highway Capacity Software Plus.
% RVs were obtained from exhibit 12-14 of the HCM.
Number of access points per mile were obtained from exhibit 12-4 of the HCM.

*45 mph was used as the posted speed since that is the lowest value HCS + accepts for two-lane highway analysis.
** Lane widths less than 9 ft were entered in as 9 ft since that is the HCS+ minimum.

Sources: Highway Information System Database, KYTC 2004 Traffic Forecasting Report, KYTC Vehicle Classification Database

Table 6: 2007 Corridor Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2007 ADT	K-Factor	2007 DHV	Off Peak Direction %	Peak Direction %	Posted Speed Limit (MPH)	% Trucks	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
KY 39	1	0.00 (North Bank of Kentucky River)	0.12 (KY 1541)	0.12	100	0.11	10	43	57	55	7.4	47.7	24.7	N/A	C
	2	0.12 (KY 1541)	2.454 (KY 1268)	2.33	100	0.11	10	43	57	55	7.4	47.7	24.7	N/A	C
	3	2.454 (KY 1268)	3.747 (Big Hickman Creek Bridge)	1.29	900	0.11	100	43	57	55	7.4	43.7	36	N/A	D
	4	3.747 (Big Hickman Creek Bridge)	5.56 (North of Old Sulphur Well Road)	1.81	900	0.11	100	43	57	55	7.4	44.8	36	N/A	D
	5	5.56 (North of Old Sulphur Well Road)	5.83 (North of Elmfork Road)	0.27	900	0.11	100	43	57	45	7.4	34.8	36	N/A	E
	6	5.83 (North of Elmfork Road)	7.550 (KY 1541)	1.72	900	0.11	100	43	57	55	7.4	44.8	36	N/A	D
	7	7.550 (KY 1541)	8.38 (South of Ash Drive)	0.83	3,400	0.11	370	43	57	55	7.4	41.3	60.7	N/A	D
	8	8.38 (South of Ash Drive)	8.548 (Ash Drive)	0.17	3,400	0.11	370	43	57	35	7.4				
	9	8.548 (Ash Drive)	8.875 (Miles Road)	0.33	3,400	0.1	340	44	56	35	7.4				
	10	8.875 (Miles Road)	9.29 (Hager Lane)	0.42	7,600	0.1	760	44	56	35	7.4				
	11	9.29 (Hager Lane)	9.404 (KY 29 / US 27)	0.11	7,600	0.1	760	44	56	25	7.4				
CS 4524 (Man O' War Blvd)	1	6.561 (Nicholasville Road)	8.566 (Tates Creek Road)	2.01	31,900	0.1	3190	44	56	45	*8.7*	45	N/A	23.2	C
	2	8.566 (Tates Creek Road)	10.285 (Armstrong Mill Road)	1.72	26,600	0.1	2660	44	56	45	*8.7*	45	N/A	19.4	C
	3	10.285 (Armstrong Mill Road)	11.821 (Alumni Drive)	1.54	37,300	0.1	3730	44	56	45	*8.7*	45	N/A	27.2	D
	4	11.821 (Alumni Drive)	12.792 (US 25 / Richmond Road)	0.97	44,800	0.1	4480	44	56	45	*8.7*	45	N/A	32.7	D
	5	12.792 (US 25 / Richmond Road)	13.454 (Palumbo Drive)	0.66	34,300	0.1	3430	44	56	45	*8.7*	45	N/A	25	C
	6	13.454 (Palumbo Drive)	14.254 (KY 1927 / Todds Road)	0.80	41,600	0.1	4160	44	56	45	*8.7*	45	N/A	30.3	D
	7	14.254 (KY 1927 / Todds Road)	15.241 (I-75 / KY 1425)	0.99	39,100	0.1	3910	44	56	45	*8.7*	45	N/A	25.6	C
KY 595	1	16.014 (KY 876)	17.03 (Dry Branch Road)	1.02	600	0.11	70	43	57	55	*8.6*	43.4	32.5	N/A	D
	2	17.03 (Dry Branch Road)	20.78 (North of Sledd Branch Road)	3.75	700	0.11	80	43	57	55	*8.6*	42.9	33.7	N/A	D
	3	20.78 (North of Sledd Branch Road)	22.212 (New Road)	1.43	700	0.11	80	43	57	55	*8.6*	45.1	33.7	N/A	C
	4	22.212 (New Road)	24.55 (South of Poosey Ridge Road)	2.34	100	0.11	10	43	57	55	*8.6*	48.3	24.7	N/A	C
	5	24.55 (South of Poosey Ridge Road)	24.604 (Poosey Ridge Road)	0.05	100	0.11	10	43	57	55	*8.6*	47.2	24.7	N/A	C
KY 1984	1	0.00 (Newby Road)	.751 (West of Kanatzar Lane)	0.75	700	0.11	80	43	57	55	*8.6*	42.9	33.7	N/A	D
	2	.751 (West of Kanatzar Lane)	1.051 (West of Haden Heights)	0.30	700	0.11	80	43	57	55	*8.6*	44.5	33.7	N/A	D
	3	1.051 (West of Haden Heights)	2.06 (KY 169)	1.01	700	0.11	80	43	57	55	*8.6*	42.9	33.7	N/A	D
KY 1985	1	0.00 (Whitlock Road / Baldwin Road)	.85 (East of Whitlock and Baldwin)	0.85	400	0.11	40	43	57	55	*8.6*	44.8	28.6	N/A	D
	2	.85 (East of Whitlock and Baldwin)	1.399 (West of Tate Creek Bridge)	0.55	400	0.11	40	43	57	55	*8.6*	44.8	28.6	N/A	D
	3	1.399 (West of Tate Creek Bridge)	1.499 (KY 169)	0.10	400	0.11	40	43	57	55	*8.6*	46.4	28.6	N/A	C
KY 3055	1	0.00 (White Hall Shrine Road)	1.54 (South of KY 627/US 25)	1.54	100	0.11	10	43	57	55	*8.6*	49.5	24.7	N/A	C
	2	1.54 (South of KY 627/US 25)	1.593 (KY 627/US 25)	0.05	100	0.11	10	43	57	55	*8.6*	47.8	24.7	N/A	C
KY 1975	1	0.00 (KY 1974)	4.463 (Whites Lane)	4.46	1,300	0.11	140	43	57	55	6.1	42.6	40.5	N/A	D
	2	4.463 (Whites Lane)	5.410 (US 25)	0.95	3,000	0.11	330	43	57	55	6.1	39.7	57.8	N/A	E

LOS E - F

LOS D

LOS A - C

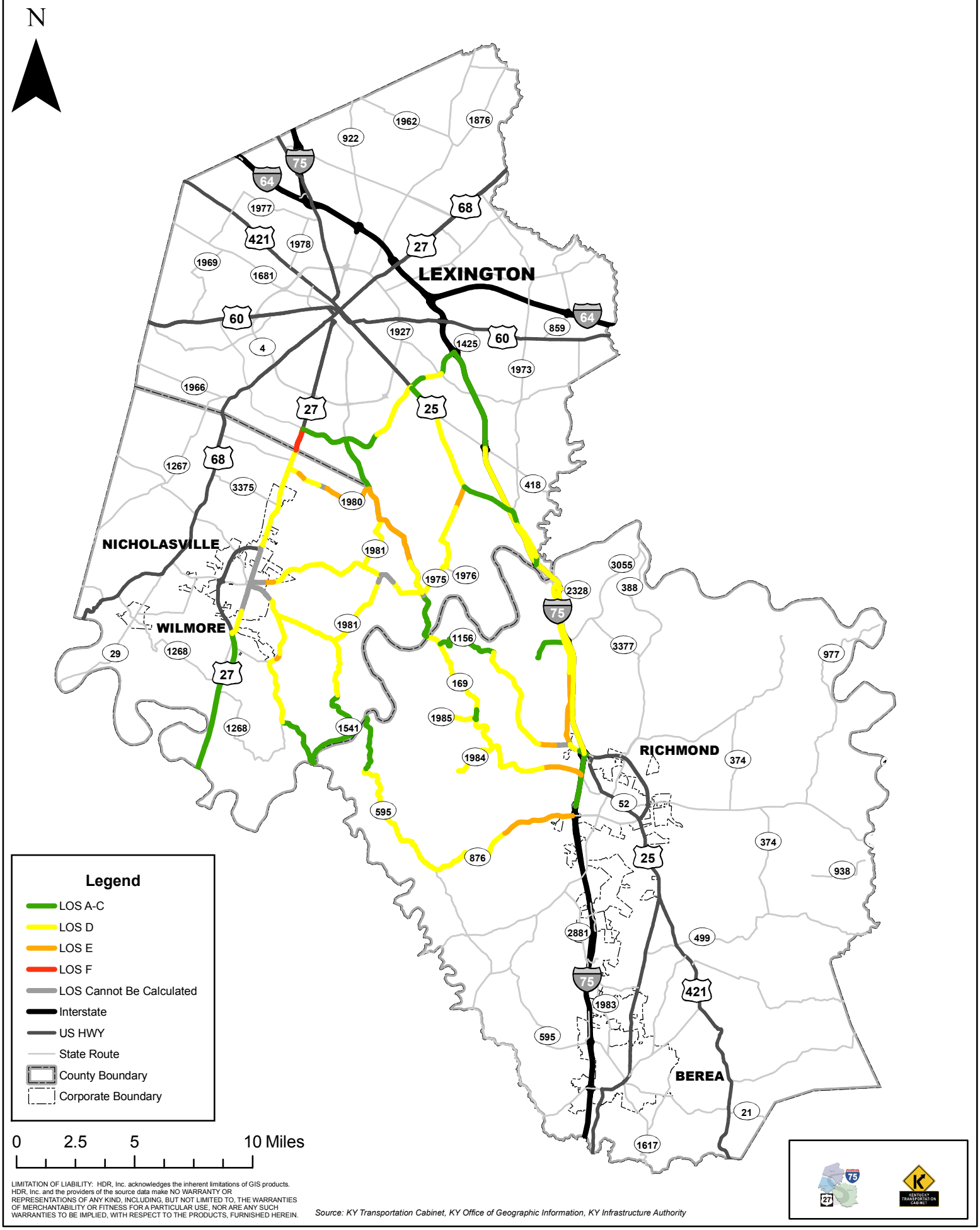
Speed <45, Not Analyzed

Notes:
ADT = 2007 Average Daily Traffic (count or estimate) from CTS Traffic Count Information
K-Factor = Design Hour Factor obtained from KYTC 2004 Traffic Forecasting Report
DHV = 2007 Design Hour Volume (Average Daily Traffic x K-Factor)
Speed Limit obtained from Highway Information System
% Trucks and Buses obtained from 2004 Vehicle Classification System Database. Roadways where data did not exist were estimated using KYTC 2004 Traffic Forecasting Report, and are italicized.
Level of Service (LOS) and % Time Spent Following calculated using Highway Capacity Software Plus.
% RVs were obtained from exhibit 12-14 of the HCM.
Number of access points per mile were obtained from exhibit 12-4 of the HCM.

*45 mph was used as the posted speed since that is the lowest value HCS + accepts for two-lane highway analysis.
** Lane widths less than 9 ft were entered in as 9 ft since that is the HCS+ minimum.

Sources: Highway Information System Database, KYTC 2004 Traffic Forecasting Report, KYTC Vehicle Classification Database

Figure 5: 2007 Corridor Levels of Service



Source: KY Transportation Cabinet, KY Office of Geographic Information, KY Infrastructure Authority

3.5 Future No-Build Traffic Operating Conditions

Traffic forecasts for each of the study segments were developed for the No-Build scenario for a future year of 2040. The methodology and findings for the future No-Build traffic forecasts are summarized below. For a more detailed explanation of the traffic forecast methodology, refer to **Appendix A** where the complete Traffic Forecast Methodology Report is included.

Traffic Forecast Methodology

To forecast traffic to 2040 volumes, historical growth rates were applied to the various roads in the study area. Each road was divided into segments based on the locations of count stations. A different growth rate based on the historical trends of the count stations was applied to each segment of road. In some cases, there were several roadway segments per count station; therefore, the same growth rate was applied to those segments.

There were some roadway segments that had unusually high growth rates based on historical trends. The historic counts were reviewed for these segments and there were generally three reasons for high historic growth rates. The first is that there was one year with a count that seemed erroneous, either being too high or low. If it seemed apparent that a miscount had occurred, that count was removed and the historical growth rate recalculated. The second reason for an unusually high growth rate is a major event on the roadway occurred, such as a development or widening of the road. If there is a point where traffic growth drastically spiked and continued from that point forward, it was assumed that a major event happened, and traffic growth was calculated based only on counts taken after the major event. The third reason for an unusually high growth rate is very low volumes on the roadway. On some roadways volumes were very low; therefore the growth rates were very high. For example, a roadway had an ADT of less than 100, and in ten years it grew to over 600. This would give a very high historic growth rate; however, because the roadway is small and rural, it is not likely to continue to grow at that rate for the next thirty years. Several roadways like this exist in the study area, and their growth rates were adjusted to be more in line with the growth rates of other similar roads.

Future No-Build Traffic Volumes

The 2040 future year No-Build traffic volumes were calculated by applying historic growth rates, as discussed above, to the various segments of roadway. The historic growth rates and 2040 no-build traffic volumes are shown in **Table 1**.

2040 Highway Level of Service and Delay

Table 7 displays the levels of service for each of the highway sections for the year 2040. **Figure 6** shows the level of service for each highway on a map.

Table 7: 2040 Corridor Levels of Service

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Off Peak Direction %	Peak Direction %	Posted Speed Limit (MPH)	% Trucks	Estimated Travel Speed	% Time Spent Following	Density (pc/mi/ln)	LOS
US 27X	1	0.0 (South of Nicholasville)	0.23 (Southbrook Drive)	0.23	13,800	0.112	1550	43	57	55	10.3	37.2	84.5	N/A	E
	2	0.23 (Southbrook Drive)	0.835 (John C Watts Drive)	0.61	13,800	0.1	1380	44	56	55	10.3	32	81.8	N/A	D
	3	0.835 (John C Watts Drive)	1.075 (Longview Drive)	0.24	14,400	0.1	1440	44	56	45	10.3	21.5	82.8	N/A	D
	4	1.075 (Longview Drive)	1.305 (Edgewood Drive)	0.23	17,500	0.1	1750	44	56	35	10.3				
	5	1.305 (Edgewood Drive)	1.586 (Natchez Trace)	0.28	33,400	0.1	3340	44	56	35	10.3				
	6	1.586 (Natchez Trace)	1.88 (Brown Street)	0.29	33,400	0.1	3340	44	56	35	10.3				
	7	1.88 (Brown Street)	2.112 (Chestnut Street)	0.23	23,800	0.1	2380	44	56	35	10.3				
	8	2.112 (Chestnut Street)	2.18 (KY 39/KY 29)	0.07	23,800	0.1	2380	44	56	25	10.3				
	9	2.18 (KY 39/KY 29)	2.38 (KY 169)	0.20	30,500	0.1	3050	44	56	25	10.3				
	10	2.38 (KY 169)	2.882 (Duncan Street)	0.50	35,900	0.1	3590	44	56	35	10.3				
	11	2.882 (Duncan Street)	3.89 (US 27 Bypass)	1.01	60,600	0.1	6060	44	56	35	10.3				
US 27 (South and North of Downtown)	1	0.0 (Garrard-Jessamine County Line)	1.115 (South of Old Danville Road)	1.12	21,200	0.101	2140	44	56	55	8.9	51	N/A	14.8	B
	2	1.115 (South of Old Danville Road)	3.826 (Greystone Drive/KY 1268)	2.71	21,200	0.101	2140	44	56	55	8.9	51	N/A	14.8	B
	3	3.826 (Greystone Drive/KY 1268)	6.011 (US 27 Bypass)	2.19	75,000	0.101	7580	44	56	55	8.9	51	N/A	N/A	F
	4	10.827 (US 27 Bypass)	11.016 (South of Old US 27 ROW)	0.19	74,400	0.101	7510	44	56	55	8.9	51	N/A	N/A	F
	5	11.016 (South of Old US 27 ROW)	13.695 (Industry Parkway)	2.68	74,400	0.101	7510	44	56	55	8.9	49.4	N/A	N/A	F
	6	13.695 (Industry Parkway)	14.807 (KY 1980)	1.11	74,400	0.106	7890	40	60	55	8.9	51.4	N/A	N/A	F
	7	14.807 (KY 1980)	15.278 (Jessamine-Fayette County Line)	0.47	60,600	0.106	6420	40	60	55	8.9	51.4	N/A	N/A	F
	8	0.0 (Fayette-Jessamine Co. Line)	0.956 (Man O War)	0.96	146,700	0.101	14820	44	56	55	*6.9*	50.1	N/A	N/A	F
I-75	1	87.185 (KY 876)	89.802 (US 25)	2.62	117,500	0.1	11750	44	56	65	16	67	N/A	N/A	F
	2	89.802 (US 25)	91.1 (North of US 25)	1.30	192,400	0.104	20010	43	57	65	16	70	N/A	N/A	F
	3	91.1 (North of US 25)	92.1 (North of Lexington Access Road)	1.00	192,400	0.104	20010	43	57	65	16	70	N/A	N/A	F
	4	92.1 (North of Lexington Access Road)	94.295 (South of KY 627)	2.20	192,400	0.104	20010	43	57	65	16	70	N/A	N/A	F
	5	94.295 (South of KY 627)	94.73 (KY 627)	0.44	192,400	0.104	20010	43	57	65	16	70	N/A	N/A	F
	6	94.73 (KY 627)	97.038 (US 25)	2.31	154,700	0.104	16090	43	57	65	19.1	70	N/A	N/A	F
	7	97.038 (US 25)	97.703 (Madison-Fayette County Line)	0.67	211,100	0.104	21950	43	57	65	19.1	70	N/A	N/A	F
	8	97.703 (Madison-Fayette County Line)	98.516 (US 25)	0.81	211,100	0.104	21950	43	57	65	19.1	70	N/A	N/A	F
	9	98.516 (US 25)	103.89 (KY 418)	5.37	114,100	0.104	11870	43	57	65	19.1	70	N/A	N/A	F
	10	103.89 (KY 418)	108.21 (KY 1425 Man-O-War Underpass)	4.32	140,800	0.104	14640	43	57	65	19.1	70	N/A	N/A	F
KY 1541	1	0 (KY 39)	3.556 (Kissing Ridge Road)	3.56	100	0.11	10	43	57	55	*10.3*	47.7	24.7	N/A	C
	2	3.556 (Kissing Ridge Road)	4.500 (North of Pollard Pike)	0.94	1,100	0.11	120	43	57	55	*10.3*	42.9	38.6	N/A	D
	3	4.500 (North of Pollard Pike)	7.000 (North of KY 1981)	2.50	2,400	0.11	260	43	57	55	*10.3*	40.2	53.3	N/A	D
	4	7.000 (North of KY 1981)	9.668 (KY 39)	2.67	2,400	0.11	260	43	57	55	*10.3*	40.2	53.3	N/A	D

LOS E - F

LOS D

LOS A - C

Speed <45, Not Analyzed

Notes:
ADT = 2040 Average Daily Traffic forecasted from 2007 ADT based on historical growth.
K-Factor = Design Hour Factor obtained from KYTC 2004 Traffic Forecasting Report
DHV = 2007 Design Hour Volume (Average Daily Traffic x K-Factor)
Speed Limit obtained from Highway Information System
% Trucks and Buses obtained from 2004 Vehicle Classification System Database. Roadways where data did not exist were estimated using KYTC 2004 Traffic Forecasting Report, and are italicized.
Level of Service (LOS) and % Time Spent Following calculated using Highway Capacity Software Plus.
% RVs were obtained from exhibit 12-14 of the HCM.
Number of access points per mile were obtained from exhibit 12-4 of the HCM.

*45 mph was used as the posted speed since that is the lowest value HCS + accepts for two-lane highway analysis.
** Lane widths less than 9 ft were entered in as 9 ft since that is the HCS+ minimum.

Sources: Highway Information System Database, KYTC 2004 Traffic Forecasting Report, KYTC Vehicle Classification Database

Table 7: 2040 Corridor Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Off Peak Direction %	Peak Direction %	Posted Speed Limit (MPH)	% Trucks	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
US 25	1	20.255 (I-75 Bridge)	20.342 (North of I-75 Bridge)	0.09	36,600	0.101	3700	44	56	45	*6.9*	45	N/A	28.2	D
	2	20.342 (North of I-75 Bridge)	20.49 (Keeneland Drive)	0.09	36,600	0.101	3700	44	56	45	*6.9*	45	N/A	28.2	D
	3	20.49 (Keeneland Drive)	20.573 (Brandy Lane)	0.08	36,600	0.101	3700	44	56	45	*6.9*	45	N/A	28.2	D
	4	20.573 (Brandy Lane)	20.771 (Keystone Drive)	0.20	36,600	0.101	3700	44	56	45	*6.9*	N/A	99.4	N/A	F
	5	20.771 (Keystone Drive)	20.964 (KY 1156)	0.19	36,600	0.101	3700	44	56	45	*6.9*	N/A	99.4	N/A	F
	6	20.964 (KY 1156)	21.139 (North of KY 1156)	0.18	13,800	0.101	1390	44	56	45	*6.9*	22	82	N/A	D
	7	21.139 (North of KY 1156)	24.076 (Clay Lane)	2.94	13,800	0.115	1590	36	64	55	*12.4*	32.2	84.6	N/A	E
	8	24.076 (Clay Lane)	25.373 (KY 627/KY 3055)	1.30	7,900	0.115	910	36	64	55	*12.4*	38.3	71.5	N/A	E
	9	25.373 (KY 627/KY 3055)	28.161 (KY 2884)	2.79	6,100	0.115	700	36	64	55	*12.4*	38.7	67.1	N/A	E
	10	0 (South Limits of I-75 Interchange)	.366 (North of I-75 NB Ramps)	0.37	3,900	0.112	440	43	57	55	*10.3*	45	59.1	N/A	C
	11	.366 (North of I-75 NB Ramps)	1.829 (South of Elk Lick Falls Road)	1.46	3,900	0.112	440	43	57	55	*10.3*	40.3	59.1	N/A	D
	12	1.829 (South of Elk Lick Falls Road)	2.876 (North of Turner Station Road)	1.05	3,900	0.112	440	43	57	55	*10.3*	45	59.1	N/A	C
	13	2.876 (North of Turner Station Road)	4.832 (KY 1975)	1.96	3,900	0.112	440	43	57	55	*10.3*	44.6	59.1	N/A	D
	14	4.832 (KY 1975)	8.144 (KY 418)	3.31	7,000	0.112	780	43	57	55	*10.3*	42.6	69.4	N/A	D
	15	8.144 (KY 418)	9.734 (Man O War Boulevard)	1.59	53,400	0.101	5390	44	56	55	*6.9*	53	N/A	38.1	E
KY 1980	1	3.025 (US 27)	3.68 (West of Leeburton Road)	0.66	5,800	0.115	670	36	64	55	10.2	38.4	66.6	N/A	E
	2	3.68 (West of Leeburton Road)	4.06 (East of Noland Drive)	0.38	5,800	0.115	670	36	64	45	10.2	28.4	66.6	N/A	E
	3	4.06 (East of Noland Drive)	4.69 (Ashgrove Lane)	0.63	5,800	0.115	670	36	64	55	10.2	38.4	66.6	N/A	E
	4	4.69 (Ashgrove Lane)	5.06 (East of Young Drive)	0.37	9,100	0.115	1050	36	64	35	10.2				
	5	5.06 (East of Young Drive)	6.02 (West of Spurlock Lane)	0.96	9,100	0.115	1050	36	64	55	10.2	36.4	75.3	N/A	E
	6	6.02 (West of Spurlock Lane)	6.69 (East of Mackey Pike)	0.67	9,100	0.115	1050	36	64	45	10.2	26.4	75.3	N/A	E
	7	6.69 (East of Mackey Pike)	7.451 (Fayette County Line)	0.76	9,100	0.115	1050	36	64	55	10.2	36.4	75.3	N/A	E
KY 1974	1	0.00 (KY 169)	.16 (South of KY 1975)	0.16	1,200	0.112	130	43	57	35	*14*				
	2	.16 (South of KY 1975)	1.667 (Crawley Lane)	1.51	1,200	0.112	130	43	57	55	*14*	40.9	40.2	N/A	D
	3	1.667 (Crawley Lane)	4.228 (Delong Road)	3.04	2,500	0.112	280	43	57	55	*14*	38.3	55.5	N/A	E
	4	4.228 (Delong Road)	4.711 (South of Hickman Creek Bridge)	0.48	12,900	0.1	1290	44	56	55	*8.7*	31	80	N/A	E
	5	4.711 (South of Hickman Creek Bridge)	5.443 (KY 1980)	0.73	12,900	0.1	1290	44	56	55	*8.7*	31	80	N/A	E
	6	5.443 (KY 1980)	7.782 (Man O War Boulevard)	2.34	31,100	0.1	3110	44	56	55	*8.7*	45	N/A	25.3	C
KY 1981	1	0.00 (KY 1541)	2.365 (Marble Creek Lane)	2.37	600	0.11	70	43	57	55	*10.3*	44.9	32.6	N/A	D
	2	2.365 (Marble Creek Lane)	3.30 (South of KY 169)	0.94	600	0.11	70	43	57	55	*10.3*	44.9	32.6	N/A	D
	3	3.30 (South of KY 169)	3.668 (KY 169)	0.37	500	0.11	60	43	57	35	*10.3*				
	4	3.668 (KY 169)	3.998 (North of Caveson Way)	0.30	7,100	0.11	780	43	57	55	*8.6*	37.7	70.6	N/A	E
	5	3.998 (North of Caveson Way)	6.13 (KY 1974 @ Fayette County Line)	2.13	7,100	0.11	780	43	57	55	*8.6*	37.7	70.6	N/A	E

LOS E - F

LOS D

LOS A - C

Speed <45, Not Analyzed

Notes:
ADT = 2040 Average Daily Traffic forecasted from 2007 ADT based on historical growth.
K-Factor = Design Hour Factor obtained from KYTC 2004 Traffic Forecasting Report
DHV = 2007 Design Hour Volume (Average Daily Traffic x K-Factor)
Speed Limit obtained from Highway Information System
% Trucks and Buses obtained from 2004 Vehicle Classification System Database. Roadways where data did not exist were estimated using KYTC 2004 Traffic Forecasting Report, and are italicized.
Level of Service (LOS) and % Time Spent Following calculated using Highway Capacity Software Plus.
% RVs were obtained from exhibit 12-14 of the HCM.
Number of access points per mile were obtained from exhibit 12-4 of the HCM.

*45 mph was used as the posted speed since that is the lowest value HCS + accepts for two-lane highway analysis.
** Lane widths less than 9 ft were entered in as 9 ft since that is the HCS+ minimum.

Sources: Highway Information System Database, KYTC 2004 Traffic Forecasting Report, KYTC Vehicle Classification Database

Table 7: 2040 Corridor Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Off Peak Direction %	Peak Direction %	Posted Speed Limit (MPH)	% Trucks	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
KY 169	1	1.349 (I-75 Underpass)	2.240 (Goggins Lane)	0.89	15,100	0.12	1810	42	58	55	7.8	29.6	87.1	N/A	E
	2	2.240 (Goggins Lane)	3.082 (Boone Way)	0.84	15,700	0.12	1880	42	58	55	7.8	29	87.9	N/A	E
	3	3.082 (Boone Way)	4.877 (Crutcher Pike)	1.80	15,700	0.115	1810	36	64	55	7.8	331.6	87.1	N/A	E
	4	4.877 (Crutcher Pike)	6.184 (KY 1984)	1.31	2,200	0.115	250	36	64	55	7.8	41.5	51.9	N/A	D
	5	6.184 (KY 1984)	8.051 (KY 1985)	1.87	1,400	0.115	160	36	64	55	7.8	43.1	43.8	N/A	D
	6	8.051 (KY 1985)	8.478 (Buffalo Road)	0.43	700	0.115	80	36	64	55	7.8	44.6	35.6	N/A	D
	7	8.478 (Buffalo Road)	11.74 (Ervin Sloan East Road)	3.26	700	0.115	80	36	64	55	7.8	43	35.6	N/A	D
	8	11.74 (Ervin Sloan East Road)	11.869 (KY 1156 / Carvers Ferry Road)	0.13	700	0.115	80	36	64	55	7.8	43	35.6	N/A	D
	9	11.869 (KY 1156 / Carvers Ferry Road)	12.511 (Approach to Valley View Ferry)	0.64	400	0.115	50	36	64	55	7.8	44.3	32.2	N/A	D
	10	0.00 (Approach to Valley View Ferry)	1.939 (South of Newman Road)	1.94	800	0.115	90	36	64	55	5.2	45.7	36.2	N/A	C
	11	1.939 (South of Newman Road)	2.030 (North of KY 1974)	0.09	800	0.115	90	36	64	55	5.2	45.4	36.4	N/A	C
	12	2.030 (North of KY 1974)	3.598 (South of Burnside Drive)	1.57	2,900	0.115	330	36	64	55	5.2	41.1	57.1	N/A	D
	13	3.598 (South of Burnside Drive)	4.218 (KY 1981)	0.62	2,900	0.115	330	36	64	35	5.2				
	14	4.218 (KY 1981)	7.733 (Vince Road / Bethany Road)	3.52	11,600	0.115	1330	36	64	55	5.2	35.8	80.5	N/A	E
	15	7.733 (Vince Road / Bethany Road)	9.482 (Locust Heights)	1.75	12,300	0.115	1410	36	64	55	5.2	35	82.2	N/A	E
	16	9.482 (Locust Heights)	9.918 (North of Glencove Ave)	0.44	12,300	0.1	1230	44	56	45	5.2	25.1	78.8	N/A	E
	17	9.918 (North of Glencove Ave)	10.028 (Liberty Street)	0.11	12,300	0.1	1230	44	56	35	5.2				
	18	10.028 (Liberty Street)	10.362 (Bell Court)	0.33	6,600	0.1	660	44	56	35	5.2				
	19	10.362 (Bell Court)	10.458 (US 27)	0.10	6,600	0.1	660	44	56	25	5.2				
KY 876	1	0.00 (KY 595)	2.387 (Bogie Mill Road)	2.39	1,700	0.11	190	43	57	55	*10.3*	41.2	46.4	N/A	D
	2	2.387 (Bogie Mill Road)	3.99 (West of Redwood Drive)	1.60	1,400	0.11	150	43	57	55	*10.3*	40.6	42	N/A	D
	3	3.99 (West of Redwood Drive)	4.77 (Old Pond Way/Mule Shed Road)	0.78	1,400	0.11	150	43	57	45	*10.3*	32.2	42	N/A	E
	4	4.77 (Old Pond Way/Mule Shed Road)	5.15 (West of Curtis Pike)	0.38	5,500	0.11	610	43	57	45	*10.3*	27.3	64.8	N/A	E
	5	5.15 (West of Curtis Pike)	6.528 (Willis Branch Road)	1.38	5,500	0.11	610	43	57	45	*10.3*	28.4	64.8	N/A	E
	6	6.528 (Willis Branch Road)	6.95 (West of Amberly Way)	0.42	27,100	0.11	2980	43	57	45	*10.3*	N/A	96.9	N/A	F
	7	6.95 (West of Amberly Way)	7.097 (I-75 Ramp)	0.15	27,100	0.11	2980	43	57	45	*10.3*	N/A	96.9	N/A	F
KY 1156	1	0.00 (US 25)	.64 (South of Secretariat Drive)	0.64	5,400	0.12	650	42	58	35	5.1				
	2	.64 (South of Secretariat Drive)	1.352 (Boone Way)	0.71	5,400	0.12	650	42	58	55	5.1	35.2	65.3	N/A	E
	3	1.352 (Boone Way)	4.5 (South of Clay Lane)	3.15	3,000	0.11	330	43	57	55	5.1	38.2	57.6	N/A	E
	4	4.5 (South of Clay Lane)	5.68 (South of Kentucky River Road)	1.18	3,000	0.11	330	43	57	55	5.1	38.2	57.6	N/A	E
	5	5.68 (South of Kentucky River Road)	6.278 (Kentucky River Road)	0.60	3,000	0.11	330	43	57	55	5.1	38.2	57.6	N/A	E
	6	6.278 (Kentucky River Road)	8.7 (South of Tate Creek Bridge)	2.42	300	0.11	30	43	57	55	5.1	45.3	27.2	N/A	C
	7	8.7 (South of Tate Creek Bridge)	9.376 (KY 169)	0.68	300	0.11	30	43	57	55	5.1	45.3	27.2	N/A	C

LOS E - F

LOS D

LOS A - C

Speed <45, Not Analyzed

Notes:
ADT = 2040 Average Daily Traffic forecasted from 2007 ADT based on historical growth.
K-Factor = Design Hour Factor obtained from KYTC 2004 Traffic Forecasting Report
DHV = 2007 Design Hour Volume (Average Daily Traffic x K-Factor)
Speed Limit obtained from Highway Information System
% Trucks and Buses obtained from 2004 Vehicle Classification System Database. Roadways where data did not exist were estimated using KYTC 2004 Traffic Forecasting Report, and are italicized.
Level of Service (LOS) and % Time Spent Following calculated using Highway Capacity Software Plus.
% RVs were obtained from exhibit 12-14 of the HCM.
Number of access points per mile were obtained from exhibit 12-4 of the HCM.

*45 mph was used as the posted speed since that is the lowest value HCS + accepts for two-lane highway analysis.
** Lane widths less than 9 ft were entered in as 9 ft since that is the HCS+ minimum.

Sources: Highway Information System Database, KYTC 2004 Traffic Forecasting Report, KYTC Vehicle Classification Database

Table 7: 2040 Corridor Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Off Peak Direction %	Peak Direction %	Posted Speed Limit (MPH)	% Trucks	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
KY 39	1	0.00 (North Bank of Kentucky River)	0.12 (KY 1541)	0.12	100	0.11	10	43	57	55	7.4	47.7	24.7	N/A	C
	2	0.12 (KY 1541)	2.454 (KY 1268)	2.33	100	0.11	10	43	57	55	7.4	47.7	24.7	N/A	C
	3	2.454 (KY 1268)	3.747 (Big Hickman Creek Bridge)	1.29	1,700	0.11	190	43	57	55	7.4	41.4	46	N/A	D
	4	3.747 (Big Hickman Creek Bridge)	5.56 (North of Old Sulphur Well Road)	1.81	1,700	0.11	190	43	57	55	7.4	42.5	46	N/A	D
	5	5.56 (North of Old Sulphur Well Road)	5.83 (North of Elmfork Road)	0.27	1,700	0.11	190	43	57	45	7.4	32.5	46	N/A	E
	6	5.83 (North of Elmfork Road)	7.550 (KY 1541)	1.72	1,700	0.11	190	43	57	55	7.4	42.5	46	N/A	D
	7	7.550 (KY 1541)	8.38 (South of Ash Drive)	0.83	5,600	0.11	620	43	57	55	7.4	40	64.9	N/A	D
	8	8.38 (South of Ash Drive)	8.548 (Ash Drive)	0.17	5,600	0.11	620	43	57	35	7.4				
	9	8.548 (Ash Drive)	8.875 (Miles Road)	0.33	5,600	0.1	560	44	56	35	7.4				
	10	8.875 (Miles Road)	9.29 (Hager Lane)	0.42	17,700	0.1	1770	44	56	35	7.4				
	11	9.29 (Hager Lane)	9.404 (KY 29 / US 27)	0.11	17,700	0.1	1770	44	56	25	7.4				
CS 4524 (Man O' War Blvd)	1	6.561 (Nicholasville Road)	8.566 (Tates Creek Road)	2.01	77,600	0.1	7760	44	56	45	*8.7*	45	N/A	N/A	F
	2	8.566 (Tates Creek Road)	10.285 (Armstrong Mill Road)	1.72	51,300	0.1	5130	44	56	45	*8.7*	45	N/A	38.4	E
	3	10.285 (Armstrong Mill Road)	11.821 (Alumni Drive)	1.54	98,900	0.1	9890	44	56	45	*8.7*	45	N/A	N/A	F
	4	11.821 (Alumni Drive)	12.792 (US 25 / Richmond Road)	0.97	135,900	0.1	13590	44	56	45	*8.7*	45	N/A	N/A	F
	5	12.792 (US 25 / Richmond Road)	13.454 (Palumbo Drive)	0.66	73,300	0.1	7330	44	56	45	*8.7*	45	N/A	N/A	F
	6	13.454 (Palumbo Drive)	14.254 (KY 1927 / Todds Road)	0.80	63,900	0.1	6390	44	56	45	*8.7*	45	N/A	N/A	F
	7	14.254 (KY 1927 / Todds Road)	15.241 (I-75 / KY 1425)	0.99	56,100	0.1	5610	44	56	45	*8.7*	45	N/A	43.1	E
KY 595	1	16.014 (KY 876)	17.03 (Dry Branch Road)	1.02	700	0.11	80	43	57	55	*8.6*	42.9	33.7	N/A	D
	2	17.03 (Dry Branch Road)	20.78 (North of Sledd Branch Road)	3.75	2,600	0.11	290	43	57	55	*8.6*	38.4	55.5	N/A	E
	3	20.78 (North of Sledd Branch Road)	22.212 (New Road)	1.43	2,600	0.11	290	43	57	55	*8.6*	40.6	55.5	N/A	D
	4	22.212 (New Road)	24.55 (South of Poosey Ridge Road)	2.34	200	0.11	20	43	57	55	*8.6*	47.9	26	N/A	C
	5	24.55 (South of Poosey Ridge Road)	24.604 (Poosey Ridge Road)	0.05	200	0.11	20	43	57	55	*8.6*	46.8	26	N/A	C
KY 1984	1	0.00 (Newby Road)	.751 (West of Kanatzar Lane)	0.75	3,200	0.11	350	43	57	55	*8.6*	38.7	59.7	N/A	E
	2	.751 (West of Kanatzar Lane)	1.051 (West of Haden Heights)	0.30	3,200	0.11	350	43	57	55	*8.6*	40.3	59.7	N/A	D
	3	1.051 (West of Haden Heights)	2.06 (KY 169)	1.01	3,200	0.11	350	43	57	55	*8.6*	38.7	59.7	N/A	E
KY 1985	1	0.00 (Whitlock Road / Baldwin Road)	.85 (East of Whitlock and Baldwin)	0.85	500	0.11	60	43	57	55	*8.6*	43.8	31.2	N/A	D
	2	.85 (East of Whitlock and Baldwin)	1.399 (West of Tate Creek Bridge)	0.55	500	0.11	60	43	57	55	*8.6*	43.8	31.2	N/A	D
	3	1.399 (West of Tate Creek Bridge)	1.499 (KY 169)	0.10	500	0.11	60	43	57	55	*8.6*	45.4	31.2	N/A	C
KY 3055	1	0.00 (White Hall Shrine Road)	1.54 (South of KY 627/US 25)	1.54	100	0.11	10	43	57	55	*8.6*	49.5	24.7	N/A	C
	2	1.54 (South of KY 627/US 25)	1.593 (KY 627/US 25)	0.05	100	0.11	10	43	57	55	*8.6*	47.8	24.7	N/A	C
KY 1975	1	0.00 (KY 1974)	4.463 (Whites Lane)	4.46	3,700	0.11	410	43	57	55	6.1	40	57.9	N/A	E
	2	4.463 (Whites Lane)	5.410 (US 25)	0.95	7,200	0.11	790	43	57	55	6.1	37.7	70.5	N/A	E

LOS E - F

LOS D

LOS A - C

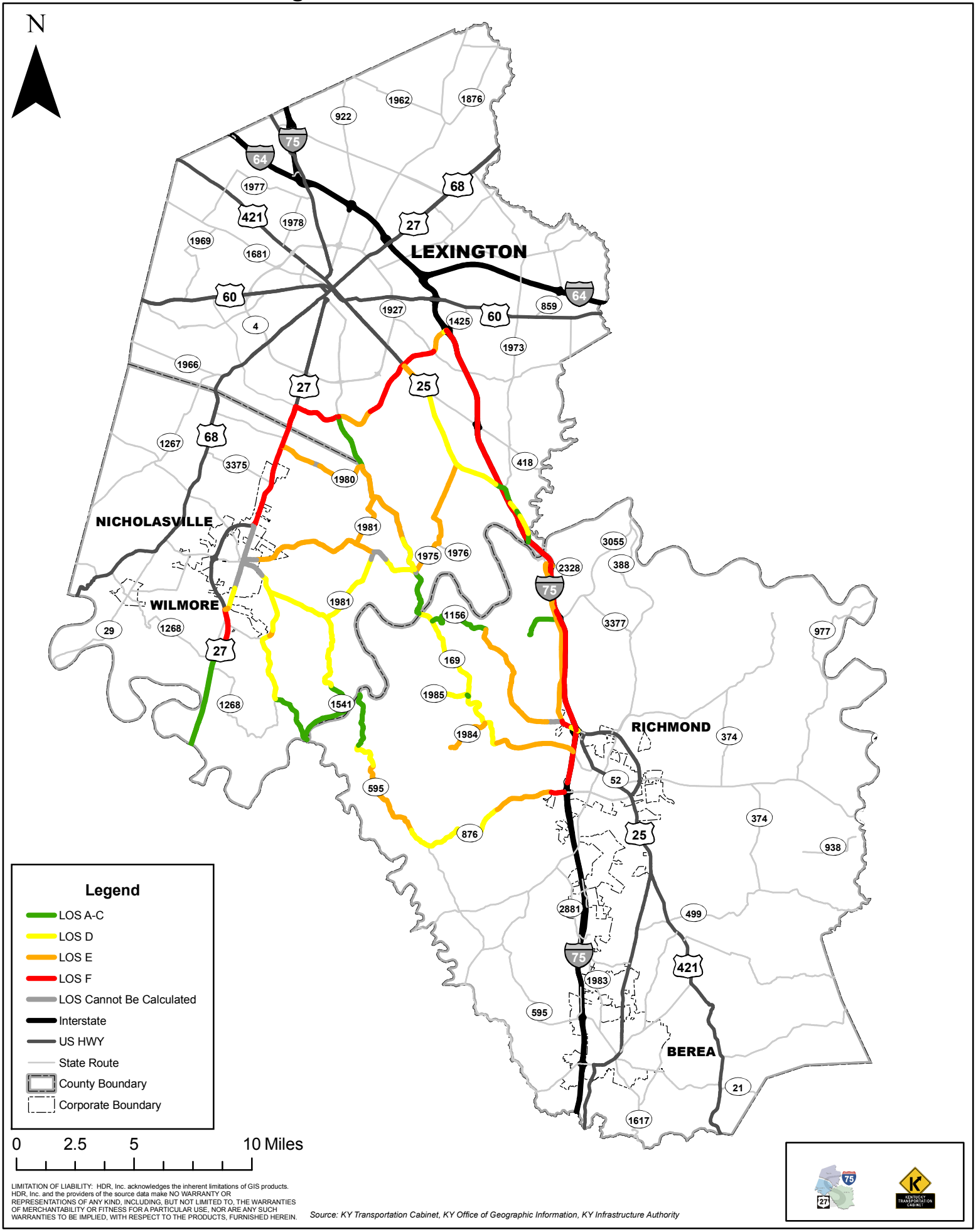
Speed <45, Not Analyzed

Notes:
ADT = 2040 Average Daily Traffic forecasted from 2007 ADT based on historical growth.
K-Factor = Design Hour Factor obtained from KYTC 2004 Traffic Forecasting Report
DHV = 2007 Design Hour Volume (Average Daily Traffic x K-Factor)
Speed Limit obtained from Highway Information System
% Trucks and Buses obtained from 2004 Vehicle Classification System Database. Roadways where data did not exist were estimated using KYTC 2004 Traffic Forecasting Report, and are italicized.
Level of Service (LOS) and % Time Spent Following calculated using Highway Capacity Software Plus.
% RVs were obtained from exhibit 12-14 of the HCM.
Number of access points per mile were obtained from exhibit 12-4 of the HCM.

*45 mph was used as the posted speed since that is the lowest value HCS + accepts for two-lane highway analysis.
** Lane widths less than 9 ft were entered in as 9 ft since that is the HCS+ minimum.

Sources: Highway Information System Database, KYTC 2004 Traffic Forecasting Report, KYTC Vehicle Classification Database

Figure 6: 2040 Corridor Levels of Service



Source: KY Transportation Cabinet, KY Office of Geographic Information, KY Infrastructure Authority

3.6 Crash Analysis

Crash Analysis Methodology

The Kentucky Transportation Cabinet provided crash data for a three-year period from January 1, 2004 through December 31, 2006. **Figure 7** shows the locations of these crashes by crash type (fatality, injury or property damage only).

Crash rates were computed for specific segments of each major study area highway using the methodology provided in the crash analysis report periodically published by the Kentucky Transportation Center (KTC)[1]. The section crash rates are based on the number of crashes on a specified section, the average daily traffic on the roadway, the time frame of analysis, and the length of the section. They are expressed in terms of crashes per 100 million vehicle-miles. A section's crash rate was then compared to a statewide critical crash rate[2] derived from critical crash rate tables for highway sections in the KTC crash report (Appendix D of KTC crash report). This comparison is expressed as a ratio of the section crash rate to the critical crash rate and is referred to as the critical crash rate factor. Sections with a critical crash rate factor greater than one indicate that it is more likely a crash will occur at this location than other similar locations throughout the state, and there is a potential improvement to the location that can make it safer.

The section crash rate is also compared directly to the statewide average crash rate presented in the KTC crash report. The statewide averages consider all crashes for a specified period that are listed in the Collision Report Analysis for Safer Highways (CRASH) database maintained by the Kentucky State Police and stratified by functional classification (Table B-2 in KTC crash report). Section rates that exceed the statewide average crash rate but not the critical crash rate may be problem areas, but they are not statistically proven to be higher crash areas. Therefore, this second comparison is used to identify a second tier of highway sections that may have crash problems and could be considered for safety improvements if warranted based on further analysis.

Section Crash Analysis

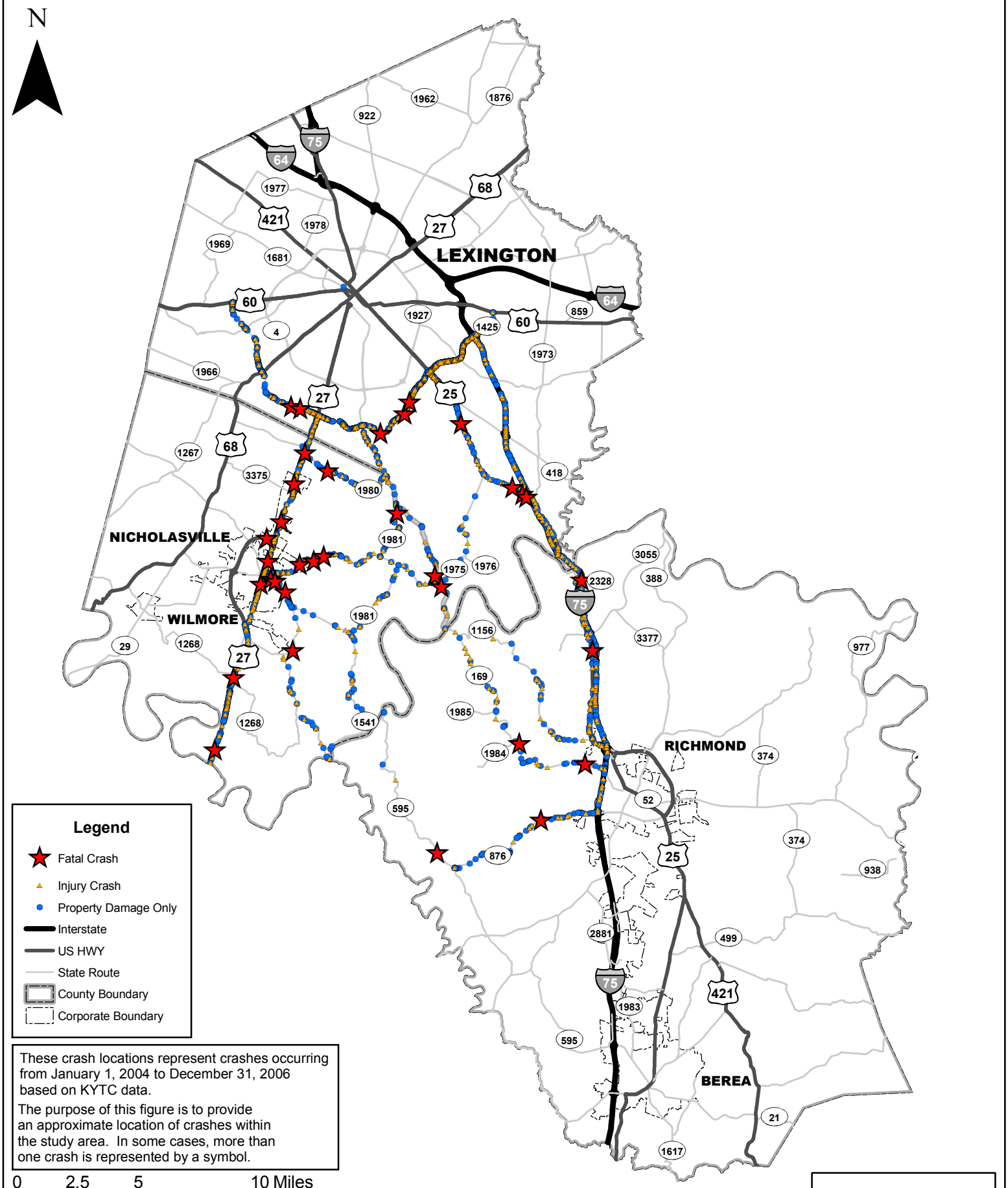
For the major roadways within the study area, many of the observed section crash rates exceed the critical crash rate for that roadway type. The critical crash rate factors range from 0.08 to 8.90. US 27 through downtown Nicholasville, most of Man O' War Boulevard, US 25 north of the Kentucky River and many state roads between US 27 and I-75 have sections whose critical crash rate exceeds the statewide critical rate. There are many other sections along US 27, I-75 and state highways in between the two that are not confirmed high crash rate sections (i.e. they do no exceed the critical crash rate), but their current crash rates exceed the statewide average crash rate.

[1] Analysis of Traffic Crash Data in Kentucky (2002 – 2006), Kentucky Transportation Center Research Report KTC-07-26/KSP2-07-1F.

[2] The critical crash rate is the threshold above which an analyst can be statistically certain (at a 99.5% confidence level) that the section crash rate exceeds the average crash rate for a similar roadway and is not mistakenly shown as higher than the average due to randomly occurring crashes.

Table 8 shows the crash statistics for the segments analyzed and **Figure 8** shows the segments on a map.

Figure 7: Crash Locations



Source: KY Transportation Cabinet, KY Office of Geographic Information, KY Infrastructure Authority

Table 8: Crash Rates by Segment

Route	Section	Begin Milepoint	End Milepoint	Total Crashes	Average Daily Traffic	Section Length (miles)	Exposure "M" (100 or 1 MVM)	Statewide Average Crash Rate	Section Crash Rate	Statewide Critical Crash Rate	Critical Crash Rate Factor
US 27X (Downtown Nicholasville)	1	0.000 (South of Nicholasville)	1.075 (Longview Drive)	37	10,540	1.075	0.124	242	298	360	0.83
	2	1.076 (Longview Drive)	2.180 (KY 39/KY 29)	126	20,220	1.104	0.244	242	515	332	1.55
	3	2.181 (KY 39/KY 29)	3.890 (US 27 Bypass)	323	27,090	1.709	0.507	242	637	311	2.05
US 27 (South and North of Downtown	1	0.000 (Garrard-Jessamine Co Line)	3.826 (Greystone Drive/KY 1268)	159	19,200	3.826	0.804	100	198	317	0.62
	2	3.827 (Greystone Drive/KY 1268)	6.011 (US 27 Bypass-South End)	61	24,600	2.184	0.588	100	104	321	0.32
	3	10.827 (US 27 Bypass-North End)	13.695 (Industry Parkway)	374	38,700	2.868	1.215	100	308	486	0.63
	4	13.696 (Industry Parkway)	15.278 (Jessamine-Fayette Co Line)	102	38,220	1.582	0.662	92	154	286	0.54
	5	0.000 (Jessamine-Fayette Co Line)	0.956 (Man O War Blvd)	206	55,300	0.956	0.579	100	356	501	0.71
I-75	1	87.185 (KY 876)	89.802 (US 25)	90	53,700	2.617	1.539	75	58	111	0.53
	2	89.803 (US 25)	94.730 (KY 627)	181	65,900	4.927	3.555	42	51	61	0.83
	3	94.731 (KY 627)	97.038 (US 25)	97	62,200	2.307	1.571	42	62	65	0.95
	4	97.039 (US 25)	98.516 (US 25)	47	65,700	1.477	1.063	42	44	69	0.64
	5	98.517 (US 25)	103.890 (KY 418)	146	65,400	5.373	3.848	42	38	61	0.62
	6	103.891 (KY 418)	108.21 (KY 1425/Man O War Blvd)	137	53,100	4.319	2.511	42	55	62	0.88

Critical Crash Rate Factor >1, Section Crash Rate Exceeds Statewide Critical Rate (High Crash Rate Section)
Critical Crash Rate Factor <1, Section Crash Rate Exceeds Statewide Average Rate
Critical Crash Rate Factor <1, Section Crash Rate Lower Than Statewide Average Rate

Notes:
Analysis Period: 3 Years (2004 to 2006)
Crash rates are expressed in crashes per 100 MVM (100 million vehicle miles traveled)
Exposure (M) = [(ADT) x (365) x (Time Frame of Analysis (Years)) x (Section Length)] / 100,000,000
Section Crash Rate = Total Crashes / Exposure
Critical Crash Rate Factor = Section Crash Rate / Statewide Critical Crash Rate
ADT = Average Daily Traffic, MVM = Million Vehicle Miles

Sources:
Crash data for 2004 to 2006 from KYTC Data
Statewide Rates from KTC Research Report KTC-07-26/KSP2-07-1F, Analysis of Traffic Crash Data in Kentucky (2002 - 2006)

Table 8: Crash Rates by Segment (Cont.)

Route	Section	Begin Milepoint	End Milepoint	Total Crashes	Average Daily Traffic	Section Length (miles)	Exposure "M" (100 or 1 MVM)	Statewide Average Crash Rate	Section Crash Rate	Statewide Critical Crash Rate	Critical Crash Rate Factor
US 25	1	20.255 (I-75 Bridge)	20.964 (KY 1156)	112	13,800	0.709	0.107	297	1045	368	2.84
	2	20.965 (KY 1156)	24.076 (Clay Lane)	35	6,300	3.111	0.215	206	163	303	0.54
	3	24.077 (Clay Lane)	25.373 (KY 627/KY 3055)	14	3,600	1.296	0.051	206	274	377	0.73
	4	25.374 (KY 627/KY 3055)	28.161 (KY 2328)	16	2,800	2.787	0.085	206	187	346	0.54
	5	0.000 (South Limits of I-75)	2.876 (North of Turner Station Rd)	54	3,100	2.876	0.098	177	553	338	1.64
	6	2.877 (North of Turner Station Rd)	4.832 (KY 1975)	24	3,100	1.955	0.066	177	362	354	1.02
	7	4.833 (KY 1975)	8.144 (KY 418)	447	4,400	3.311	0.160	177	2802	315	8.90
	8	8.144 (KY 418)	9.734 (Man O War Blvd)	183	30,600	1.590	0.533	297	343	325	1.06
KY 1980	1	3.025 (US 27)	4.690 (Ashgrove Lane)	43	3,300	1.665	0.060	206	715	365	1.96
	2	4.691 (Ashgrove Lane)	6.690 (East of Mackey Pike)	33	2,500	1.999	0.055	206	603	368	1.64
	3	6.691 (East of Mackey Pike)	7.451 (Fayette County Line)	21	2,500	0.760	0.021	206	1009	470	2.15
KY 1974	1	0.000 (KY 169)	1.667 (Crawley Lane)	14	900	1.667	0.016	177	852	504	1.69
	2	1.668 (Crawley Lane)	4.228 (Delong Road)	20	1,500	2.56	0.042	177	476	400	1.19
	3	4.229 (Delong Road)	5.443 (KY 1980)	8	6,500	1.214	0.086	242	93	393	0.24
	4	5.443 (KY 1980)	7.782 (Man O War Boulevard)	88	10,300	2.339	0.264	242	334	531	0.63

Critical Crash Rate Factor >1, Section Crash Rate Exceeds Statewide Critical Rate (High Crash Rate Section)
Critical Crash Rate Factor <1, Section Crash Rate Exceeds Statewide Average Rate
Critical Crash Rate Factor <1, Section Crash Rate Lower Than Statewide Average Rate

Notes:
Analysis Period: 3 Years (2004 to 2006)
Crash rates are expressed in crashes per 100 MVM (100 million vehicle miles traveled)
Exposure (M) = [(ADT) x (365) x (Time Frame of Analysis (Years)) x (Section Length)] / 100,000,000
Section Crash Rate = Total Crashes / Exposure
Critical Crash Rate Factor = Section Crash Rate / Statewide Critical Crash Rate
ADT = Average Daily Traffic, MVM = Million Vehicle Miles

Sources:
Crash data for 2004 to 2006 from KYTC Data
Statewide Rates from KTC Research Report KTC-07-26/KSP2-07-1F, Analysis of Traffic Crash Data in Kentucky (2002 - 2006)

Table 8: Crash Rates by Segment (Cont.)

Route	Section	Begin Milepoint	End Milepoint	Total Crashes	Average Daily Traffic	Section Length (miles)	Exposure "M" (100 or 1 MVM)	Statewide Average Crash Rate	Section Crash Rate	Statewide Critical Crash Rate	Critical Crash Rate Factor
KY 1981	1	0.000 (KY 1541)	3.668 (KY 169)	22	600	3.668	0.024	224	913	463	1.97
	2	3.669 (KY 169)	6.130 (KY 1974 @ Fayette Co Line)	61	2,200	2.461	0.059	189	1029	368	2.80
KY 169	1	1.349 (I-75 Underpass)	3.082 (Boone Way)	28	5,110	1.733	0.097	106	289	374	0.77
	2	3.083 (Boone Way)	4.877 (Crutcher Pike)	9	4,500	1.794	0.088	206	102	339	0.30
	3	4.878 (Crutcher Pike)	6.184 (KY 1984)	8	1,400	1.306	0.020	206	400	472	0.85
	4	6.185 (KY 1984)	8.051 (KY 1985)	4	1,000	1.866	0.020	206	196	461	0.42
	5	8.052 (KY 1985)	11.869 (KY 1156)	16	600	3.817	0.025	206	638	458	1.39
	6	11.870 (KY 1156)	12.511 (Approach to Valley View)	1	400	0.641	0.003	206	356	964	0.37
	7	0.000 (Approach to Valley View)	2.030 (North of KY 1974)	10	600	2.03	0.013	206	750	526	1.43
	8	2.031 (North of KY 1974)	4.218 (KY 1981)	18	1,200	2.187	0.029	206	626	426	1.47
	9	4.219 (KY 1981)	7.733 (Vince Rd/Bethany Rd)	43	3,600	3.514	0.139	206	310	321	0.97
	10	7.734 (Vince Rd/Bethany Rd)	9.482 (Locust Heights)	21	4,500	1.748	0.086	206	244	341	0.71
	11	9.483 (Locust Heights)	10.458 (US 27)	35	4,190	0.975	0.045	242	782	431	1.82

Critical Crash Rate Factor >1, Section Crash Rate Exceeds Statewide Critical Rate (High Crash Rate Section)
Critical Crash Rate Factor <1, Section Crash Rate Exceeds Statewide Average Rate
Critical Crash Rate Factor <1, Section Crash Rate Lower Than Statewide Average Rate

Notes:
Analysis Period: 3 Years (2004 to 2006)
Crash rates are expressed in crashes per 100 MVM (100 million vehicle miles traveled)
Exposure (M) = [(ADT) x (365) x (Time Frame of Analysis (Years)) x (Section Length)] / 100,000,000
Section Crash Rate = Total Crashes / Exposure
Critical Crash Rate Factor = Section Crash Rate / Statewide Critical Crash Rate
ADT = Average Daily Traffic, MVM = Million Vehicle Miles

Sources:
Crash data for 2004 to 2006 from KYTC Data
Statewide Rates from KTC Research Report KTC-07-26/KSP2-07-1F, Analysis of Traffic Crash Data in Kentucky (2002 - 2006)

Table 8: Crash Rates by Segment (Cont.)

Route	Section	Begin Milepoint	End Milepoint	Total Crashes	Average Daily Traffic	Section Length (miles)	Exposure "M" (100 or 1 MVM)	Statewide Average Crash Rate	Section Crash Rate	Statewide Critical Crash Rate	Critical Crash Rate Factor
KY 1975	1	0.000 (KY 1974)	4.463 (Whites Lane)	18	1,500	4.463	0.073	224	246	351	0.70
	2	4.464 (Whites Lane)	5.410 (US 25)	1	3,100	0.946	0.032	224	31	412	0.08
KY 39	1	0.000 (N. Bank of Kentucky River)	2.454 (KY 1268)	14	100	2.454	0.003	224	5210	966	5.39
	2	2.455 (KY 1268)	7.550 (KY 1541)	24	900	5.095	0.050	224	478	376	1.27
	3	7.551 (KY 1541)	8.875 (Miles Road)	11	3,400	1.324	0.049	224	223	380	0.59
	4	8.876 (Miles Road)	9.404 (KY 29/US 27)	36	7,600	0.528	0.044	242	819	426	1.92
KY 1541	1	0.000 (KY 39)	3.556 (Kissing Ridge Road)	4	100	3.556	0.004	224	1027	848	1.21
	2	3.557 (Kissing Ridge Road)	4.500 (North of Pollard Pike)	6	500	0.943	0.005	224	1162	720	1.61
	3	4.501 (North of Pollard Pike)	9.668 (KY 39)	19	1,300	5.167	0.074	224	258	348	0.74
KY 595	1	16.014 (KY 876)	22.212 (New Road)	4	850	6.198	0.058	189	69	372	0.19
	2	22.213 (New Road)	24.604 (Poosey Ridge Road)	2	100	2.391	0.003	189	764	1058	0.72

Critical Crash Rate Factor >1, Section Crash Rate Exceeds Statewide Critical Rate (High Crash Rate Section)
Critical Crash Rate Factor <1, Section Crash Rate Exceeds Statewide Average Rate
Critical Crash Rate Factor <1, Section Crash Rate Lower Than Statewide Average Rate

Notes:
Analysis Period: 3 Years (2004 to 2006)
Crash rates are expressed in crashes per 100 MVM (100 million vehicle miles traveled)
Exposure (M) = [(ADT) x (365) x (Time Frame of Analysis (Years)) x (Section Length)] / 100,000,000
Section Crash Rate = Total Crashes / Exposure
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Statewide Rates from KTC Research Report KTC-07-26/KSP2-07-1F, Analysis of Traffic Crash Data in Kentucky (2002 - 2006)

Table 8: Crash Rates by Segment (Cont.)

Route	Section	Begin Milepoint	End Milepoint	Total Crashes	Average Daily Traffic	Section Length (miles)	Exposure "M" (100 or 1 MVM)	Statewide Average Crash Rate	Section Crash Rate	Statewide Critical Crash Rate	Critical Crash Rate Factor
KY 876	1	0.000 (KY 595)	2.387 (Bogie Mill Road)	31	700	2.387	0.018	224	1694	494	3.43
	2	2.388 (Bogie Mill Road)	4.770 (Old Pond Way/Mule Shed)	22	1,300	2.382	0.034	224	649	413	1.57
	3	4.771 (Old Pond Way/Mule Shed)	6.528 (Willis Branch Road)	26	2,500	1.757	0.048	224	541	382	1.42
	4	6.529 (Willis Branch Road)	7.097 (I-75 Ramp)	16	12,800	0.568	0.080	224	201	359	0.56
KY 1156	1	0.000 (US 25)	1.352 (Boone Way)	5	1,800	1.352	0.027	106	188	502	0.37
	2	1.353 (Boone Way)	6.278 (Kentucky River Road)	24	800	4.925	0.043	224	556	391	1.42
	3	6.279 (Kentucky River Road)	9.376 (KY 169)	4	200	3.097	0.007	224	590	743	0.79
Man O War	1	6.561 (Nicholasville Road)	8.566 (Tates Creek Road)	267	31,900	2.01	0.700	242	381	317	1.20
	2	8.566 (Tates Creek Road)	10.285 (Armstrong Mill Road)	108	25,600	1.72	0.482	242	224	327	0.69
	3	10.285 (Armstrong Mill Road)	11.821 (Alumni Drive)	298	35,200	1.54	0.592	242	503	323	1.56
	4	11.821 (Alumni Drive)	12.792 (US 25 / Richmond Road)	224	44,800	0.97	0.476	242	470	326	1.44
	5	12.792 (US 25 / Richmond Road)	13.454 (Palumbo Drive)	238	32,800	0.66	0.238	242	1001	350	2.86
	6	13.454 (Palumbo Drive)	15.241 (I-75 / KY 1425)	608	40,350	1.790	0.791	242	769	316	2.43

Critical Crash Rate Factor >1, Section Crash Rate Exceeds Statewide Critical Rate (High Crash Rate Section)
Critical Crash Rate Factor <1, Section Crash Rate Exceeds Statewide Average Rate
Critical Crash Rate Factor <1, Section Crash Rate Lower Than Statewide Average Rate

Notes:
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Crash rates are expressed in crashes per 100 MVM (100 million vehicle miles traveled)
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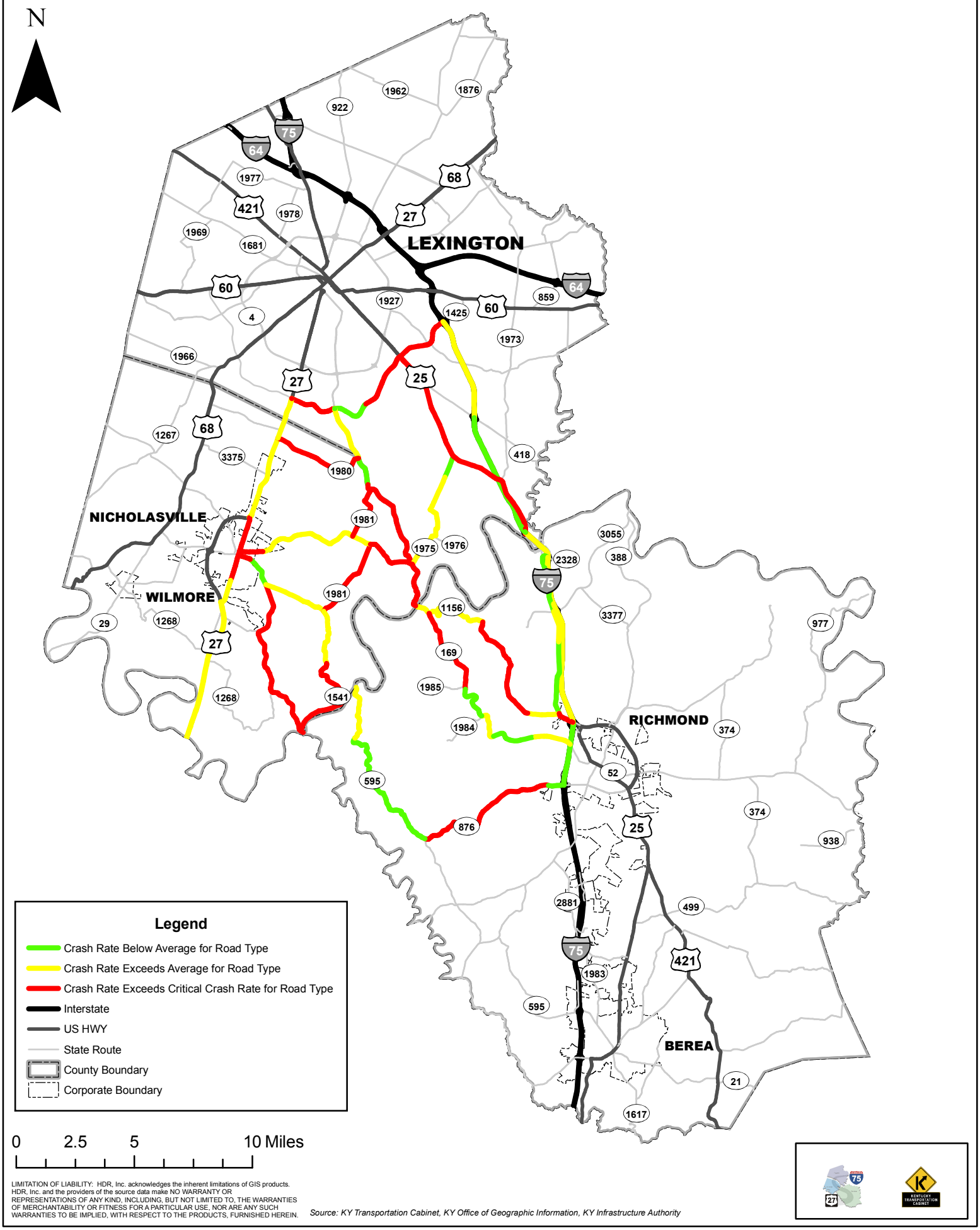
Sources:
Crash data for 2004 to 2006 from KYTC Data
Statewide Rates from KTC Research Report KTC-07-26/KSP2-07-1F, Analysis of Traffic Crash Data in Kentucky (2002 - 2006)

Figure 8: Crash Rates by Segment



Source: KY Transportation Cabinet, KY Office of Geographic Information, KY Infrastructure Authority

Crash Report Analysis

Because of the number of crashes within the primary study area, an additional crash analysis was conducted to look at severity and crash type.

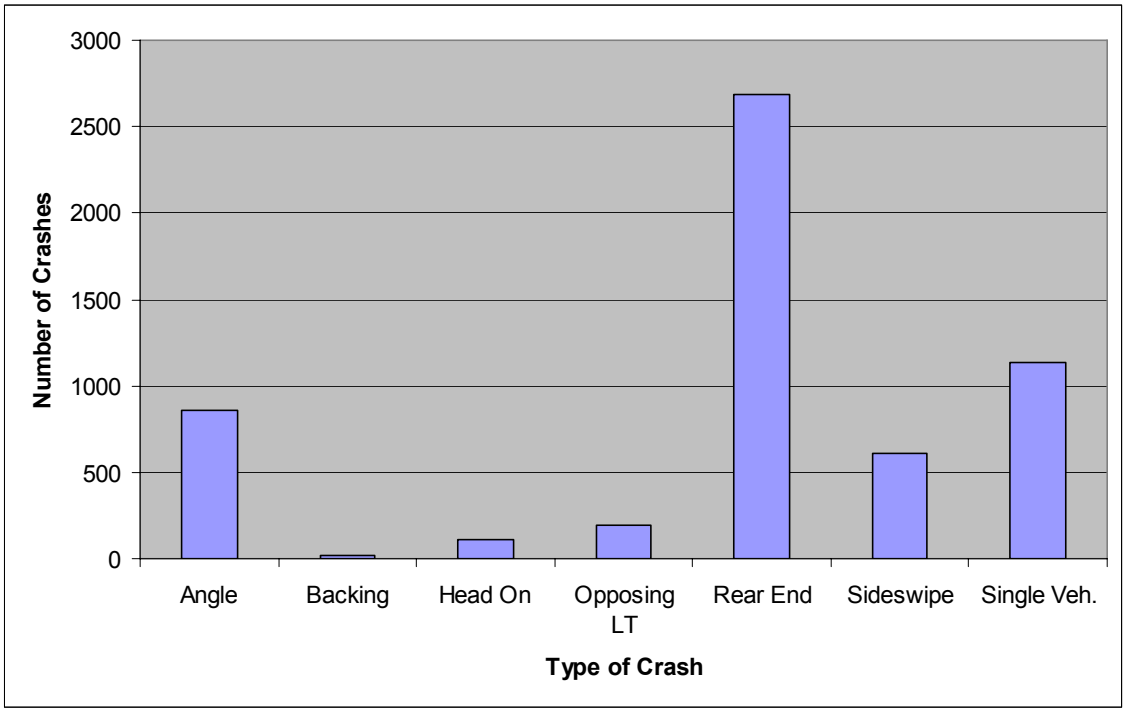
A breakdown of the crash severity for the entire area is provided below.

Severity	Number of Crashes	Percentage
Property Damage Only	4,318	76.8%
Injury	1,267	22.6%
Fatality	34	0.6%
	5,619	100%

The majority of crashes were property damage only (PDO) crashes (4,318). Over one-fifth of the crashes involved at least one injury, and thirty-four fatal crashes occurred between 2004 and 2006. Of the thirty-four crashes that involved a fatality, fourteen were angle crashes, thirteen were single vehicle crashes, five were head on crashes, one was an opposing left turn crash and one was a sideswipe in the opposite direction crash. The weather was not a contributing factor in the majority of the crashes.

A review of all crash types for the study area was performed to determine the most frequent type. **Figure 9** shows the results.

Figure 9: Crash Types (2004 – 2006)



The majority of crashes were rear end crashes (approximately 49%), although there were also a significant number of angle, sideswipe, and single vehicle crashes.

3.7 Multimodal Facilities (Pedestrian, Bicycle, and Transit)

Currently, limited transit facilities exist in the study area. In Fayette County, bus service is offered through LEXTRAN. Within the study area there are three major routes:

1. Route 34: Centre Parkway – Hamburg Pavillion (serves the northeastern portion of the study area)
2. Route 36: South Side Connector (serves the northwestern portion of the study area)
3. Brown Route No. 2: Newtown – Tates Creek in Fayette County (serves the north central portion of the study area)

The other two counties do not offer regularly scheduled public transit service. Discussions are currently being made to address the extension of LEXTRAN service into some portions of North Jessamine County, but no definite plans have been executed.

It is KYTC's policy to consider provision of bicycle and pedestrian facilities as appropriate. Currently, the Lexington Area Metropolitan Planning Organization (MPO) has a regional Bicycle and Pedestrian Master Plan that includes some portions of Fayette and Jessamine Counties in the study area. The plan describes a "complete streets" plan that states that roadways designated as "complete streets" should be able to accommodate bicycles and pedestrians. Roadways within the study area that are part of the complete streets plan include US 27, Man O' War Boulevard, KY 1974, US 27, and portions of KY 169, KY 39, and KY 1980. The Master Plan also outlines a greenway trails program. As part of this plan, there is a proposed off-road trail that would extend from US 27 to the Kentucky River ending at Tates Creek Road in Fayette County. There are also various commuter and recreational bike routes throughout the study area. Commuter bike routes exist along US 27, KY 1980, KY 39 and US 25. Recreational bike routes exist on KY 39, KY 1541, KY 1981, KY 169, KY 1974, KY 1975, and KY 1156. Due to the rural and scenic nature of the study area, bicycling along the low-volume rural roads is very popular. The area also has potential to attract bicycle tourism.

3.8 Existing and Future No-Build Traffic and Highway Conditions Summary

Based on the existing transportation conditions analysis, there appear to be a number of key transportation issues in the study area. These include the following:

- Major roadways in the study area, such as US 27, I-75 and Man O' War Boulevard, currently have very high traffic volumes.
- Many roadways in the study area have high historical growth rates, indicating continuing traffic growth.

- Roads such as I-75, US 27 and KY 1980 have high truck percentages.
- Sections of US 27, US 25, KY 1980, KY 1974, KY 169, KY 876, KY 1176, KY 39, and KY 1975 currently operate at a LOS E or F.
- Many sections of Man O' War Boulevard, US 27 and I-75 currently operate at LOS D.
- In 2040, sections along the majority of roadways in the study area will be operating at a LOS E or F.
- The majority of roadways in the study area have segments with a critical crash rate factor greater than one.
- Rear end crashes are the most common type of crash in the study area.
- The Lexington Area MPO's Regional Bicycle and Pedestrian Master Plan has designated several roadways in the study area for potential bicycle and pedestrian facilities.

4.0 REVIEW OF PREVIOUS REPORTS / PLANS

4.1 Review of Transportation Reports

A review of previous transportation studies and reports for the study area is necessary to better understand the problems and possible solutions that have already been identified or studied. In this case, there are several previous reports relevant to the current planning study. They include the following:

- Scoping Study for US 27/I-75 Connector in Garrard and Madison Counties
- Jessamine County I-75 Connector
- Northeast Jessamine Transportation Study
- Man O' War Boulevard Traffic Study
- Community-Wide Congestion Management Study Update

Scoping Study for US 27/I-75 Connector in Garrard and Madison Counties
An initial evaluation of a connector between US 27 and I-75 was completed in June 2000 by Bernardin, Lochmueller, and Associates, Inc. (BLA). The study completed by BLA, while similar in concept, had a different study area. This study was scoped to look at cross-country alternates between US 27 and I-75 south of the Kentucky River and north of the existing KY 52. No routes were evaluated through Jessamine County or north of the river.

The purpose and need for proposed improvements in this study was to improve safety and operations, traffic flow, accessibility and connectivity in the transportation systems of Garrard and Madison Counties. This resulted in the development of eight "build" corridors and three preliminary KY 52 reconstruction options in addition to a "no-build" alternative. The "build" corridors included:

- Alternate 1 from KY 152 to KY 627
- Alternate 2 from KY 34 to KY 627
- Alternate 3 from KY 152 to Duncannon Road
- Alternate 4 from KY 34 to Duncannon Road
- Alternate 5 from KY 152 to KY 876
- Alternate 6 from KY 34 to KY 876
- Alternate 7 from KY 152 to US 25
- Alternate 8 from KY 34 to US 25

In order to determine how much traffic might use each alternate, the Kentucky Statewide Traffic Model (KySTM) was used to create a subarea model for this study area. The base year of the model was 1995 with the year 2025 used as the long-range forecast horizon year. Generally there was little difference between the cross-country corridors with a forecasted volume of traffic up to 5,000 vehicles per day in the year 2025 between US 27 and I-75.

In addition to traffic volumes, the evaluation criteria used in the BLA study included:

Transportation Considerations
- Daily Traffic Volume Served
- Travel Time Savings Over the "no-build" Alternate
- Accessibility
- Congestion Relief
- Congestion Contribution

Environmental Considerations
- Socioeconomic Impacts Associated with Residential and Business Displacements
- Affected Historic Structures
- Affected Archaeological Sites
- Floodplains
- Wetlands
- Threatened, Endangered and Special Concern Species (TES)
- Prime Farmland
- Underground Storage Tanks and Hazardous Material Sites
- Air Quality
- Noise Impacts

Agency Considerations
- Construction Costs
- Right-of-Way Costs

Due to adverse environmental impacts and adverse traffic impacts, Alternates 5 – 8 were eliminated. A public information meting was held to obtain comments about the "build" alternates, the "no-build", and the KY 52 reconstruction alternates. At the meeting, there was significant opposition for the construction of a connector road from US 27 through western Madison County to any area along I-75 between Boonsboro Road (KY 627) and Duncannon Road. This included a petition with 1,050 signatures submitted by Madison County Tomorrow opposing the project. Ultimately, the study recommendation was for the reconstruction of KY 52 even though the number of possible/potential displacements is significantly higher. It was preferred from the standpoint of cost-effectiveness and implementation timing.

Jessamine County I-75 Connector

The Jessamine County I-75 Connector study was prepared by Wilbur Smith Associates in July 2005 for the Jessamine County Joint Transportation Task Force to obtain funds to study the feasibility of a connector roadway between US 27 in Nicholasville and I-75. The request specifies looking at a connector from US 27 in Nicholasville to I-75 near the Clays Ferry Bridge, with one termini north of the bridge and one south. The northern corridor would not require a bridge crossing over the Kentucky River while the southern route would. The initial funding request was for $495,000 to complete an Alternatives

Study for the project to be administered by the Kentucky Transportation Cabinet (KYTC). At the time of this request, this project was not in the state or MPO Transportation Improvement Plan (TIP), but has been in and out of the MPO plan due to the controversial nature of the project.

In order to request funding, several project objectives were developed. These include:

- Better define the project purpose and need;
- Identify and evaluate potential improvement location and alternatives;
- Make recommendations for future improvements;
- Afford an opportunity for public and agency input so that project needs, improvement alternatives, and potential issues and concerns can be clearly defined and addressed at the earliest stage of project development;
- Identify potential environmental issues; and
- Help expedite the project development process.

According to the request, the preliminary project purposes are:

- Promote Homeland Security initiatives and goals by providing relief and protection from potential problems that may result from any major impacts to I-75 and the Clays Ferry Bridge, a critical asset and key infrastructure on the national transportation system;
- Improve connectivity and increase system capacity while reducing congestion on portions of the National Highway System (NHS) and the National Truck Network (NN); and
- Support economic growth in Jessamine County and adjacent counties by reducing travel time from Nicholasville to I-75 through improved connectivity and reduced congestion.

The need for the project (which supports the project purposes) includes a number of identified issues / deficiencies. One issue is the heavy truck traffic on I-75 (approximately 25 to 30 percent of the vehicle composition is trucks). In addition to the heavy truck volumes, overall congestion is an issue with the I-75 corridor in Kentucky which is expected to be at or above its theoretical capacity by the year 2020. From a connectivity standpoint, between Mt. Vernon and Lexington (a distance of about 40 miles) there is no adequate highway connecting I-75 and US 27. Based on initial travel time estimates, a new connector could save up to twenty minutes from Nicholasville for southbound trucks and other motorists on I-75. Protection of “critical assets and key infrastructure” is also a key issue for this project, particularly the Clays Ferry Bridge. Should the Clays Ferry Bridge be damaged due to hostile acts or earthquake damage, a connecter would provide direct access to US 27, which is the closest crossing over the Kentucky River.

In addition to the $495,000 required to complete the planning study, it is estimated that the project would cost $135 million to $190 million depending on the terrain, corridor length, project termini, and the need for a new bridge over the Kentucky River.

Northeast Jessamine Transportation Study

The Northeast Jessamine Transportation Study was prepared by Jordan Jones and Goulding in June 2003 for the Kentucky Transportation Cabinet. The primary objective of the study was to evaluate and address the growth and development in the US 27 corridor area in northeastern Jessamine County, particularly related to the Brannon Crossing Centre development. The aspects of the Northeast Jessamine Transportation Study that relate to this study include a discussion of development impacts to US 27 between Nicholasville and Fayette County and proposed recommendations to mitigate those impacts.

The study concluded that the Brannon Crossing Centre was the primary development that will impact traffic volumes and operations on US 27 in the near future. Since the time of the study, partial build-out of the development has occurred. The initial estimate of generated trips by the development at full-build out was up to 106,000 additional trips. The majority of these trips would access US 27 which (at the time of the study) was determined to operate at or near capacity during the peak hour even without the additional trips. The widening of US 27 to six lanes was specified in the Lexington Area Metropolitan Planning Organization's (MPO) Year 2025 Transportation Plan; however funds for the project were not committed at that point. Based on further analysis, US 27 will continue to operate at or near capacity even with the widening project as any additional capacity will be consumed by the increased traffic volumes. The study recommended that widening US 27 to eight lanes may be required given projected development pressures and that changes in access control may be recommended from access by permit to full access control with grade separations and interchanges at cross roads.

Man O' War Boulevard Traffic Study

The Man O' War Boulevard Traffic Study prepared by ENTRAN was completed in August 2007 for the Lexington-Fayette Urban County Government and the Lexington Area Metropolitan Planning Organization. The purposes of the study were to evaluate one of Lexington's most heavily-traveled and perceived congested roadways, Man O' War Boulevard, and identify and recommend improvements to locations with recurring traffic congestion and safety deficiencies. In particular, vehicular safety was determined to be an issue with almost all intersections identified as high crash rate locations. The majority of crash types were rear-end crashes. A level of service analysis was prepared to assess the existing conditions along Man O' War Boulevard, with the results consistent with levels of service calculated as part of this study. The result showed that traffic operations along Man O' War Boulevard, from a corridor perspective, are at or just below a good level of service. The intersections have operational deficiencies, thereby causing traffic congestion. Some improvement options identified in the report to address the identified deficiencies include:

- Extending turn lanes
- Upgrading traffic signals and signage
- A single point urban interchange (SPUI) at the Nicholasville Road and Man O' War Boulevard intersection

- Roundabouts along Man O' War Boulevard at the Armstrong Mill Road, Crosby Drive, and Rapid Run Drive intersections
- Widen Man O' War Boulevard to six lanes, three in each direction

At the time of this report, the improvement recommendations were not included in any list with the exception of the widening of Man O' War Boulevard. This is currently (as of this report) included in the Lexington Area MPO 2030 Long Range Transportation Plan (LRTP) and in the current Unscheduled Projects List.

Community-Wide Congestion Management Study Update

The Community-Wide Congestion Management Study Update, also prepared by ENTRAN for the Lexington-Fayette Urban County Government and the Lexington Area Metropolitan Planning Organization, and was completed in August 2007. This study is an update to the 2004 Congestion Management Study. Study objectives included:

- Updating decision matrices developed in 2004 that served as analytical tools of the project evaluation process;
- Expanding the geographic extent of the project evaluation process to include routes not addressed in the 2004 study;
- Reviewing and updating recommended improvements from the 2004 study;
- Developing additional recommended congestion mitigation projects and strategies; and,
- Providing recommendations for future enhancement of the congestion management process.

Three routes that are relevant to the US 27 / I-75 corridor study that are evaluated in this report include Man O' War Boulevard, Nicholasville Road (US 27), and Tates Creek Road (KY 1974). To assess the current conditions of these roads, evaluation criteria included the Travel Rate Index (TRI), Level of Service (LOS), and the Crash Rate and Critical Crash Rate Factor.

Currently during the AM peak period, US 27 from the Bypass in Jessamine County north to Man O' War Boulevard, and much of Man O' War Boulevard between US 27 and US 25 operate at a LOS F. Man O' War Boulevard from US 25 to I-75 operates at LOS E. US 25 from Man O' War Boulevard to KY 418 operates at a LOS D, and a small amount of Man O' War Boulevard just east of Tates Creek Road operates at LOS C or better. During the PM peak period all of Man O' War Boulevard between US 27 and I-75, as well as US 27 between Man O' War Boulevard and the bypass operates at LOS F. Only US 25 from Man O' War Boulevard to KY 418 operates at LOS C or better. There are currently sections of US 27, and most of Man O' War Boulevard that have critical crash rate factors greater than one, making it a high crash rate area.

Along Man O' War Boulevard, projects in the 2030 Long-Range Transportation Plan include widening Man O' War Boulevard to six travel lanes. A project included in the 2006 Congestion Management Study involves the construction of refuge areas /

breakdown lanes outside the existing curb along Man O' War Boulevard, to keep traffic flowing in the event of a crash or breakdown.

For US 27, projects in the 2030 Long-Range Transportation Plan include widening US 27 from 4 lanes to 6 lanes between Man O' War Boulevard and the bypass. A new East Nicholasville Bypass is currently part of the Lexington MPO TIP. A recommended project from this report is the development of an access management plan for US 27 from the bypass to the Fayette County line.

Along Tates Creek Road, there are no current projects in the 2030 Long-Range Transportation Plan, or from the Congestion Management Study, that affect Tates Creek Road south of Man O' War Boulevard in the US 27 / I-75 corridor study area.

4.2 Review of Comprehensive Plans

2007 Lexington-Fayette Urban County Government Comprehensive Plan
The LFUCG Comprehensive Plan refers to the Year 2030 Transportation as the document that lists specific transportation projects for Fayette County. Transportation projects occurring in the study area include the widening of Man O' War Boulevard from Winchester Road to Nicholasville Road, which is listed in the 2030 Plan as a Federal Aid Project, and the widening of US 27 from New Circle Road to the Nicholasville Bypass as well as the widening of KY 1974 from Malabu Drive to Man O' War Boulevard which is listed in the plan as projects without a dedicated funding source. There is no mention of a connector between US 27 and I-75 in the plan, however a new corridor would likely meet the goals for future transportation systems listed in the report.

2004 Jessamine County / City of Wilmore Comprehensive Plan
A new corridor from US 27 to I-75 is consistent with the goals stated in Jessamine County's Comprehensive Plan of expanding infrastructure to meet current / future needs and providing for an efficient transportation system throughout the County. This project was included in the 2003-2004 Unscheduled Needs List. It was listed as a priority project in the Comprehensive Plan, and noted that it should be designed and constructed to have the least impact on residential / agricultural properties. The plan also shows a shared use trail / bike route along KY 1541 to KY 1981 as part of the 2004 Concept Greenway / Trail Plan.

Madison County, Kentucky 2005 Comprehensive Plan
The Madison County, Kentucky 2005 Comprehensive Plan lists two issues that are relevant to this study. The plan indicates that special attention should be paid to the impact of growth and development in Northern Madison County (from Exit 95 – Boonesboro Road to Exit 97 – Clays Ferry along I-75) as this area is shifting from being mostly agricultural and rural to urban. The plan also notes the need to upgrade certain county roads as well as state and federal highways to accommodate the large-scale increases in traffic volumes within the next 15 to 20 years.

The Comprehensive Plan recommends a North Madison Development Park in the vicinity of the I-75 / KY 627 interchange, as well as reconstruction of that interchange. It also indicates that there will be significant traffic growth along the northern section of US 25 from the Clays Ferry interchange to KY 1156, due mostly to residential and commercial growth. Because this growth occurs within the study area, it could have an impact or be impacted by a new corridor.

Reconstruction of the KY 627 and I-75 interchange is currently on the unscheduled needs list. If this interchange is chosen as the eastern terminus, this project would need to be coordinated with the new connector.

Reconstruction of KY 169 from Goggins Lane to the US 25X (Main Street) is on the six-year highway plan. This is a Priority I project under the Recommended Long Range Transportation Improvements for the Madison County area. Widening US 25 from KY 1156 to Exit 97 near the Fayette County line is a Priority II project and widening I-75 to eight lanes from the Fayette County line to the Rockcastle County line is a Priority III project. While these projects would not directly affect a new corridor, they could encourage development or foster additional traffic growth in the area.

Madison County Land Use and Official Zoning Maps

According to the land use and zoning maps, most of the study area is agricultural land use, however, there are several areas zoned for single family residential, multifamily residential, general commercial, neighborhood commercial, and public / semi-public use.

5.0 HUMAN ENVIRONMENT OVERVIEW

An overview was conducted to determine the general characteristics of the human environment in the study area. The analysis addresses: general socioeconomic characteristics, environmental justice, land use characteristics, and cultural / historic and archeological characteristics. **Figure 10** shows human environmental characteristics. The following sections summarize the overview findings.

5.1 Socioeconomic Profile

Population Growth – **Table 9** shows population data from the 1990 and 2000 Census, for Fayette, Jessamine and Madison counties. The 2030 population projections are also shown.

Table 9: Study Area Populations

	1990	2000	2030	% Growth (1990-2000)	% Growth (2000-2030)
Fayette County	225,366	260,512	331,212	15.60%	27.10%
Jessamine County	30,508	39,041	59,489	28.00%	52.40%
Madison County	57,508	70,872	104,419	23.20%	47.30%

Source: Kentucky State Data Center

The 2000 census shows the city of Nicholasville having a population of 19,680, and the city of Richmond having a population of 27,152. Based on population growth, the study area is growing rapidly and is expected to continue to grow at a significant pace in the future.

Minority Populations – According to the 2000 Census, minority populations in Fayette County represented 19.0% of all residents. In Jessamine County, minority population represented a total of 5.6% of residents. In Madison County, minority residents represented 7.0% of all residents. As a comparison, the total minority population percentage of the entire Commonwealth of Kentucky is 9.9%.

Low – Income Populations – In 2000, approximately 12.9% of the Fayette County population was below the poverty line. In Jessamine County, approximately 10.5% was below the poverty line. In Madison County, 16.5% were below the poverty line. Fayette and Jessamine Counties are below the statewide average of 15.8%, while Madison County exceeds it.

Age of Population – Fayette, Jessamine and Madison Counties have a lower percentage of residents age 60 and over, 13.3%, 13.0% and 13.3% respectively compared to the statewide average of 17.0%.

Local Economy – In 2000, Fayette County's unemployment rate was 3.7%, which is higher than the 2000 unemployment rate for Kentucky of 3.5%, and lower than the rate for the U.S., 4.0%. Jessamine and Madison Counties are below both the Kentucky and US unemployment rates at 2.9% and 3.2% respectively.

The highest percentage of employees in all jurisdictions is in the field of management, professional and related occupations. This is accounted for by the service-based economy. Sales and office occupations also account for a high percentage of the local workforce. Manufacturing is also important in the study area. Large employers in the area include: McLane Cumberland, Valvoline, and Sherwin Williams Automotive Finishes Corp. **Tables 10, 11** and **12**, show employment by major industry for Fayette, Jessamine and Madison counties. **Table 13** shows major manufacturers located within the study area.

Figure 10: Human Environmental Characteristics

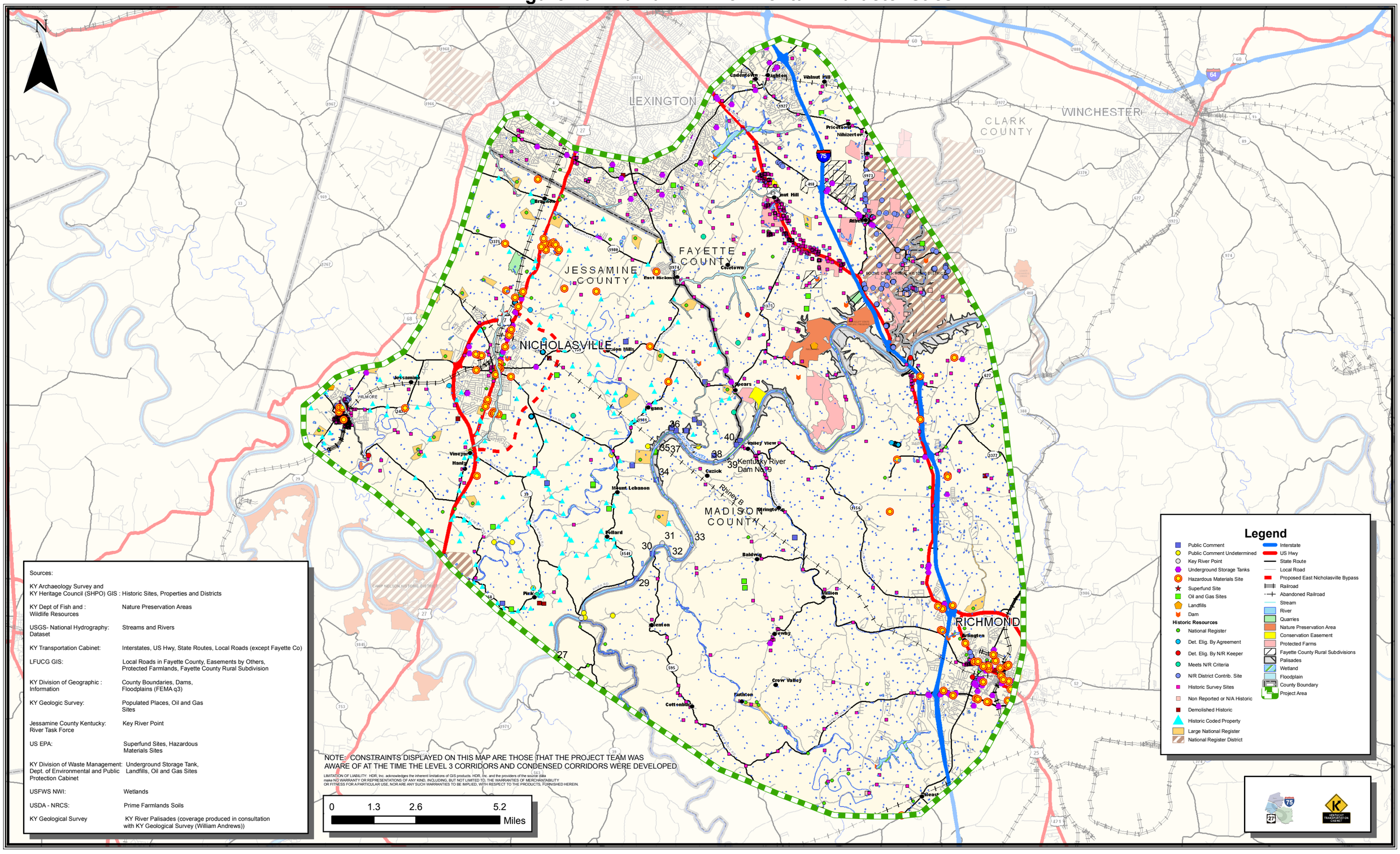


Table 10: Fayette County Employment by Major Industry (2006)

Fayette County	Employment	Percent
Agriculture, Forestry, Fishing and Hunting	2,219	1.3
Mining	311	0.2
Construction	8,475	4.9
Manufacturing	14,641	8.5
Trade, Transportation, and Utilities	33,437	19.4
Information	3,964	2.3
Financial Activities	9,055	5.3
Services	**70,781**	**41.1**
Public Administration	6,875	4.0
Other	207	0.1
All Industries	172,139	100.0

Source: Kentucky Economic Development Information System

Table 11: Jessamine County Employment by Major Industry (2006)

Jessamine County	Employment	Percent
Agriculture, Forestry, Fishing and Hunting	No data	No data
Mining	No data	No data
Construction	1,331	8.9
Manufacturing	2,921	19.4
Trade, Transportation, and Utilities	3,466	23.0
Information	111	0.7
Financial Activities	413	2.7
Services	**3,703**	**24.6**
Public Administration	556	3.7
Other	20	0.1
All Industries	15,039	100.0

Source: Kentucky Economic Development Information System

Table 12: Madison County Employment by Major Industry (2006)

Madison County	Employment	Percent
Agriculture, Forestry, Fishing and Hunting	No data	No data
Mining	No data	No data
Construction	926	3.0
Manufacturing	5,485	18.0
Trade, Transportation, and Utilities	5,242	17.2
Information	802	2.6
Financial Activities	758	2.5
Services	**10,131**	**33.2**
Public Administration	1,836	6.0
Other	20	0.1
All Industries	30,481	100.0

Source: Kentucky Economic Development Information System

Table 13: Major Manufacturers in the Study Area

Firm	Product(s)/Service(s)	Employees	Year Est.
ACS	Provide business processing solutions	74	2001
Adcom Wire Co.	High carbon spring wire, bright plating	100	1968
Alltech Inc.	Natural animal feed additives and brewing & distilling products - Corporate headquarters	250	1980
Amcor PET Packaging	Plastic custom bottles, food and customer care products	139	1982
Atlantis Plastics Inc	Flexible packaging stretch film	79	1984
B & H Tool Works Inc	A full service tooling, machining, stamping, and fabrication job shop. Capabilities include CNC, EDM, and laser machining. Progressive and hand transfer stamping capabilities.	118	1978
Classic Rattan Inc	Rattan & wicker furniture	38	1978
Creative Draperies Inc	Draperies & bedspreads	35	1969
Custom Wiring Inc	Wiring harnesses & electrical sub assemblies	37	1978
Donaldson Co In	Industrial air pollution control devices	250	1979
Hospital Specialty Co	Sanitary napkins, adult disposable undergarments	190	1979
Jackson Plastics Inc	Plastic injection molding	180	1995
Kokoku Rubber Inc	Rubber syringe stoppers, automobile part. Auto, medical pharma, business machines and electronics. Seals, gaskets, O-rings for automotive.	165	1988
Lockmasters Inc	Designs and markets educational products, lock, parts, and tools for the security industry / wholesale distribution	33	1981
McKechnie Vehicle Components	Plastic injection molding - automotive components, wheel trim, center caps, claddings	290	1979
McLane Cumberland	**Food distribution center**	**620**	**1995**
Meade Concrete Products Inc	Manufacture and retail concrete blocks and other building materials	36	1991
Rock Tenn Corp	Paperboard folding boxes	230	1970
Sargent & Greenleaf Inc	High security locks	150	1974
Sherwin Williams Automotive Finishes Corp	Automotive coatings & finishes	198	1976
Sherwin Williams Automotive Finishes Corp	Distribution of automotive coatings	65	1995
TEBCO of Kentucky Inc	Truck bodies & related equipment	55	1991
Uncle Charlie's Meats	Meat processing & packaging and distribution	63	1957
Valvoline Co.	**Administrative offices and lab**	**858**	**1980**

Source: Kentucky Economic Development Information System

Commuting – Approximately 86.0% of employed Fayette County residents work in the county, with the remaining 14.0% commuting to other nearby counties. In 2000, the average travel time to work was 19.3 minutes. In 1990, the average travel time to work was 17.5 minutes. The increase in time from 1990 to 2000 represents an increase of 10.3%. The dominant mode in both 1990 and 2000 was the single occupant vehicle (SOV) which accounted for 91.1% and 90%, respectively. Approximately 46.2% of employed Jessamine County residents work in the county, with the remaining 53.8% commuting to nearby counties; with most workers commuting to Fayette County. In 2000 the average travel time to work was 24.1 minutes, which is an increase of 11.1% over the 1990 average travel time to work of 21.7 minutes. Approximately 69.8% of Madison County residents work in the county, with the remaining 30.2% commuting to nearby counties. Again, Fayette County is the destination for many commuters in Madison County. In 2000 the average travel time to work was 23.5 minutes, a 19.9% increase from the 1990 average travel time of 19.6 minutes.

Community Facilities and Development Patterns – The majority of the study area is rural, bounded by development to the north from Lexington, in the east from Richmond, and in the west by Nicholasville. Most of the residential neighborhoods are located in the northern portion of the study area, along Man O' War Boulevard and I-75. Of particular concern is the Old Richmond Road Neighborhood. This is an old, established neighborhood that has been considered in the past for historic preservation. It is located in the northeastern portion of the study area. There are several small neighborhoods scattered throughout the study area as well.

There are also several areas in Fayette County that are included in the Fayette County Purchase of Development Rights Program (PDR). The PDR Program is an Agricultural Easement Program by the local government to protect the landscape from urban sprawl. Several agricultural, equine, and other farms are included and are protected by conservation easements. These areas should be avoided to all extents possible.

5.2 Environmental Justice

The Environmental Justice (EJ) assessment examined potential disproportionate adverse community impacts on selected groups (minority, low-income and elderly) within the defined project study area for the proposed transportation improvement(s) in the region between US 27 and I-75 in Fayette, Jessamine and Madison counties. A summary of the assessment is provided below. For a more in-depth analysis, refer to **Appendix B** which contains the entire report.

The purpose of the assessment was to:

- assist the Kentucky Transportation Cabinet in carrying out the Division of Planning's mission "… to collect, maintain, analyze and report accurate data for making sound fiscally responsible recommendations regarding the maintenance, operation and improvement of our transportation network";
- fulfill applicable federal Environmental Justice commitments; and

- further the goals and objectives and cooperative nature of the metropolitan transportation planning process.

The assessment focused on identifying, through a demographic analysis, the extent to which EJ populations and other groups of concern reside in or near the study area and may be impacted by the proposed project. Subsequent actions (determination of disproportionately high and adverse effects; proposing measures to avoid, minimize, and/or mitigate such effects; and providing specific opportunities for public involvement) may be undertaken, as appropriate, contingent upon the results of the demographic analysis.

The preliminary analysis showed that there are several locations within the study area with higher than average minority, low-income, and elderly persons. However, in Fayette County all census block groups with these characteristics are north of Man O' War Boulevard and will likely not be impacted by an alternative corridor. Near KY 39, just east of US 27 in Jessamine County, there is a block group with a high minority and low-income population. In Madison County, there is a high low-income population in the western part of the study area.

5.3 Underground Storage Tanks and Hazardous Materials

There are many potential underground storage tanks (UST) near Wilmore, Richmond, Nicholasville, and along Man O' War Boulevard on the south side of Lexington. There is also a possibility for USTs to be found at county stores and automobile repair facilities. There are potentially 507 UST sites in the study area. There is also the potential for oil, gas and water wells. 568 water wells and 19 oil and gas wells have been identified, although many have been abandoned. Three landfills are located in the study area, one near Wilmore, one near Richmond, and the last near Jacks Creek Pike in Fayette County. Hazardous materials and waste activities can be expected along US 27 in Nicholasville and near Richmond, and will likely be associated with industrial facilities.

5.4 Previously Documented Cultural Historic and Archeological Sites

A records search and informant interviews were performed by H. Powell and Company to determine the existence of any known cultural resources in the study area. **Figure 11** shows historical resources within the study area. Sixty-six recorded individually listed National Register sites were found within the area of potential effect (APE) of the project. Many of these, however, are not located between US 27 and I-75. Some of the significant cultural historic sites found within the project area are listed below:

- Cleveland-Rogers Complex;
- Waveland State Historic Site;
- Bonne Station State Historic Site;
- White Hall State Historic Site;
- Henry Pettit Mill;
- The Venable; and

- Butler's Tavern.

Two significant historic districts are located within the APE. These include the Boone Creek Historic District and Camp Nelson.

Based on the informant interviews conducted at the public information meeting on November 20, 2007, there are many other potential cultural historic sites, including residences, schools, cemeteries, mills, quarries, tunnels, bridges, warehouses, ferry crossings, Civil War fortifications, caves, prehistoric earthen mounds, prehistoric burials and prehistoric sites of indeterminate nature. Most of these sites are grouped around the towns of Union Mills, Logana and Valley View.

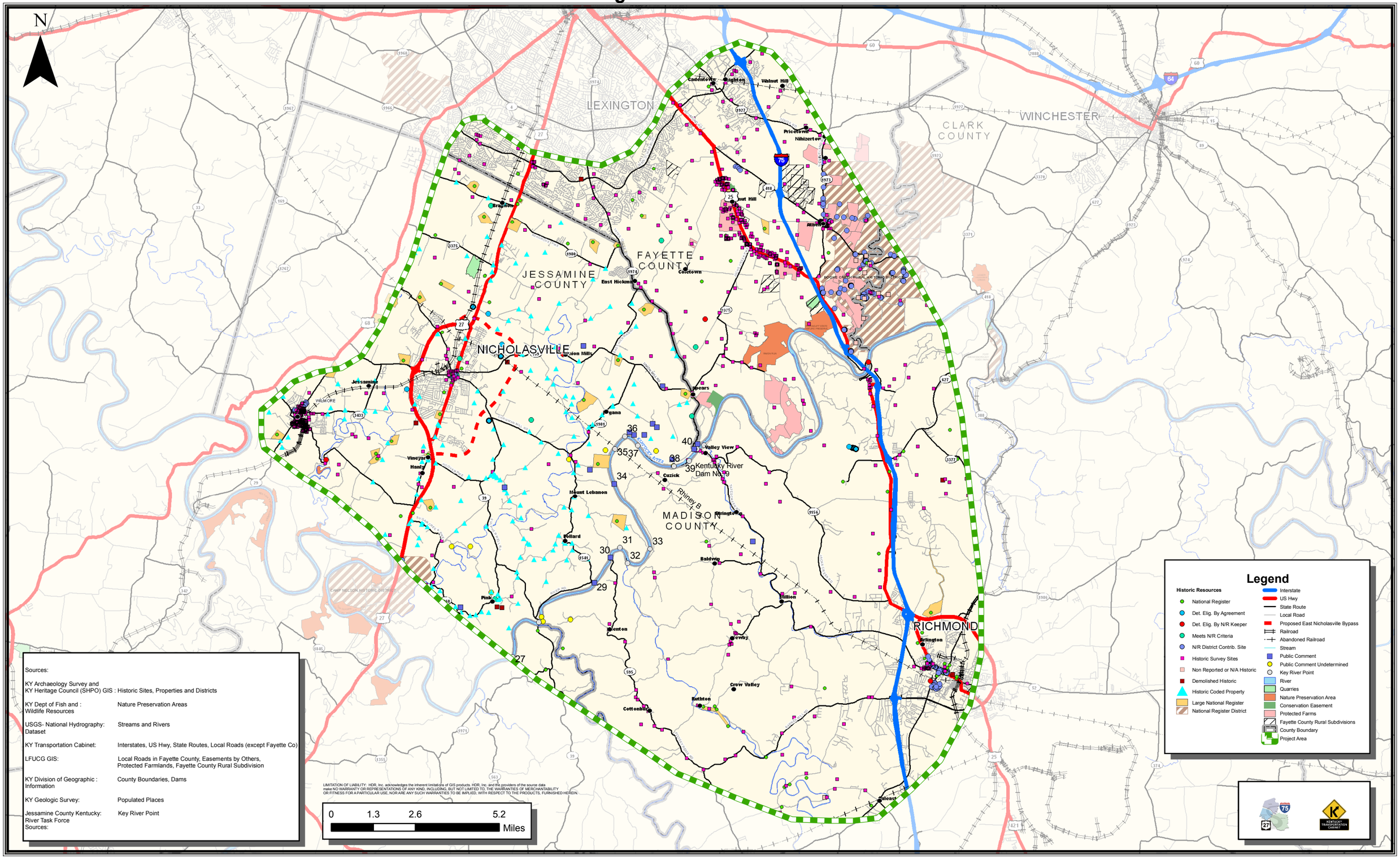
If adverse impacts to historic resources are identified during future project development phases, Section 106 initiation would begin once the environmental documentation and design of any future project started. Should a proposed corridor require the use of historic resources, then a Section 4(f) evaluation will be necessary.

As for archeological sites, there are two hundred and sixty-six archaeological sites that have been identified. Of those sites, two are considered eligible, six have been determined eligible, one is currently nominated and four are currently listed in the National Register of Historic Places (NRHP). The eligibility of one hundred and forty five sites has not yet been assessed.

There are nineteen sites previously recorded within the APE that are site types that typically qualify for preservation in place. These include three cave sites, eight earth mounds, three military, one mound complex, one non-mound earthwork, one open habitation with mounds, and two stone mounds.

For additional information about the cultural historic and archeological overview, refer to the full report included in **Appendix C**.

Figure 11: Historic Resources



Legend

Historic Resources
- National Register
- Det. Elig. By Agreement
- Det. Elig. By N/R Keeper
- Meets N/R Criteria
- N/R District Contrib. Site
- Historic Survey Sites
- Non Reported or N/A Historic
- Demolished Historic
- Historic Coded Property
- Large National Register
- National Register District

- Interstate
- US Hwy
- State Route
- Local Road
- Proposed East Nicholasville Bypass
- Railroad
- Abandoned Railroad
- Stream
- Public Comment
- Public Comment Undetermined
- Key River Point
- River
- Quarries
- Nature Preservation Area
- Conservation Easement
- Protected Farms
- Fayette County Rural Subdivisions
- County Boundary
- Project Area

Sources:

KY Archaeology Survey and KY Heritage Council (SHPO) GIS :	Historic Sites, Properties and Districts
KY Dept of Fish and : Wildlife Resources	Nature Preservation Areas
USGS- National Hydrography: Dataset	Streams and Rivers
KY Transportation Cabinet:	Interstates, US Hwy, State Routes, Local Roads (except Fayette Co)
LFUCG GIS:	Local Roads in Fayette County, Easements by Others, Protected Farmlands, Fayette County Rural Subdivision
KY Division of Geographic : Information	County Boundaries, Dams
KY Geologic Survey:	Populated Places
Jessamine County Kentucky: River Task Force Sources:	Key River Point

0 1.3 2.6 5.2 Miles

KENTUCKY TRANSPORTATION CABINET

6.0 NATURAL ENVIRONMENT OVERVIEW

An environmental overview was conducted by Third Rock Consultants, LLC to determine the characteristics of the natural environment in the study area. Resources addressed in this section include: aquatic resources, threatened, rare, and endangered species, air quality, traffic noise, and floodplains. Below is a summary of key points from the overview. **Figure 12** shows the natural environment features in the study area. Refer to **Appendix C** for the entire document.

6.1 Aquatic Resources

The Kentucky River and its tributaries run through the middle of the study area. The tributaries include Tate Creek, South Elkhorn Creek, Silver Creek, Jessamine Creek, Boone Creek, Hickman Creek, Paint Lick Creek and Hines Creek. Hines Creek has been designated as an exceptional water and reference reach by the Kentucky Division of Water. The Kentucky River Palisades, which are a unique formation of steep gorges where many nature preserves have been established, also run through the study area.

Natural wetlands occur in the study area, including two large reservoirs and many small farm ponds. Most of the potential naturally occurring wetlands are along South Elkhorn Creek, Silver Creek and Paint Lick Creek.

Any new stream crossings or changes to existing stream crossings may require United States Army Corps of Engineers Section 404 and Kentucky Division of Water Section 401 permits. Impacts to streams or wetlands may need to be mitigated. Also, the study area lies within an active karst area where water quality and endangered species habitat will need to be taken into consideration.

6.2 Threatened, Rare, and Endangered Species

Threatened, rare, and endangered species in the study area include the Indiana bat (Myotis sodalis), gray bat (Myotis grisescens), running buffalo clover (Trifolium stoloniferum), and the American burying beetle (Nicrophorus americanus).

Two nature preserves are also located in the study area, the Raven Run Nature Sanctuary and the Floracliff State Nature Preserve.

6.3 Air Quality

The study area is part of the Bluegrass Interstate Air Quality Control Region. All counties within the study area are currently designated in attainment for all transportation related air pollutants. If any portion of the roadway passes through Fayette County, the $PM_{2.5}$ National Ambient Air Quality Standard should be considered.

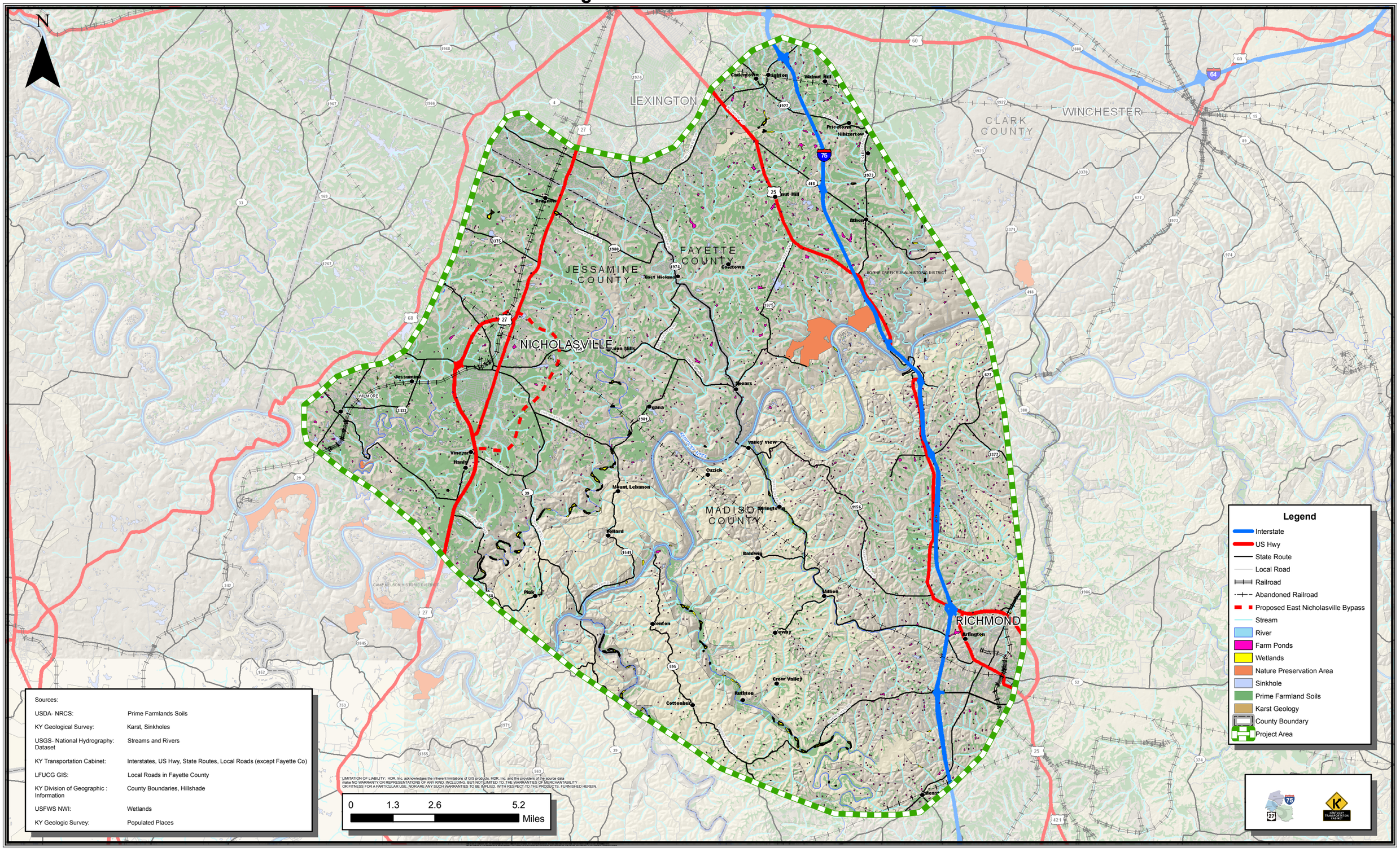
6.4 Traffic Noise

Potential sensitive noise receptors in the study area include the Raven Run and Floracliff State Nature Preserve, and the White Hall and Boone Station State Historic Sites. There are also numerous churches, schools, and cemeteries in the study area. However most are concentrated around the cities of Wilmore, Nicholasville, Richmond and southern Lexington / Fayette County.

6.5 Floodplains

Floodplains in the study area occur along existing rivers and creeks, including the Kentucky River, Jessamine Creek, Hickman Creek, Silver Creek, Tate Creek and Boone Creek. The floodplains generally do not extend outside of the river and creek beds.

Figure 12: Natural Environmental Features



7.0 GEOTECHNICAL OVERVIEW

Based on comments received from the Kentucky Geological Survey, there are several geological features within the study area. It should be noted that the study area might encounter karst features such as sinkholes and caves, as well as shaly units prone to landslides, unconsolidated sediments in drainage areas, and terrace deposits on hilltops along the Kentucky River. It is also possible that faulted areas will be encountered. A map is included along with the Geologic Survey's response in **Appendix D**. Drainage problems could occur if water seeps along the faulted area. Mineralization could also be found within the faulted and fractured areas, as well as contrasting rock types on opposite sides of faulted areas. Rocks suitable for construction stone are possible within the study area.

For additional information about geologic features / concerns, refer to the letter provided by the Kentucky Geological Survey attached in **Appendix D** as part of the public involvement / agency coordination for this study.

8.0 PUBLIC INVOLVEMENT

The Public Involvement Program for the US 27 to I-75 Scoping Study was comprised of several key elements designed to encourage participation and obtain feedback from the stakeholders in Fayette, Jessamine and Madison Counties. The key aspects include: meetings with local elected officials, formation and regular meetings of a project work group (PWG), public meetings, and agency correspondence. The process and methods for public involvement are outlined in this chapter. The results and feedback from implementation of the Public Involvement Program are provided throughout the entire report, particularly in the development and evaluation of alternates. Copies of the public involvement meeting summaries are included in **Appendix E** for reference including summaries of the input received at the public meetings.

Locally Elected Officials and Other Stakeholders – Meetings were held with locally elected officials and other stakeholders from Fayette, Jessamine, and Madison Counties. Locally elected officials included County Judge Executives, Mayors, and other officials who represented or spoke for the jurisdiction or agency. Three meetings were held in each of the counties; Fayette, Jessamine and Madison. Brief summaries of each meeting are given below, and meeting minutes are provided in **Appendix E**.

- Fayette County – A meeting with Don Kelly, the Public Works Director for the Lexington Fayette Urban County Government (LFUCG) was held on August 17, 2007. Mr. Kelly is knowledgeable about the project and the transportation conditions of south Lexington. He is supportive of a study, but will withhold judgment on recommendations. He feels that a new roadway would relieve congestion from Man ‘O War Boulevard and New Circle Road.

- Jessamine County – A meeting with Neal Cassity, the Judge Executive of Jessamine County, Russ Meyer, the Mayor of Nicholasville, and Nancy Stone of the Jessamine County Chamber of Commerce was held on August 28, 2007. Judge Cassity, Mayor Meyer and Ms. Stone are all very knowledgeable about the project and the transportation conditions of the region. The Jessamine County Transportation Task Force, headed by Nancy Stone, was the agency that received the initial grant money to fund this project. This is an incredibly important project to the County.

- Madison County – A meeting with Connie Lawson, the Mayor of Richmond, and Kent Clark, the Judge Executive of Madison County was held on August 7, 2007. Ms. Lawson and Mr. Clark are both supportive of the proposed connector project. They feel that it is needed in order to relieve traffic on I-75 during a crash, construction, or other type of incident. It would also provide an alternate to the Clays Ferry Bridge, and would provide more direct access to the interstate system for Jessamine County residents and businesses. In addition, it would be beneficial for evacuation during an incident at the Bluegrass Army Depot.

Project Work Group Meetings – A Project Work Group (PWG) was developed to provide input on issues and concerns about the project at key decision points throughout the study. The PWG includes representatives from KYTC District 7 and Central Office Staff including – KYTC Planning, Pre-Construction, Environmental Analysis, representatives from the Lexington MPO, Bluegrass ADD, federal, state, and local resource agencies, local elected officials from Jessamine, Fayette and Madison Counties, chamber of commerce representatives, landowners, homeowners, and other representative citizens of Jessamine, Fayette and Madison Counties. A list of PWG members is included in **Appendix E** along with meeting minutes for all PWG meetings. Five meetings were held at major study milestones. Each of the meetings is described in more detail below.

- PWG Meeting #1 – The first PWG meeting was held on October 30, 2007 at the Bluegrass Area Development District conference room. This was a kick-off meeting with the purpose of convening the PWG, providing background information, and obtaining input on study issues and goals.
- PWG Meeting #2 – The purpose of the second PWG meeting, held on February 25, 2008, was to update the members on project progress to date including presenting the DRAFT project purpose and need, a summary of the comments received at the first public meeting, initial TransCad Model results of "test" corridors, and the initial fatal flaw screening and evaluation of the alternate corridors for the US 27 to I-75 Corridor Scoping Study. The PWG was shown what was done to narrow the 50 to 60 corridors drawn at the public meeting down to 18, and comments were received. The PWG agreed that a more detailed analysis needed to be performed for all 18 alternatives as well as the no-build before any remaining corridors could be eliminated.
- PWG Meeting #3 – The purpose of the third PWG meeting was to review the project purpose and need and narrow down the list of potential alternative corridors to the most promising based on the provided evaluation matrix. An evaluation matrix that examined each corridor with respect to system operations, traffic operations, natural environment, human environment and cost was presented. Based on these criteria, discussion amongst the PWG followed, and the set of 18 corridors was narrowed to 6, in addition to the no-build alternative.
- PWG Meeting #4 – The purpose of the fourth PWG meeting was to present the PWG with the Level 3 Analysis of the remaining six corridors and the no-build option, and to obtain feedback before the information was presented at the next public meeting. The analysis was discussed and it was decided what information would be best to present at the public meeting.
- PWG Meeting #5 – The purpose of the fifth PWG meeting was to discuss the results of the second public meeting with the PWG, as well as present to them the Project Development Team's preferred corridor. The PWG agreed on the preferred corridor and provided comments with respect to treatment of access, preference of a two versus four lane roadway, multi-use path considerations and tolling. This was the final PWG meeting, however the PWG was told they would be given the opportunity to review the draft report and provide comments.

Public Meetings – Two public meetings were held during the course of this study. The public meetings were held in a traditional open house style format. Key goals for these meetings were to determine if the public was in favor of the project, to gather input on the issues and concerns of the project, to propose alternate corridors and to help choose the best corridor. Each of these meetings is described in more detail below.

- Public Meeting #1 – This meeting was held on November 20, 2007 in the cafeteria of the West Jessamine Middle School in Jessamine County. The purpose of the first public information meeting was to inform the public of the study, present the existing conditions documentation, gather input on the project issues and goals, determine if the public was for or against the project, and begin the process of alternate development. Five stations were set up around the cafeteria and were staffed with KYTC, Bluegrass ADD, Lexington MPO, PB, HDR, H. Powell and Company, and Third Rock personnel. The five stations included study background information, existing highway system conditions, existing environmental information, inputs on issues, goals and corridors, and written and oral recorded comments. A survey was given to each attendee when they signed in. In addition to the 144 surveys returned either at the meeting or afterwards, participants were also able to provide feedback by writing their issues and goals for the project on large sheets of paper provided, drawing corridors on large maps where they would like to see the road built, and by having their comments recorded by a court reporter. A summary of this informational event and the resulting survey information is provided in **Appendix E**.
- Public Meeting #2 – The second public meeting was held on June 16, 2008 on the campus of Eastern Kentucky University in Richmond, Kentucky. The purpose of the meeting was to present to the public the work completed thus far including project purpose and need, identification / development of potential corridors, and the evaluation process. Through an iterative evaluation process, the number of potential corridors was narrowed down to six prior to this meeting. These six final corridors (along with the no-build option) were shown to the public to request feedback as to which should be the preferred alternative. Additional input was also requested as to the number of lanes, treatment of access, bicycle / pedestrian considerations, and tolling as a potential funding source. This open house was somewhat unique in that in order to encourage attendees to visit the individual project stations and fill out a comment form, three $50 gas cards were given away. This was fairly successful as out of the 77 people who signed in at the meeting, 58 completed and returned a survey. A summary of this informational event and the resulting survey information is provided in **Appendix E**.

Agency Correspondence – An agency mailing was prepared during the initial stages of this study and sent to various local, state, and federal regulatory agencies, as well as elected officials, to obtain input in the study process. The list of respondents includes:

- The United States Department of Military Affairs
- Kentucky Airport Zoning Commission

- Kentucky Division of Forestry
- Kentucky Vehicle Enforcement
- University of Kentucky Geological Survey
- Kentucky Department for Environmental Protection Division for Air Quality
- Kentucky Department of Natural Resources Division of Conservation
- Kentucky Cabinet for Health and Family Services Facilities Management Division
- Kentucky Department of Fish and Wildlife Resources Commerce Cabinet
- Kentucky Transportation Cabinet Office of Special Programs
- City of Nicholasville
- Nicholasville Police Department
- Lexington Division of Police
- Nicholasville Mayor Russell Meyer
- Jessamine County Judge Executive
- Jessamine County Clerk Jessamine County EMS Chief
- Nicholasville Fire Department
- State Representative Robert R. Damron
- State Representative Bill Farmer
- State Senator Tom Buford
- Kentucky Division of Waste Management

A letter describing the project was sent to the above agencies and representatives, along with the website where they could find public meeting materials. Some agencies sent back letters, while others returned the survey forms used at the public meeting. From the letters received, several of the agencies listed above had concerns regarding the project.

- The Airport Zoning Commission stated that a permit from the state and the Federal Aviation Administration would be needed if any temporary or permanent structures exceed restrictions given in their response.
- The Kentucky Division of Forestry encouraged the inclusion of wildlife-friendly passage accommodations.
- The Division of Air Quality listed Kentucky Division for Air Quality Regulations that apply to the project, as well as requirements of the Clean Air Act. They also recommended investigating applicable local government regulations.
- The Kentucky Department for Environmental Protection Division for Air Quality response stated that the project must meet the conformity requirements of the Clean Air Act as amended and the transportation planning provision of Title 23 and Title 49 of United States Code.
- The Kentucky Geologic Survey stated that the study area would encounter several geologic features, such as:
    - Karst features (sinkholes and caves);
    - Shaly units that are highly susceptible to slumping when wet;
    - Unconsolidated sediments in drainage areas and terrace deposits on hilltops;

  - Rock units that would be suitable as construction stone; and
  - Faulted areas where water seepage along the faults could cause drainage problems, mineralization could be found in the faulted and fractured areas, and contrasting rock types could be found on opposite sides of the faulted areas.

  The Geologic Survey said that the potential for an earthquake in the study area is very low.
- The Kentucky Department for Environmental Protection Division of Conservation identified an agricultural district in the northwest area of Madison County, and stated that impacts to this soil should be mitigated. Concerns of controlling erosion and sediments during and after earth disturbing activities were expressed, and it was suggested that best management practices (BMPs) be utilized to prevent non-point source water pollution. It was also requested that the study include the issue of loss of farmland.
- Based on comments provided by the Kentucky Department of Fish and Wildlife Resources Commerce Cabinet, the federally endangered gray bat, *Myotis grisescens,* and Indiana bat, *Myotis sodalist* are known to occur within close proximity to the project area. Any impact to trees during construction should be completed within a specific time frame to avoid any harm to the bats.
- Also from the Department of Fish and Wildlife Resources, impacts to streams should preferably be mitigated on site, however, if that is not possible, several Kentucky River tributaries were identified as stream restoration sites.
- The Kentucky Division of Waste Management received no comments from Hazardous Waste Permitting. There are also no Hazardous Waste Treatment Storage Sites. A list of superfund sites in the study area as well as a list of Underground Storage Tank sites were sent, and are included in **Appendix D**, along with the e-mail responses.

Based on the survey forms received from state representatives, senators and other public agencies, it seems that the majority of agencies and elected officials are in favor of a new connector road or do not see a compelling reason why one should not be pursued. Reasons that most people want the connector include reduced traffic congestion, improved connectivity, economic development, and improved safety.

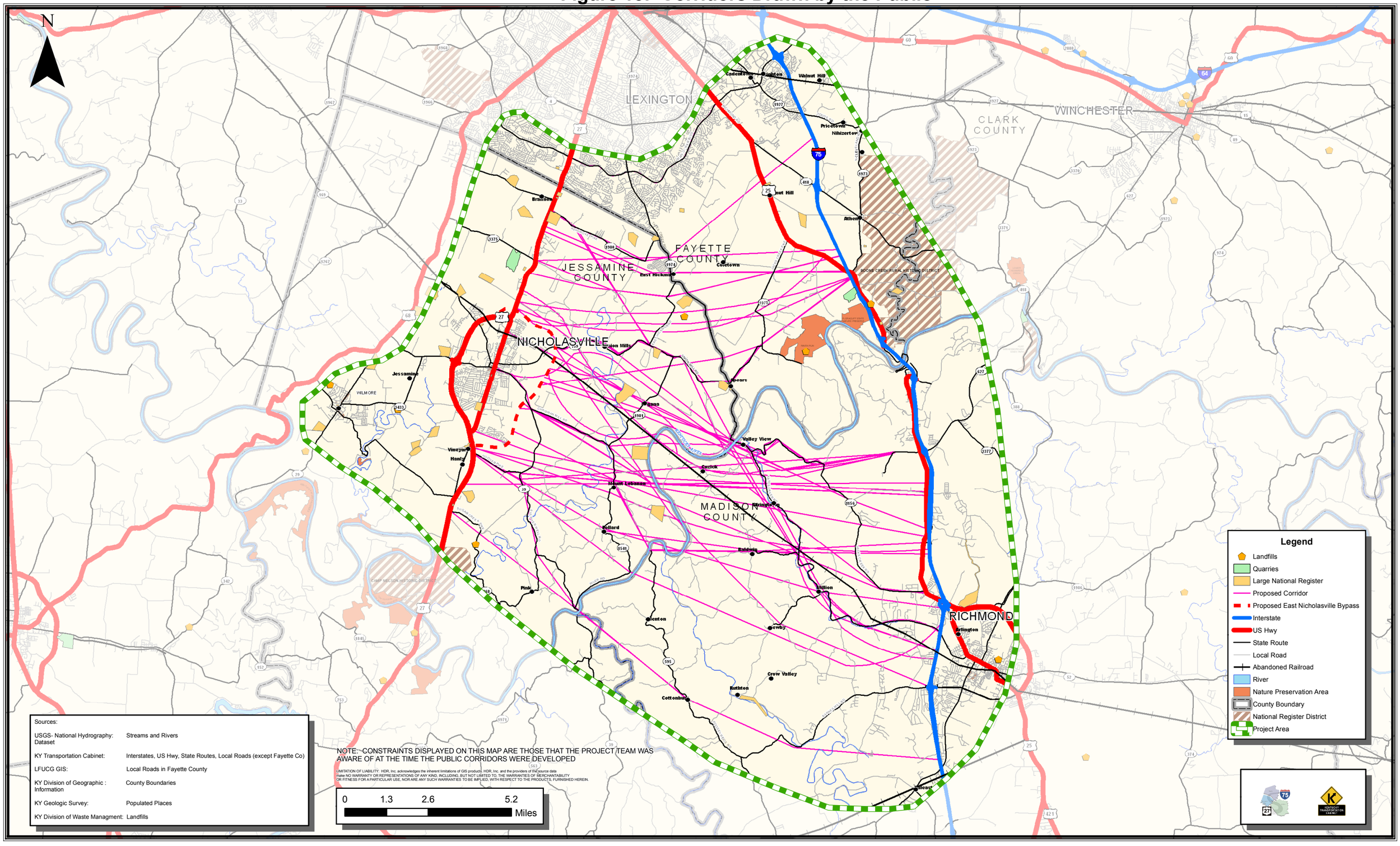
A copy of the recipient list and responses can be found in **Appendix D** for reference.

Project Team Meetings – Several meetings were also held with the KYTC and the consultant team to discuss project issues including the PWG and public meetings (preparation and results), issues and goals, development of alternates, evaluation of alternates and a meeting to discuss project recommendations. The meeting minutes from these meetings are included in **Appendix E** for reference.

9.0 ALTERNATIVES DEVELOPMENT

The corridor development process began at the first Public Meeting held on November 20, 2007. The general public was given background information on the study area, purpose and need, and goals and objectives. They were also given information regarding current traffic volumes, levels of service, truck volumes, crash rates, environmental features, and archeological and historic features in the study area. They were then given a map of the study area and asked to draw lines where they would like to see the connector built. **Figure 13** shows the map of all the corridors drawn by the public. This map served as the beginning of the corridor evaluation process and contains 50 to 60 distinct corridors.

Figure 13: Corridors Drawn by the Public

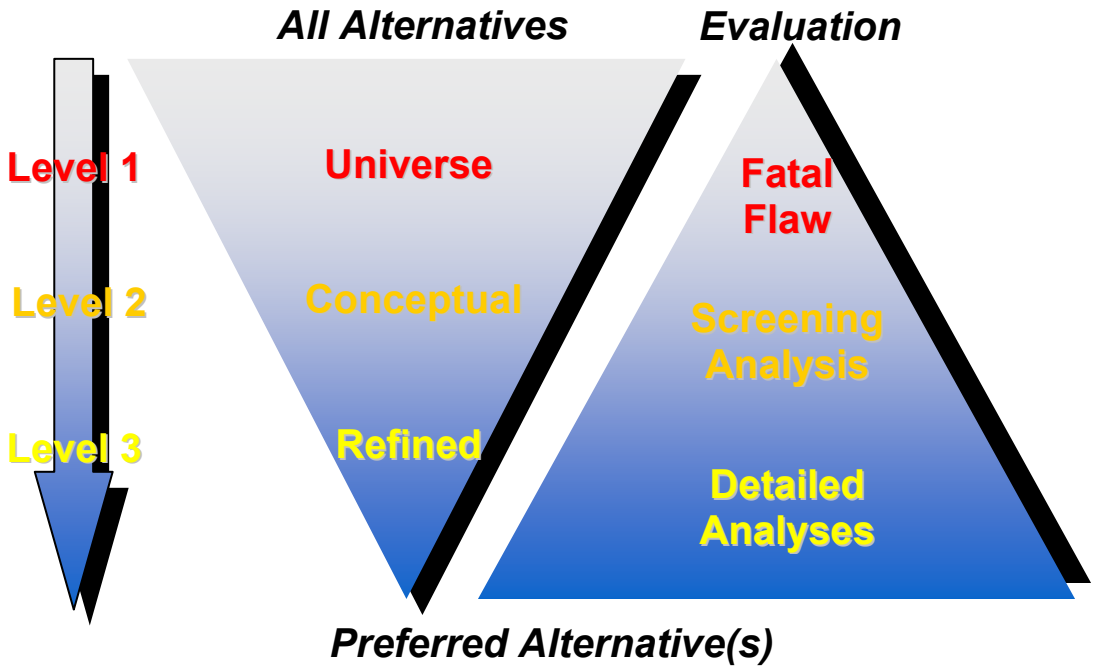


10.0 EVALUATION METHODOLOGY

The evaluation procedure used in this study is a three-step process. The purpose of the three-step process is to refine the list of alternatives (corridors) from all possible alternatives, to a short list of promising alternatives, and then finally to a recommended alternative. The evaluation process uses increasingly detailed analysis methods to complete the screening and to refine the alternatives remaining after each round of analysis. The goal is to study and further develop only feasible alternatives that best meet the project's goals, while not spending extensive effort on those that are unworkable or do not meet the project's goals.

Initially, a few important details were identified for a broad array of possible alternatives. As the analysis progressed, the range and depth of information increased and the number of alternatives being studied decreased as shown in **Figure 14.**

Figure 14: Three-Level Evaluation Process



During Level 1, much of the analysis was based on qualitative or comparative information. The principal goals at this level were to determine if an alternative was feasible (physically, financially, environmentally and socio-politically) and generally how it compared to the other alternatives. During the next two levels, the amount of qualitative data and analysis increased substantially (i.e. traffic forecasts, cost estimates, potential numbers of impacted wetlands, etc.) allowing for more detailed and definitive comparisons. The goal of the final Level 3 analysis was to select a recommendation. The following three report sections present a summary of each of the three analysis levels.

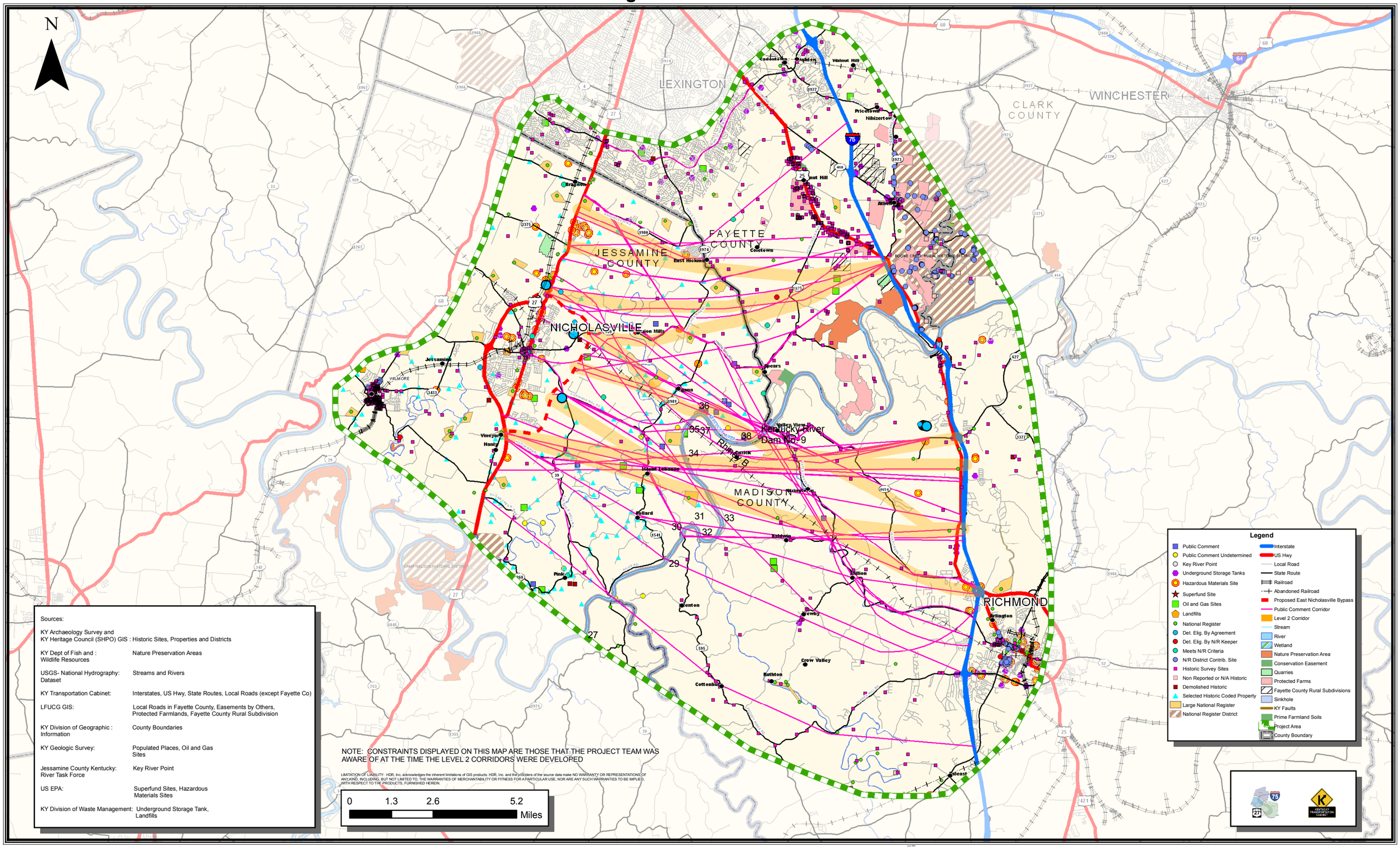
11.0 LEVEL 1 EVALUATION – INITIAL SCREENING

The initial screening process began with the map of corridors drawn by attendees at the November 20, 2007 Public Meeting. On January 16, 2008, the Project Development Team (PDT) met to review all of the corridors drawn by the public and to find common points throughout the study area where people wanted to see a connecter. This procedure enabled the group to decide on a set of 2,000 foot wide corridors to be further evaluated. Some criteria used by the PDT in addition to common points are noted below.

- Lines drawn outside the three county study area boundary were eliminated from consideration.
- Corridors in the southernmost study area toward Richmond were eliminated as there is not much traffic / transportation utility for them.
- Corridors with an eastern termini south of Richmond were eliminated. The *Scoping Study for US 27/I-75 Connector in Garrard and Madison Counties* discussed in Chapter 4 addresses connectivity issues associated with this portion of Madison County.
- Due to cost, corridors that crossed the river more than once were removed.
- Corridors through 'listed' properties were removed.
- The northernmost corridors were removed due to known developments, including PDR sites.
- Diagonal routes were eliminated due to the length, which would drive up the costs and decrease travel time savings and utility.
- Common intersection points were noted. These areas were shaded on the wall map. Corridors drawn by the PDT included all these points.

Based on these criteria, a total of eighteen corridors were retained for further analysis in Level 2. **Figure 15** shows these eighteen corridors. In addition to the eighteen corridors, a no-build scenario was included as a baseline for comparison as well as a viable alternative.

Figure 15: Level 2 Corridors



Sources:

KY Archaeology Survey and KY Heritage Council (SHPO) GIS :	Historic Sites, Properties and Districts
KY Dept of Fish and : Wildlife Resources	Nature Preservation Areas
USGS- National Hydrography: Dataset	Streams and Rivers
KY Transportation Cabinet:	Interstates, US Hwy, State Routes, Local Roads (except Fayette Co)
LFUCG GIS:	Local Roads in Fayette County, Easements by Others, Protected Farmlands, Fayette County Rural Subdivision
KY Division of Geographic : Information	County Boundaries
KY Geologic Survey:	Populated Places, Oil and Gas Sites
Jessamine County Kentucky: River Task Force	Key River Point
US EPA:	Superfund Sites, Hazardous Materials Sites
KY Division of Waste Management:	Underground Storage Tank, Landfills

NOTE: CONSTRAINTS DISPLAYED ON THIS MAP ARE THOSE THAT THE PROJECT TEAM WAS AWARE OF AT THE TIME THE LEVEL 2 CORRIDORS WERE DEVELOPED

12.0 LEVEL 2 EVALUATION – PRELIMINARY ANALYSIS

12.1 Level 2 Evaluation Summary

The Level 1 analysis narrowed the 50 to 60 corridors drawn by the public down to eighteen plus the no-build. For the second level of analysis these corridors were evaluated based on system operations, traffic operations, natural environment impacts, human environment impacts and cost.

System Operations Evaluation

The system operations evaluation took into consideration corridor length, whether or not the corridor crosses the Kentucky River, potential transportation system safety improvements, study area travel time savings, and connectivity. The transportation system safety evaluation gave each corridor a ranking of low, medium or high, indicating how many high crash rate sections from which the corridor is likely to divert traffic. If the corridor is likely to divert traffic from 10 to 13 high crash rate sections, it was considered to have low system safety. If the number of crash rate sections was 14 or 15, it was given medium system safety. If traffic is likely to be diverted from more than 16 high crash rate sections, the corridor was considered to have a high system safety improvement. The study area travel time savings was calculated based on the difference in vehicle hours of travel (VHT) from the no-build scenario. All corridors provided some travel time savings. Connectivity stated whether or not the corridor would connect to another roadway at its western terminus at US 27 and/or its eastern terminus at I-75.

Traffic Operations Evaluation

The traffic operations evaluation looked at 2040 Average Daily Traffic (ADT), 2040 Level of Service (LOS), and the corridor truck percentage. The ADT analysis was performed using the Kentucky Statewide Model (KYSTM). Each corridor was coded into the model, and then the model was run to determine the ADT along the corridor. A one percent per year growth rate was used to forecast the ADT from the model to the 2040 ADT. The ADTs of US 27, I-75 and Man O' War Boulevard were found using the model for the no-build scenario. The volumes of US 27, I-75 and Man O' War Boulevard for each corridor scenario were then compared to the no-build scenario and a range of traffic increase and / or decrease was given. A range of LOS for various segments along US 27, I-75, and Man O' War Boulevard was given for the no-build as well as each of the eighteen corridor scenarios. LOS was also calculated for each of the corridors. A range of truck percentages along each corridor was also calculated from the model.

Natural Environment Evaluation

Each of the eighteen corridors and the no-build option was evaluated with regards to the number of streams that would be impacted in the corridor, the number and acres of potential wetlands / ponds in the corridors and acres of floodplain that would be impacted. A GIS dataset was used to detail this evaluation.

Human Environment Evaluation
The human environment analysis included the number of known historic sites and known archeological sites in each corridor, and landfills and other potential HAZMAT site impacts. The number of farmland impacts in acres was also evaluated. Environmental justice impacts were considered for each of the corridors. For most of these criteria, a GIS dataset was used to detail this evaluation.

Cost Evaluation
The cost for each corridor was estimated. A typical section was assumed for a 4-lane divided facility. These estimates were for construction only and did not include design, right-of-way, utilities or mitigation costs. The estimates were for planning level purposes and are in 2008 constant dollars.

Other Criteria
In addition to the criteria listed above, other criteria were evaluated but left off of the evaluation matrix because they did not differentiate one corridor from another. The PDT as well as the PWG was made aware of this situation and chose to focus on only the above criteria that did make a difference in the evaluation. These dropped criteria are listed below:

- Number of interchanges (2);
- Threatened / rare / endangered species;
- Wildlife management / conservation areas;
- Quarries / mines;
- Park or recreation facilities; and,
- Underground storage tanks (USTs).

12.2 Level 2 Corridor Analysis

The eighteen corridors and no-build scenario were put into an evaluation matrix with the criteria listed above. **Table 14** shows the evaluation matrix for all of the corridors. The eighteen corridors are labeled according to their beginning and ending points. For example, Corridor 2-1 begins at the second point in the west and ends at the first point in the east. The colors on the table help to indicate relative performance in a category. Cells that are shaded green generally indicate good performance in a category while cells shaded red indicates poor performance in a category.

Corridor 1-1
Corridor 1-1 begins in the west at US 27 just south of KY 1980, and ends at I-75 in the east, just west of Boone Creek Rural Historic District. It has a relatively short length with no Kentucky River crossing, low system safety benefits, low travel time savings and limited connectivity. The ADT is high on the connector, and traffic volumes are lowered on some segments of Man O' War Boulevard. LOS on one segment of Man O' War Boulevard is improved from LOS E to D as a result. There are a low number of streams and potential wetlands and ponds impacted, as well as a low number of known historic sites impacted. There are a high number of farmland acres impacted, and possible

minority and elderly community impacts. The cost of this corridor is $233 million, one of the least expensive build options.

Corridor 2-1

Corridor 2-1 begins in the west at the US 27 / KY 3375 intersection and extends east to I-75 west of Boone Creek Rural Historic District. It has a relatively short length with no bridge crossing, and low system safety benefits. It connects to KY 3375 at the western terminus. The ADT on the connector is high, and it significantly lowers traffic volumes on some segments of Man O' War Boulevard, improving LOS on one segment of Man O' War Boulevard from LOS E to D. Corridor 2-1 has a low number of potential wetlands and ponds impacted, as well as a low number of impacts to known historic sites, and landfills / HAZMAT sites. There are, however, a high number of archeological sites and farmland impacts. This alternative has a cost estimate of $235 million, one of the lower estimates.

Corridor 3-1

Corridor 3-1 begins at US 27 just north of the US 27 / Northern US 27 Bypass intersection. It extends to I-75 west of Boone Creek Rural Historic District. It has a relatively short length and no Kentucky River crossing. It does, however, have high system safety benefits. It connects to the US 27 eastern and western bypasses at the western terminus. The connector has a relatively high ADT and significantly lowers traffic volumes on some segments of Man O' War Boulevard, improving the LOS on one segment of Man O' War Boulevard from LOS E to D. This corridor has a low number of streams impacted; however there are high farmland impacts as well as potential low-income and elderly community impacts. The cost estimate is $234 million.

Corridor 4-1

Corridor 4-1 beings at the Eastern Nicholasville Bypass / KY 169 intersection and extends east to I-75 west of Boone Creek Rural Historic District. It has the shortest length of all the corridors, no Kentucky River crossing, and low travel time savings. It connects to KY 169 at the western terminus. The addition of this corridor significantly lowers traffic volumes on some segments of Man O' War Boulevard, and improves LOS on one segment of Man O' War Boulevard from LOS E to D. There are a low number of potential wetlands and ponds impacted, as well as the lowest number of impacts to known historic sites. There are, however, potential low-income community impacts. This alternative has the lowest cost estimate at $211 million.

Table 14: Level 2 Evaluation Matrix

Alternative Corridors	System Operations						Traffic Operations								
	Length	Bridge Crossing (Yes / No)	System Safety Improvement (Low, Medium, High)	Study Area Travel Time Savings (vehicle hours of travel)	Connectivity		2040 Average Daily Traffic (Low to High)				2040 Level of Service (range)				Corridor Truck % (range)
					US 27 (West)	I-75 (East)	Connector	US 27	I-75	Man O' War Blvd	Connector	US 27	I-75	Man O' War Blvd	
0	0.00	No	**Low**	**0**	**None**	**None**	N/A	13,800 - 146,700	114,100 - 192,400	51,300 - 135,900	N/A	B-F	F	**E-F**	N/A
1-1	10.05	No	**Low**	118	**None**	**None**	**15,600 - 21,500**	5% less to 3% more	8% less to 4% more	**14% less to 7% more**	A-B	B-F	F	**D-F**	11.8% to 12.7%
2-1	10.02	No	**Low**	244	KY 3375	None	12,100 - 19,500	5% less to 2% more	14% less to 4% more	**16% less to 1% less**	A-B	B-F	F	**D-F**	12.2% to 14.3%
3-1	10.73	No	**High**	195	US 27 Eastern / Western Bypass	None	12,600 - 18,400	**7% less to 8% more**	**5% less to 5% more**	**17% less to 1% less**	A-B	B-F	F	**D-F**	13.1% to 14.6%
4-1	**9.84**	No	Medium	124	KY 169	None	14,300 - 15,300	**8% less to no change**	**5% less to 4% more**	**18% less to 1% less**	A	B-F	F	**D-F**	15.1% to 16.9%
4-2	12.92	Yes	Medium	394	**KY 169**	**KY 3055, KY 627**	13,600 - 15,600	**8% less to 12% more**	9% less to 2% more	9% less to no change	A	B-F	F	**E-F**	12.8% to 14.7%
4-3	13.14	Yes	Medium	**76**	KY 169	None	13,300 - 16,900	9% less to 6% more	**11% less to no change**	9% less to no change	A-B	B-F	F	**E-F**	13.5% to 15.0%
4-4	13.72	Yes	Medium	**455**	KY 169	None	**15,600 - 19,200**	**7% less to 12% more**	11% less to 3% more	9% less to no change	A-B	B-F	F	**E-F**	10.4% to 12.5%
5-2	12.83	Yes	Medium	351	None	KY 3055, KY 627	12,900 - 14,600	**9% less to 21% more**	8% less to 1% more	9% less to no change	A	B-F	F	**E-F**	12.7% to 16.6%
5-3	13.13	Yes	Medium	440	**None**	**None**	13,600 - 16,000	**10% less to 22% more**	9% less to 2% more	9% less to no change	A	B-F	F	**E-F**	13.8% to 14.7%
5-4	13.67	Yes	Medium	427	**None**	**None**	14,500 - 17,500	**11% less to 21% more**	9% less to 3% more	9% less to no change	A-B	B-F	F	**E-F**	11.7% to 13.7%
6-2	13.29	Yes	**Low**	265	None	KY 3055, KY 627	11,800 - 12,700	**9% less to 21% more**	8% less to 2% more	9% less to no change	A	B-F	F	**E-F**	13.4% to 16.8%
6-3	13.55	Yes	**Low**	341	**None**	**None**	11,700 - 12,900	**10% less to 22% more**	8% less to 2% more	9% less to no change	A	B-F	F	**E-F**	13.2% to 16.5%
6-4	14.07	Yes	**Low**	138	**None**	**None**	12,000 - 13,400	**10% less to 21% more**	9% less to 3% more	10% less to no change	A	B-F	F	**E-F**	13.1% to 15.7%
7-2	14.10	Yes	**High**	330	**US 27 Eastern / Western Bypass**	**KY 3055, KY 627**	7,400 - 13,000	9% less to 4% more	8% less to 1% more	9% less to no change	A	B-F	F	**E-F**	13.5% to 16.9%
7-3	14.34	Yes	**High**	319	US 27 Eastern / Western Bypass	None	**5,500 - 13,200**	9% less to 3% more	8% less to 2% more	9% less to no change	A	B-F	F	**E-F**	13.1% to 22.6%
7-4 (North)	14.88	Yes	**High**	360	US 27 Eastern / Western Bypass	None	7,400 - 14,200	10% less to 3% more	9% less to 2% more	9% less to no change	A	B-F	F	**E-F**	14.2% to 16.3%
7-4 (South)	14.65	Yes	**High**	307	US 27 Eastern / Western Bypass	None	8,200 - 13,700	**4% less to 21% more**	9% less to 2% more	9% less to no change	A	B-F	F	**E-F**	15.1% to 19.8%
7-5	**15.44**	Yes	**High**	171	**US 27 Eastern / Western Bypass**	**US 25 / Richmond Bypass**	8,200 - 14,000	**4% less to 21% more**	9% less to 2% more	9% less to no change	A	B-F	F	**E-F**	13.7% to 17.5%

Table 14: Level 2 Evaluation Matrix (cont.)

Alternative Corridors	Natural Environment			Human Environment					Cost (in 2008 Constant Dollars)
	No. of Streams Impacted in Corridor	Potential Wetlands / Ponds in Corridor #'s (Acres)	Floodplains Impacts (Acres)	No. of Known Historic Sites in Corridor	No. of Known Archeological Sites in Corridor	Environmental Justice Impacts	Farmland Impacts (Acres)	Landfills and Other Potential HAZMAT Site Impacts	Initial Estimated Cost in Millions (Does not include Design, ROW, Utilities, & Mitigation)
0	**0**	0(0)	**0**	**0**	**0**	**None**	**0**	**0**	**0**
1-1	**16**	60(38)	124	7	2	**Possible Minority and Elderly impacts**	**903**	1	233
2-1	20	56(36)	124	8	**4**	**None**	**948**	**0**	235
3-1	**16**	71(32)	59	11	2	**Low-Income and Elderly impacts**	**948**	2	234
4-1	20	46(24)	62	**4**	1	**Low-income impacts**	885	2	**211**
4-2	23	76(71)	**137**	**23**	**0**	**Low-income impacts**	716	**5**	341
4-3	25	89(65)	**137**	**23**	1	**Low-income impacts**	740	3	342
4-4	26	87(69)	**137**	22	**0**	**Low-income impacts**	813	1	356
5-2	24	88(75)	88	19	**0**	**None**	654	**5**	336
5-3	25	101(68)	88	19	1	**None**	678	3	339
5-4	25	99(73)	88	18	**0**	**None**	751	1	352
6-2	26	102(83)	**50**	11	1	**None**	**612**	4	332
6-3	23	111(75)	**50**	9	2	**None**	**624**	2	352
6-4	23	107(78)	**50**	8	1	**None**	698	**0**	372
7-2	28	104(86)	61	15	3	**None**	697	4	341
7-3	28	113(78)	61	13	**4**	**None**	709	2	361
7-4 (North)	27	109(82)	61	12	3	**None**	782	**0**	380
7-4 (South)	**32**	77(61)	66	17	2	**None**	**621**	2	377
7-5	**33**	109(71)	66	18	3	**Minority, Low-income and Elderly impacts**	**612**	4	**409**

Corridor 4-2
Corridor 4-2 beings at the Eastern Nicholasville Bypass / KY 169 intersection and extends to the I-75 / KY 627 interchange. This alternative crosses the Kentucky River, and connects to KY 169 at the western terminus and KY 3055 and KY 627 at the eastern terminus. The addition of the corridor would lower traffic volumes on some segments of Man O' War Boulevard, but there is no change in LOS. This alternative would impact a high amount of floodplains in addition to known historic sites and landfills / HAZMAT sites. However, there are no archeological sites within the corridor. It would also impact potential low-income populations. This alternative's cost estimate is $341 million.

Corridor 4-3
Corridor 4-3 begins at the Eastern Nicholasville Bypass / KY 169 intersection and extends east to I-75 just south of the KY 627 interchange. This corridor does cross the Kentucky River; however it has the lowest travel time savings of the build alternatives. It connects to KY 169 at the western terminus. The addition of the corridor lowers traffic volumes on some segments of Man O' War Boulevard, but does not result in a change in LOS. Within the corridor there are high floodplain impacts, as well as the highest number of known historic sites. Potential for low-income populations do exist in the corridor and they may be impacted. The cost is estimated to be $342 million.

Corridor 4-4
Corridor 4-4 begins at the Eastern Nicholasville Bypass / KY 169 intersection and extends east to I-75 near Northridge Way. It crosses the Kentucky River and connects to KY 169 at the western terminus. This corridor has the highest study area travel time savings. The KYSTM model shows a high ADT on the connector, in addition to lower traffic volumes on some segments of Man O' War Boulevard. There is no change in LOS on US 27, Man O' War Boulevard or I-75 as a result of the connector. There are a large amount of floodplain impacts, as well as a high number of impacts to known historic sites. There are no archeological sites in the corridor, but there are potential low-income populations. Construction costs are estimated at $356 million.

Corridor 5-2
Corridor 5-2 begins at the Eastern Nicholasville Bypass between KY 169 and KY 39. It crosses the Kentucky River and connects to KY 3055 and KY 627 at the eastern terminus. This corridor lowers traffic volumes on some segments of Man O' War Boulevard, but there is no change in LOS. The corridor has an average impact to streams, wetlands and ponds, and floodplains compared with the other alternatives. There are no archeological sites within the corridor but there are a high number of landfills / HAZMAT sites. This alternative's cost estimate is $336 million.

Corridor 5-3
Corridor 5-3 begins at the Eastern Nicholasville Bypass between KY 169 and KY 39. It crosses the Kentucky River and ends just south of the I-75 / KY 627 interchange. There is no connectivity to other roads at either terminus. There are lower traffic volumes on some segments of Man O' War Boulevard, but no change in LOS. This corridor would

have a high number of potential wetlands and ponds impacted. The estimated cost is $339 million.

Corridor 5-4
Corridor 5-4 begins at the Eastern Nicholasville Bypass between KY 169 and KY 39 and extends to I-75 near Northridge Way. It crosses the Kentucky River but there is no connectivity at either terminus. It has a relatively high ADT on the connector, and lowers traffic volumes on some segments of Man O' War Boulevard. There is no change in LOS on US 27, Man O' War Boulevard or I-75. Impacts to streams, wetlands and ponds, and floodplains are average compared to other corridors. There are no known archeological sites in the corridor. The estimated cost is $352 million.

Corridor 6-2
Corridor 6-2 begins at the Eastern Nicholasville Bypass south of KY 39 and extends to the I-75 / KY 627 interchange. It crosses the Kentucky River, but has low system safety benefits. It connects to KY 3055 and KY 627 at the eastern terminus. The addition of the corridor results in lower traffic volumes on some segments of Man O' War Boulevard, but no change in LOS. The corridor causes a high number of impacts to potential wetlands and ponds, but has the lowest floodplains impacts, as well as the lowest farmland impacts. This corridor has a cost estimate of $332 million.

Corridor 6-3
Corridor 6-3 begins at the Eastern Nicholasville Bypass south of KY 39 and ends at I-75 south of the KY 627 interchange. It crosses the Kentucky River, but has low system safety benefits, and no connectivity. There are lower traffic volumes on some segments of Man O' War Boulevard, but no change in LOS. This corridor has high impacts to potential wetlands and ponds, but the lowest floodplains impacts. There are also a low number of known historic sites in the corridor and farmland impacts. Construction costs are estimated at $352 million.

Corridor 6-4
Corridor 6-4 begins at the Eastern Nicholasville Bypass south of KY 39 and ends at I-75 near Northridge Way. It crosses the Kentucky River and has low system safety benefits. There is no connectivity at either terminus. The corridor does lower traffic volumes on some segments of Man O' War Boulevard, but there is no change in LOS. There would be high impacts to potential wetlands and ponds, but the lowest floodplains impacts. There are a low number of impacts to known historic sites, and no landfill or HAZMAT sites within the corridor. Construction costs are estimated to be $372 million.

Corridor 7-2
Corridor 7-2 begins at the Eastern Nicholasville Bypass at the southern connection to US 27 and extends to the I-75 / KY 627 interchange. It crosses the Kentucky River and has high system safety benefits. It connects to the US 27 eastern and western bypasses at the western terminus and KY 3055 and KY 627 at the eastern terminus. There is a relatively low ADT on the connector, but the addition of the connector still lowers traffic volumes on some segments of Man O' War Boulevard. There is no

change in LOS along US 27, I-75 or Man O' War Boulevard. There are a high number of streams and potential wetlands and ponds impacted. This corridor's cost estimate is $341 million.

Corridor 7-3

Corridor 7-3 begins at the Eastern Nicholasville Bypass at the southern connection to US 27 and ends at I-75 south of the KY 627 interchange. It crosses the Kentucky River, has high system safety benefits, and connects to the US 27 eastern and western bypasses at the western terminus. The connector has the lowest ADT, but still lowers traffic volumes on some segments of Man O' War Boulevard. There is no change in LOS. There are a high number of streams and potential wetlands and ponds impacted, as well as a high number of archeological sites within the corridor. The construction cost estimate of this alternative is $361 million.

Corridor 7-4 (North)

Corridor 7-4 (North) begins at the Eastern Nicholasville Bypass at the southern connection to US 27, and ends at I-75 near Northridge Way. It has a relatively long length, crosses the Kentucky River, has high system safety benefits, and connects to the US 27 eastern and western bypasses at the western terminus. The connector has a low ADT but still lowers traffic volumes on some segments of Man O' War Boulevard. There is no change in LOS. There are a high number of potential wetlands and ponds impacted, but there are no landfills or HAZMAT sites impacted. This alternative's cost estimate is $380 million.

Corridor 7-4 (South)

Corridor 7-4 (South) begins at the Eastern Nicholasville Bypass at the southern connection to US 27 and ends at I-75 near Northridge Way similar to Corridor 7-4 (North) but takes a southerly route between the two points. It has a relatively long length, crosses the Kentucky River, has high system safety benefits, and connects to the US 27 eastern and western bypasses at the western terminus. The connector has a low ADT but still lowers traffic volumes on some segments of Man O' War Boulevard. There is no change in LOS. It has a high number of impacts to streams, and average impacts to potential wetlands and ponds, and floodplains compared to other alternatives. It also has low farmland impacts. This alternative's cost estimate is $377 million.

Corridor 7-5

Corridor 7-5 begins at the Eastern Nicholasville Bypass at the southern connection to US 27 and ends at the I-75 / Northern Richmond Bypass interchange. It is the longest of all of the alternatives at 15.44 miles. It crosses the Kentucky River, has high system safety benefits, and connects to the US 27 eastern and western bypasses at the western terminus and to the US 25 / Richmond bypass at the eastern terminus. The connector has a low ADT but still lowers traffic volumes on some segments of Man O' War Boulevard. There is no change in LOS. The corridor has the highest number of streams potentially impacted. There are also potential minority, low-income and elderly

community impacts within the corridor. There low amounts of farmland impacted, however this alternative has the highest estimated construction cost at $409 million.

12.3 Level 2 Analysis Results

By looking at the termini points, considering connectivity and impacts as outlined in the matrices and discussed previously, the number of corridors were reduced from eighteen to six, not including the No-Build option. It remained as the baseline comparison as well as a viable alternative. The remaining alternative corridors include all corridors that go through points 4, 5, and 6 on US 27 and points 2 and 4 on I-75 (alternative corridors 4-2, 4-4, 5-2, 5-4, 6-2, and 6-4). The corridors that were removed from consideration are listed below along with a summary of the reasons for dismissal.

Alternative Corridor 1-1, 2-1, 4-1: These corridors are located in the northern most portion of the study area, which could lead to significant farmland and residential impacts. In addition, these alternative corridors would go through existing established neighborhoods leading to much community disruption. Alternatives 1-1 and 4-1 could have potential environmental justice impacts, while all three alternatives may impact known archeological sites.

While connectivity east and west of the project study area was not a major element of the scope of work, it should be noted that there is no existing connectivity within this corridor. Furthermore, a Kentucky River crossing is not included in these alternatives; therefore while they would lead to a lower cost, they lose the added benefit for an additional river crossing to provide an alternative route to I-75 were there to be an incident (either traffic or security related) that would render the Clays Ferry Bridge inaccessible. It may be that with an additional river crossing, federal funding through Homeland Security monies could be secured for this project. It should be noted though, that that no discussion with Homeland Security at the State or Federal level was a part of this scoping study. An additional bridge would also enhance the availability of evacuation routes in case of an incident at the Bluegrass Army Depot, further strengthening the argument of the necessity of an additional bridge.

With regard to traffic, there is the perception that a northern route through Fayette County could become another bypass of Lexington, catering to commuter traffic and furthering the congestion on US 27 and perhaps accelerating urban sprawl. The travel time savings is lower for these alternative corridors than others further south with a river crossing. From a safety perspective, the initial qualitative analysis showed that these corridors would have a low to medium improvement for system safety. Generally, as the purpose of this project is to improve safety, connectivity and regional access, these alternative corridors fail to satisfy these criteria and were therefore dismissed from further consideration.

Alternative Corridor 3-1: This alternative corridor has similar benefits and impacts as Alternative Corridors 1-1, 2-1, and 4-1 with regard to environmental justice, residential and farmland impacts, connectivity, Homeland Security, commuter traffic, and travel

time savings. There is a benefit from this corridor, however, since from a safety perspective, the initial qualitative analysis showed that this corridor would have a high improvement for system safety. Generally, with the purpose of this project being to improve safety, connectivity and regional access, this alternative corridor may improve safety but fails to satisfy the other two criteria and was therefore dismissed from further consideration.

Alternative Corridor 4-3: Based on the matrix, there are numerous impacts that provide justification for dismissing this corridor from further study including the highest number of potentially impacted acres of floodplains and known historic sites, as well as potential impacts to low-income Environmental Justice communities. Also, there is limited system connectivity opportunities. In addition, a new interchange at this location may be too close to the existing interchange at KY 627. From a travel time savings perspective, this alternative corridor has the lowest vehicle hours of travel savings in the study area.

Alternative Corridor 5-3: From an environmental perspective, there are a high number of known historic sites and stream impacts along this corridor. There is also no existing transportation system connectivity opportunities. In addition, a new interchange at this location may be too close to the existing interchange at KY 627. This alternative corridor does not warrant further study as there are other more viable alternative corridors based on connectivity.

Alternative Corridor 6-3: Within this corridor there are a high number of potential wetlands and ponds that could be impacted, although there are fewer acres of farmland that could be potentially impacted. There is limited transportation system connectivity opportunities. In addition, a new interchange at this location may be too close to the existing interchange at KY 627. From a safety perspective, this alternative corridor rates low with regard to the potential for system safety improvement. Considering that it does not satisfy the project purpose of improving safety, connectivity and regional access, it was dismissed from further consideration.

Alternative Corridor 7-2: This corridor is located in the southern portion of the study area away from the majority of the residential areas. However, based on the traffic analysis, corridors with a western terminus as far south as terminus 7 attracted significantly less traffic onto the new connector. This would make it difficult to justify spending the amount of money it would take to build the corridor.

Alternative Corridor 7-3: Within this corridor there are a high number of known archeological sites, and there is no transportation system connectivity opportunities. In addition, a new interchange at this location may be too close to the existing interchange at KY 627. Furthermore, similar to Alternative Corridor 7-2, corridors with a western terminus as far south as terminus 7 on US 27 attracted significantly less traffic to the connector, making it difficult to justify the cost.

Alternative Corridor 7-4 (North) and 7-4 (South): These alternatives have a high number of streams that could be impacted within the corridors. In addition there is little transportation system connectivity opportunities. With the western terminus point at 7 on US 27, these alternative corridors have similar issues as Alternative Corridors 7-2 and 7-3 and were therefore dismissed from further consideration.

Alternative Corridor 7-5: The eastern terminus of this corridor is on I-75 at the Richmond Bypass. Currently this area is heavily developed which would make construction of this alternative difficult. Furthermore, this is the longest corridor, has the highest cost, and may affect potential minority, low-income, and elderly communities. Based on the traffic analysis, corridors with a western terminus as far south as terminus 7 on US 27 attracted significantly less traffic to the connector, which would make it difficult to justify spending the amount of money it would take to build the corridor. For all of these reasons, this alternative corridor was dismissed from further consideration.

13.0 LEVEL 3 EVALUATION – DETAILED ANALYSIS

13.1 Alternative Corridor Revisions

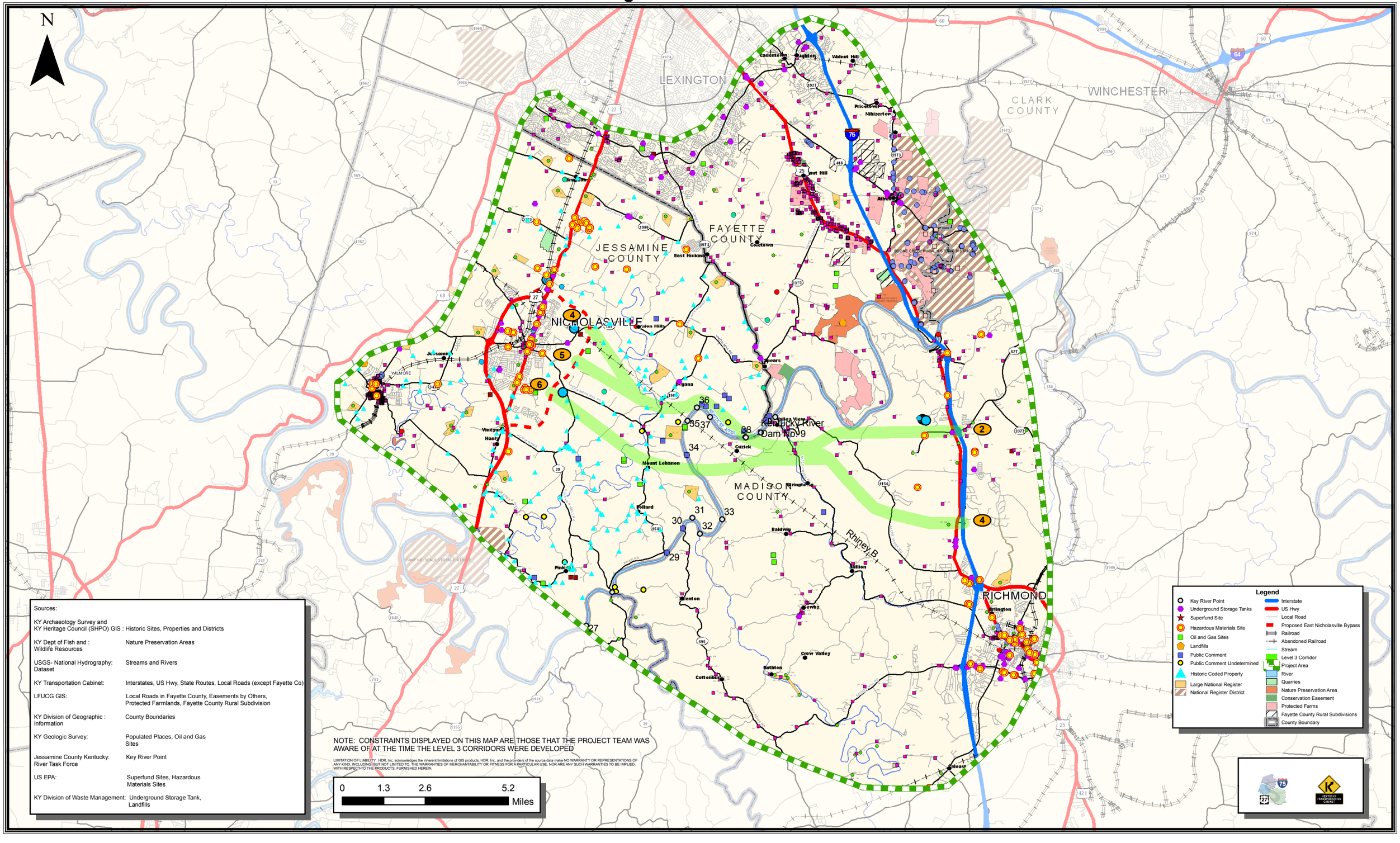
After the original eighteen corridors were narrowed down to six, the remaining corridors were adjusted slightly to minimize impacts to nationally registered historic sites, residential areas, to reduce the amount of earthwork that would need to be completed and to avoid the lock and dam on the Kentucky River. **Figure 16** shows the refined six remaining corridors.

13.2 2040 Alternative Corridor Traffic Forecasts

In the Level 2 Analysis, 2040 traffic volumes could not be calculated using historical growth rates because the corridor is a new roadway. However at that level of detail, the actual 2040 number was not as important as were the relative comparisons of traffic volumes amongst the different alternative corridors. Therefore a one percent per year growth rate was applied to each of the corridors. For the Level 3 Analysis, a more realistic growth rate must be applied so the corridor volumes could not only be comparable to one another, but also provide a more realistic idea of how much traffic would actually use the corridor. This is necessary so the PDT can be able to identify what type of facility and the number of lanes that would be needed, as well as determine if usage would justify the cost.

A meeting was held with project team members as well as several representatives from the KYTC Central Office Planning Division to discuss an appropriate method to determine the 2040 volumes for the new connector. PB was confident with the 2003 volumes obtained from the KYSTM, however the KYSTM is not able to forecast to future years. The Lexington MPO travel demand model is able to forecast to future years, however this model only includes Fayette and Jessamine counties. Because all six alternative corridors terminate in Madison County, the corridors could not be coded into the model and forecasted to a future year. The inability to find a growth rate for the corridors resulted in the decision to find an overall growth rate for the study area and apply it to the new connectors. This method posed additional problems, however, because many of the roadways in the study area have very high historical growth rates and cannot realistically continue to grow at those rates due to capacity constraints. The KYTC Central Office has developed a new “hybrid” growth rate that is a middle point between exponential and linear historical growth. This growth rate has not been widely used yet, but it is appropriate for this study because it constrains growth. It was decided that this growth rate would be used for roadways in Madison County, and that an average of the KYTC growth rate and the growth rates calculated based on the Lexington MPO travel model would be used to get a growth rate for roadways in Fayette and Jessamine counties. A weighted average of the growth rates of major roadways in the study area was calculated to provide an overall study area growth rate. This number was calculated to be 2.24% per year and was applied to each new connector to determine 2040 ADTs.

Figure 16: Level 3 Corridors



13.3 Typical Sections

Several types of facilities were considered for this project. Eventually, a four-lane facility may likely be desirable. However, depending on when a new connector is built, a two-lane facility may initially be adequate. If it is determined that this is the case, right-of-way for a four-lane facility could be bought, so that widening would be possible in the future. There has also been discussion of the need for a multi-use path to accommodate bicyclists and pedestrians. **Figures 17, 18, 19 and 20** show four typical sections that could be used for the new connector. These include a two-lane facility with right-of-way for an eventual four-lane facility, a four-lane facility, a two-lane facility with right-of-way for a four-lane facility with the addition of a multi-use path along one side, and a four-lane facility with a multi-use path on one side.

Figure 17: Two-Lane Typical Section

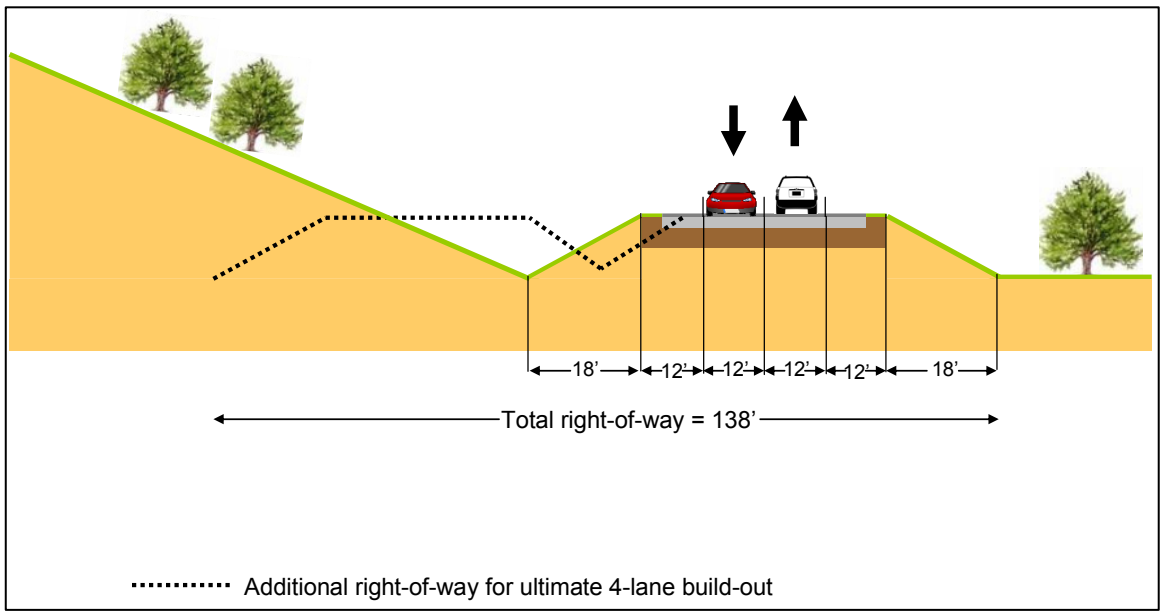


Figure 18: Four-Lane Typical Section

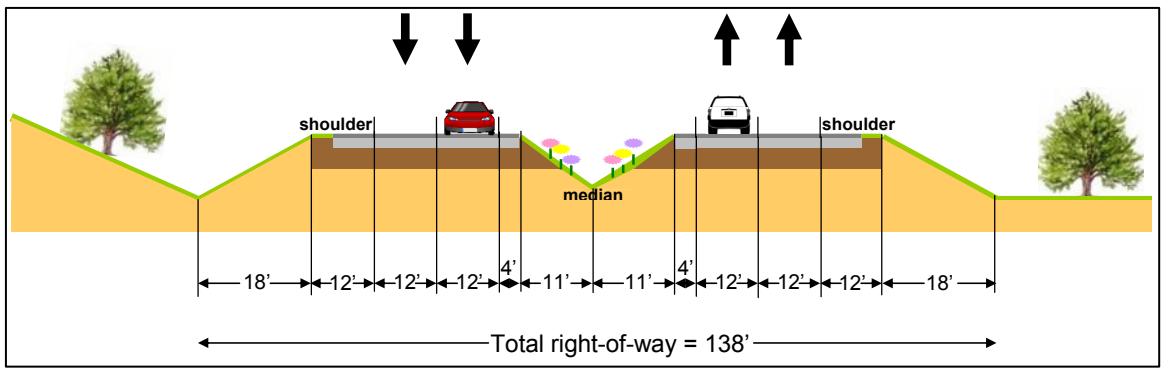


Figure 19: Two-Lane Typical Section with Multi-Use Path

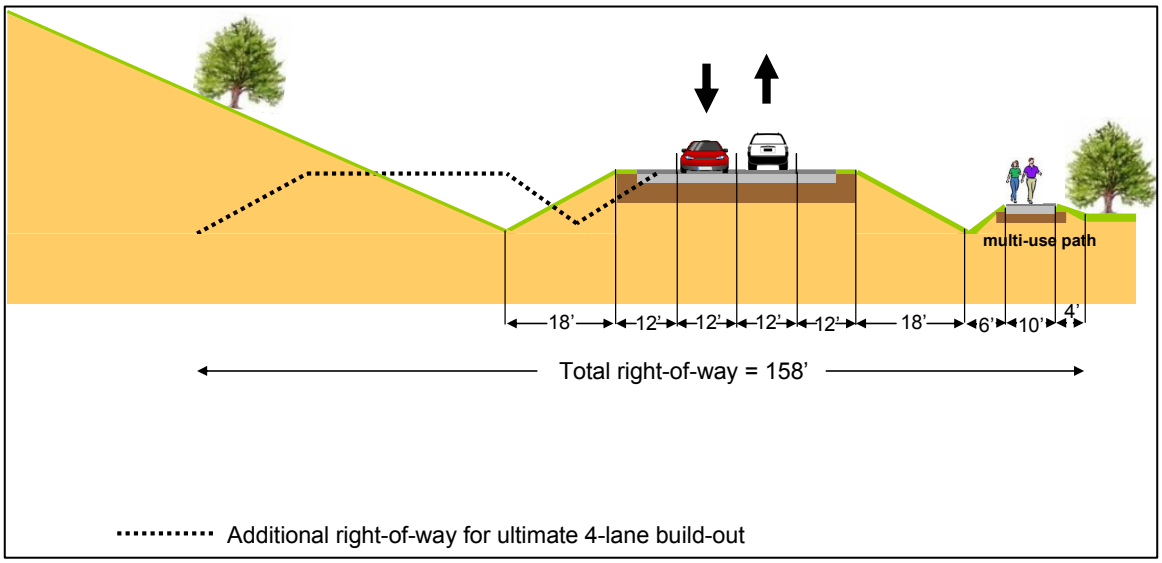
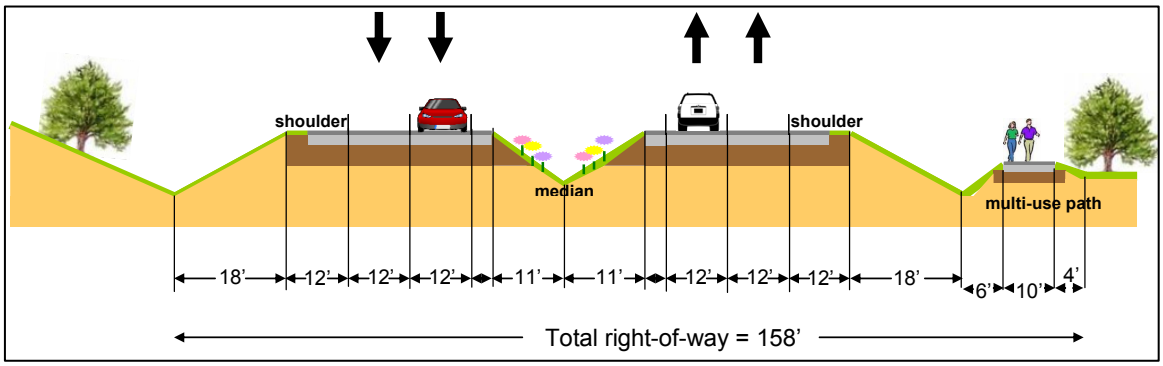


Figure 20: Four-Lane Typical Section with Multi-Use Path



To determine if a two-lane facility is appropriate for initial construction, capacity constraints of the roadway must be determined. According to the 2000 Highway Capacity Manual (HCM), two-lane roadways have a two-way capacity of 3,200 passenger cars per hour (pc/h). At capacity, the LOS is E, with operating conditions unpredictable. The level of service for a two-lane roadway is largely dependent on the percent time spent following. Therefore, as the traffic volume for both directions increases, or if there is a high percentage of no-passing zones, the level of service decreases. Because of the hilly terrain of the study area, as well as the large percentage of trucks that would use a potential connector, this roadway is likely to have a higher percent of time spent following than would a roadway of equal traffic volume with a less hilly terrain and lower truck percentage.

The Highway Capacity Software Plus (HCS Plus) software package was used to determine the year that a LOS E or below would be reached for this roadway. The

corridor volumes used for this analysis were based on the 2003 traffic volumes from the KYSTM, inflated by the study area growth rate of 2.24% per year. Based on the highway capacity analysis, a two-lane roadway will fail when the ADT for one segment reaches 13,970 vehicles. **Table 15** shows the year at which one segment of the two-lane roadway will reach that volume for each of the six alternatives.

Table 15: Year at which a Two-Lane Roadway Fails

Corridor	Failure Year
4-2	2015
4-4	2008
5-2	2017
5-4	2013
6-2	2022
6-4	2022

Based on this analysis, all of the corridors fail before the design year of 2040. Alternative corridors 6-2 and 6-4 would take the longest to reach failure, but failure occurs in the year 2022 which is still eighteen years prior to the design year.

Other issues that should be considered when deciding on whether to construct initially a two-lane versus a four-lane roadway include:

- Additional costs of the second phase of construction when the road is ultimately widened to four lanes.
- Delay that will be caused by future construction.
- If tolls are used to fund the roadway, people may not pay a toll if the roadway does not operate under free flow conditions.

While initially a four-lane road looks more desirable given the operational characteristics of the two-lane road and the other considerations, cost also plays a role in the selection of the preferred alternative. Additional analysis is provided later in this report on the discussion of funding prior to the final recommendation.

13.4 Level 3 Evaluation Summary

The Level 3 Evaluation involved a more detailed analysis of the remaining six corridors and the no-build alternative, after minor adjustments were made. The more detailed evaluation included updating information on system operations, traffic operations, natural environment, human environment and cost.

System Operations
The remaining corridors were re-evaluated with respect to system safety improvements, study area travel time savings and connectivity.

Traffic Operations
The ADT of each corridor was revised based on the method described in Section 13.2. Using the new ADT volumes, HCS+ was used to determine the level of service in 2040 if the new connector is a two-lane unlimited access facility, a four-lane unlimited access facility or a four-lane limited access facility. HCS+ does not evaluate two-lane unlimited access facilities; however it will likely perform only slightly better than a two-lane unlimited access roadway, as level of service for two-lane facilities is largely impacted by passing ability. While a limited access roadway would eliminate delays due to intersections, it would not greatly improve passing ability and opportunity. Traffic operations along US 27, I-75 and Man O' War Boulevard were compared among each of the alternatives using ADTs from the KYSTM. A range of LOS for various segments along US 27, I-75, Man O' War Boulevard was given for the no-build as well as each of the six corridor scenarios. Each new corridor's truck percentage was also calculated.

Natural Environment
The number of streams impacted in the corridor, potential wetlands / ponds in the corridors and floodplain impacts were all re-evaluated for the adjusted corridors.

Human Environment
The number of known historic and archeological sites in the corridor, environmental justice impacts, farmland impacts and landfills and other potential HAZMAT site impacts were all re-evaluated for the adjusted corridors.

Cost
Right-of-way and utilities costs were estimated in 2008 dollars for each corridor. Cost estimates were derived for base two-lane and four-lane roadways for each corridor. Costs were also calculated to add a 10-foot multi-use path to each corridor, as well as to add two interchanges to make each corridor limited access. Total costs were estimated for two and four-lane roadways with at-grade intersections, with at-grade intersections and a multi-use path, limited access roadways with no multi-use path, and limited access roadways with a multi-use path.

13.5 Level 3 Corridor Analysis

The remaining six corridors were put into an evaluation matrix (using the previously described evaluation criteria) along with the no-build scenario. **Table 16** shows the evaluation matrix.

No-Build

The no-build alternative does not significantly improve system safety or provide any travel time savings, nor does it have any connectivity. Traffic volumes along US 27, I-75 and Man O' War Boulevard are higher than what the roadways can accommodate along most sections. Connector ADT, LOS and truck percentage cannot be calculated because there is no connector in this scenario. This alternative has no impacts to the human or natural environment and has no costs associated with it beyond those that are anticipated from the individual Existing and Committed projects.

Table 16: Level 3 Evaluation Matrix

Alternative Corridors	System Operations					Traffic Operations								
	Length	System Safety Improvement (Low, Medium, High)	Study Area Travel Time Savings (vehicle hours of travel)	Connectivity		2040 Average Daily Traffic (Low to High)				2040 Connector Level of Service (range)				Corridor Truck % (range)
				US 27 (West)	I-75 (East)	Connector	US 27	I-75	Man O' War Blvd	2 Lane Unlimited Access	2 Lane Limited Access	4 Lane Unlimited Access	4 Lane Limited Access	
0	0.00	**Low**	**0**	**None**	**None**	N/A	13,800 - 146,700	114,100 - 192,400	51,300 - 135,900	N/A	N/A	N/A	N/A	N/A
4-2	12.92	Medium	**482**	**KY 169**	**KY 3055, KY 627**	20,000 - 24,000	8% less to 12% more	9% less to 2% more	9% less to no change	E-F	-	B	B	14.8% - 16.2%
4-4	13.72	Medium	395	KY 169	None	**23,000 - 28,000**	7% less to 12% more	11% less to 3% more	9% less to no change	E-F	-	B-C	B-C	10.9% - 13.3%
5-2	12.83	Medium	368	None	KY 3055, KY 627	20,000 - 23,000	9% less to 21% more	8% less to 1% more	9% less to no change	E	-	B	B	14.7% - 15.85
5-4	13.67	Medium	271	**None**	**None**	21,000 - 25,000	11% less to 21% more	9% less to 3% more	9% less to no change	E-F	-	B	B	12.5% - 13.9%
6-2	13.29	**Low**	276	None	KY 3055, KY 627	**18,000 - 20,000**	9% less to 21% more	8% less to 2% more	9% less to no change	E	-	B	B	15.8% - 16.8%
6-4	14.07	**Low**	**134**	**None**	**None**	**17,000 - 21,000**	10% less to 21% more	9% less to 3% more	10% less to no change	E	-	B	B	14.1% - 15.4%

Table 16: Level 3 Evaluation Matrix (cont.)

Alternative Corridors	Natural Environment			Human Environment				
	No. of Streams Impacted in Corridor	Potential Wetlands / Ponds in Corridor #'s (Acres)	Floodplains Impacts (Acres)	No. of Known Historic Sites in Corridor	No. of Known Archeological Sites in Corridor	Environmental Justice Impacts	Farmland Impacts (Acres)	Landfills and Other Potential HAZMAT Site Impacts
0	**0**	0(0)	**0**	**0**	**0**	**None**	**0**	**0**
4-2	25	44(45)	**81**	**17**	**2**	**Low-income impacts**	645	**4**
4-4	25	52(39)	**81**	**17**	**1**	**Low-income impacts**	759	**0**
5-2	23	48(47)	72	15	**2**	**None**	654	**4**
5-4	**20**	54(41)	72	15	**1**	**None**	**769**	**0**
6-2	**27**	59(61)	**59**	6	**4**	**None**	**586**	**4**
6-4	22	59(54)	**59**	**4**	3	**None**	688	**0**

Table 16: Level 3 Evaluation Matrix (cont.)

Alternative Corridors	Cost (in 2008 Dollars)					
	Right-of-Way Cost	Utilities Cost	Design and Construction Cost			
			2-Lane (base estimate)	4-Lane (base estimate)	Additional Cost for 10' Multi-use Path	Additional Cost for Limited Access
0	**0**	**0**	**0**	**0**	**0**	**0**
4-2	$13,000,000	**$3,000,000**	$169,000,000	$300,000,000	$23,000,000	$41,000,000
4-4	**$14,000,000**	**$3,000,000**	$175,000,000	$314,000,000	**$25,000,000**	$41,000,000
5-2	**$10,000,000**	**$3,000,000**	**$168,000,000**	$297,000,000	$23,000,000	$41,000,000
5-4	$12,000,000	**$3,000,000**	$175,000,000	$311,000,000	$24,000,000	$41,000,000
6-2	**$10,000,000**	**$4,000,000**	$172,000,000	**$287,000,000**	**$22,000,000**	$41,000,000
6-4	$11,000,000	**$4,000,000**	**$178,000,000**	**$318,000,000**	**$25,000,000**	$41,000,000

Table 16: Level 3 Evaluation Matrix (cont.)

Alternative Corridors	Total Cost (in 2008 Dollars) Does Not Include Mitigation Costs							
	2-Lane, at-grade	2-Lane, at-grade, 10' Path	2-Lane, Limited Access	2-Lane, Limited Access, 10' Path	4-Lane, at-grade	4-Lane, at-grade, 10' Path	4-Lane, Limited Access	4-Lane, Limited Access, 10' Path
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4-2	$185,000,000	$208,000,000	$226,000,000	$249,000,000	$316,000,000	$339,000,000	$357,000,000	$380,000,000
4-4	$192,000,000	$217,000,000	$233,000,000	$258,000,000	$331,000,000	$356,000,000	$372,000,000	$397,000,000
5-2	**$181,000,000**	**$204,000,000**	**$222,000,000**	**$245,000,000**	$310,000,000	$333,000,000	$351,000,000	$374,000,000
5-4	$190,000,000	$214,000,000	$231,000,000	$255,000,000	$326,000,000	$350,000,000	$367,000,000	$391,000,000
6-2	$186,000,000	$208,000,000	$227,000,000	$249,000,000	**$301,000,000**	**$323,000,000**	**$342,000,000**	**$364,000,000**
6-4	**$193,000,000**	**$218,000,000**	**$234,000,000**	**$259,000,000**	**$333,000,000**	**$358,000,000**	**$374,000,000**	**$399,000,000**

Corridor 4-2
Corridor 4-2 has a length of approximately 13 miles, and provides medium system safety improvements. It provides the highest study area travel time savings of all of the corridors, and the best connectivity, connecting to KY 169 in the west and KY 3055 and KY 627 in the east. It has an ADT between 20,000 and 24,000, and provides a LOS E-F in 2040 for a two-lane unlimited access road and a LOS B for a four-lane limited or unlimited access roadway. The addition of the corridor would lower traffic volumes on some segments of Man O' War Boulevard, but there is no change in LOS for US 27, Man O' War Boulevard and I-75. This corridor has the most impacts to floodplains, known historic sites and landfills and other potential HAZMAT sites. There is also the potential for impacts to low-income populations. Cost estimates for this alternative range from $185 to $381 million dollars, depending on the type of facility.

Corridor 4-4
Corridor 4-4 is approximately 14 miles long and connects to KY 169 at the western terminus. It has medium system safety improvements and the second highest study area travel time savings. It has the highest ADT of all of the alternatives, ranging from 23,000 to 28,000 vehicles per day. It provides a LOS E-F for a two-lane unlimited access facility and LOS B-C for a four-lane limited or unlimited access roadway. The corridor does lower traffic volumes on some segments of Man O' War Boulevard, however there is no change in LOS on US 27, Man O' War Boulevard or I-75. In addition, this alternative also has the most impacts to floodplains and known historic sites. There is the potential for impact to low-income populations. This corridor has the highest right-of-way costs, with total cost estimates ranging from $192 to $397 million dollars.

Corridor 5-2
Corridor 5-2 is approximately 13 miles long, has medium system safety improvements and the third highest study area travel time savings. This corridor connects to KY 3055 and KY 627 at the eastern terminus. It has an ADT of 20,000 to 23,000 vehicles and provides a LOS E for a two-lane unlimited access road and LOS B for four-lane limited and unlimited access roads. This corridor lowers traffic volumes on some segments of Man O' War Boulevard, but there is no change in LOS for US 27, Man O' War Boulevard and I-75. This corridor has the highest number of landfill and other potential HAZMAT site impacts, but no environmental justice impacts. The cost estimates for this alternative range from $181 to $374 million dollars, which are the lowest costs for the two-lane alternatives.

Corridor 5-4
Corridor 5-4 is approximately 14 miles long and has medium system safety improvements and average travel time savings. It has no connectivity at either terminus. The ADT is between 21,000 and 25,000 vehicles per day, and the LOS is E to F for a two-lane unlimited access road and B for a four-lane limited or unlimited access road. The corridor lowers traffic volumes on some segments of Man O' War Boulevard, but there is no change in LOS on US 27, Man O' War Boulevard or I-75. This alternative impacts the lowest number of streams, known archeological sites, and

landfills and other potential HAZMAT sites. The cost estimates for this alternative range from $189 to $391 million dollars.

Corridor 6-2

Corridor 6-2 is approximately 13 miles long, has low system safety improvements and average travel time savings. It connects to KY 3055 and KY 627 at the eastern terminus. It has one of the lowest ADTs of all the alternatives, ranging from 18,000 to 20,000 vehicles. It has LOS E for a two-lane unlimited access roadway and LOS B for a four-lane limited or unlimited access roadway. The addition of the corridor results in lower traffic volumes on some segments of Man O' War Boulevard, but no change in LOS for US 27, Man O' War Boulevard and I-75. This alternative impacts the highest number of streams, potential wetlands / ponds, known archeological sites, and landfills and other potential HAZMAT sites. However, it impacts the lowest amount of floodplains and farmland, and has no environmental justice impacts. The corridor has the highest utilities costs but the lowest overall costs for the four-lane roadway scenarios. The cost estimates range from $185 to $363 million dollars.

Corridor 6-4

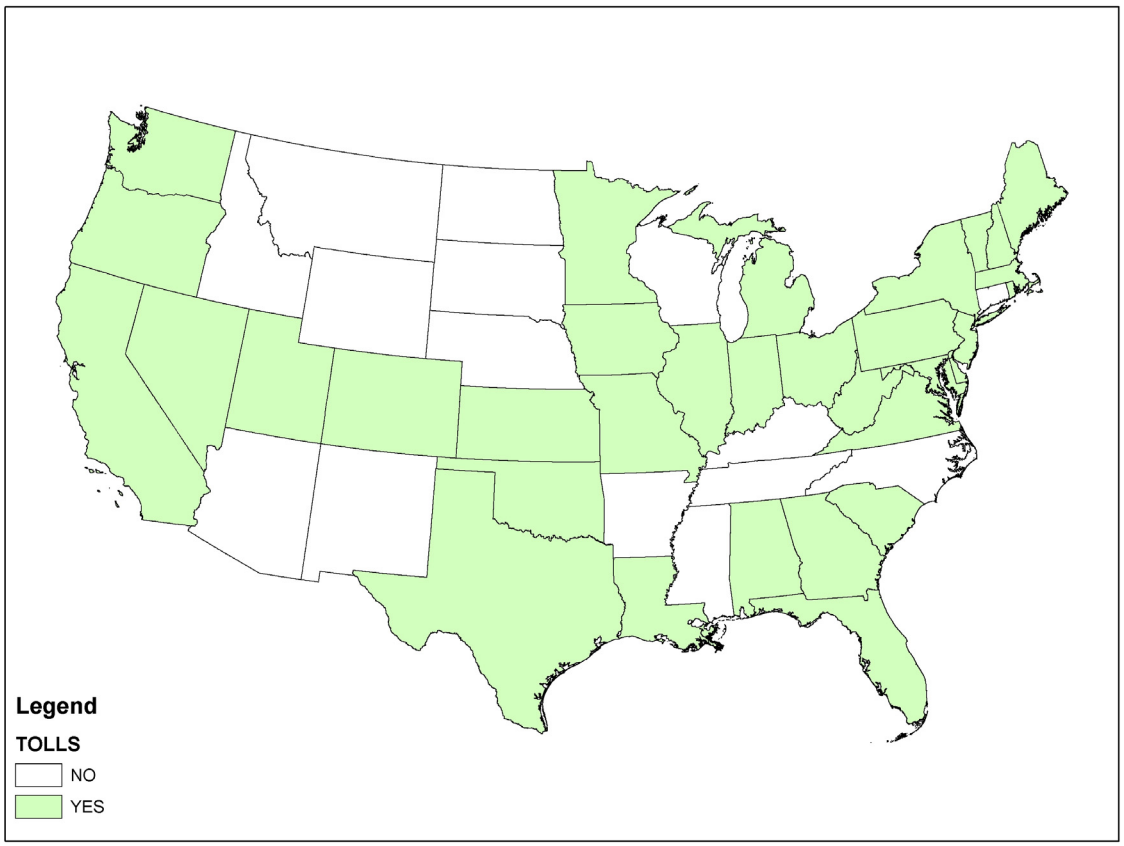
Corridor 6-4 is the longest remaining corridor at approximately 14 miles. It has low system safety improvements and the lowest study area travel time savings. It has no connectivity and one of the lowest ADTs with 17,000 to 21,000 vehicles per day. It has LOS E for a two-lane unlimited access roadway and LOS B for a four-lane limited or unlimited access road. The corridor does lower traffic volumes on some segments of Man O' War Boulevard, but there is no change in LOS for US 27, Man O' War Boulevard and I-75. It has one of the highest impacts to potential wetlands / ponds, but the lowest impacts to floodplains, known historic sites, and landfills and other potential HAZMAT sites. There are no environmental justice impacts. This alternative has the highest utilities cost and overall roadway costs, regardless of scenario. Estimates range from $193 to $399 million dollars.

14.0 TOLL FUNDING SOURCES

14.1 Toll Information

Tolling is an option for funding roadway projects, including helping cover maintenance and operating costs as well as some of the initial construction costs. Across the United States, tolls average $0.05 to $0.13 per mile, although tolls are generally higher for commercial vehicles depending on the number of axles. Tolls are also usually higher for bridges and tunnels. Usually, as the price of the toll increases, fewer cars choose to use the roadway. Many states in the US currently have tolls. Below is a map (**Figure 21**) showing states that currently have toll roads (as indicated by the green shading).

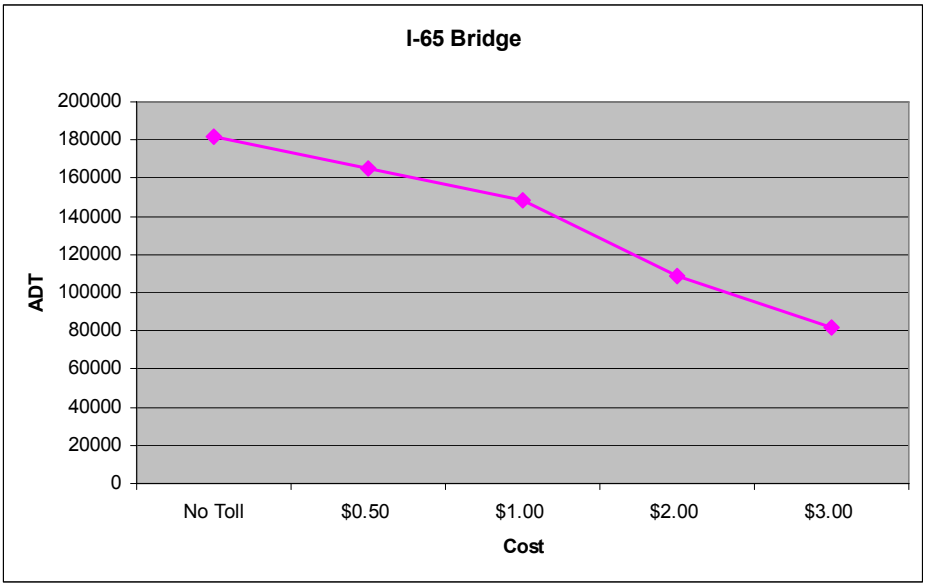
Figure 21: Map of States that Currently have Toll Facilities



Kentucky does not currently have any toll roads; however, it has tolled roadways in the past and is currently investigating tolls as a method of financing the Louisville – Southern Indiana Ohio River Bridges project. A brief overview study on tolling was performed for this project. The analysis found that travel time savings for passenger vehicles is equivalent to $9.60 per hour, and $33.00 per hour for trucks. Vehicle operating savings were found to equal $0.16 per mile for passenger cars and $0.65 per

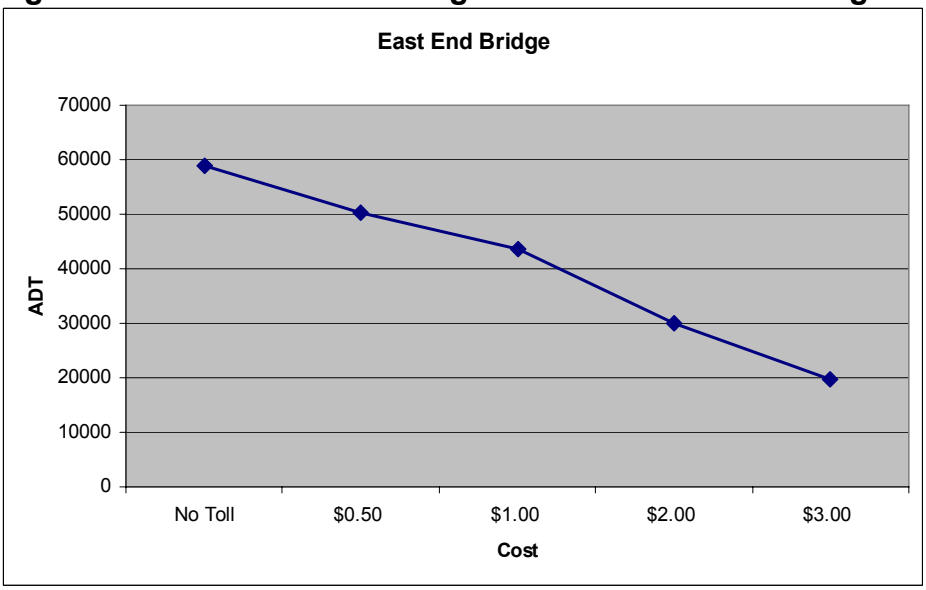
mile for trucks. The annual cost of operating a toll road, not including customer service center operations, was found to be $655,600. The study also used travel demand modeling to determine how toll road usage would be affected by increasing toll prices. **Figures 22** and **23** shows the effects of toll price on ADT for two of the bridges being studied. These figures show that the sharpest decline in ADT occurs when the toll is raised from $1.00 to $2.00.

Figure 22: Effect of Toll Pricing on ADT of I-65 Bridge



Source: Louisville-Southern Indiana Ohio River Bridges Project Preliminary Traffic and Revenue Options Study. Wilbur Smith Associates.

Figure 23: Effect of Toll Pricing on ADT of East End Bridge



Source: Louisville-Southern Indiana Ohio River Bridges Project Preliminary Traffic and Revenue Options Study. Wilbur Smith Associates.

A review of toll pricing was performed for roadways across the United States. Data was primarily compiled from Toll Facilities in the United States: Bridges – Roads – Tunnels – Ferries, a document prepared by the Federal Highway Administration (FHWA). The roadways shown were selected as the most comparable data on existing facilities with similar lengths. Two tables are presented summarizing this data, one for entire tolled roadways and one for bridges only (**Table 17** and **Table 18**).

Table 17: Representative Toll Pricing in the US for Entire Roadways

State	Length (mi.)	Road Type	Min Pass Fee	Max Pass Fee	Min Truck Fee	Max Truck Fee
New York	5	Rural Minor Collector	$9.00			
New York	5.6	Urban Freeway	$0.32	$23.05	$0.67	$93.85
New York	5.9	Rural Local	$6.00			
Colorado	6.6	Urban Interstate	$0.50	$3.25	$18.00	$18.00
South Carolina	7.5	Rural Principal Arterial	$0.50	$1.00		
California	10	Urban Freeway	$1.15	$9.25	$1.15	$9.25
Texas	10.42	Urban Principal Arterial	$1.00	$1.25	$6.25	
Texas	10.58	Urban Principal Arterial	$1.00	$1.25	$6.25	
Texas	11	Urban Freeway	$2.00		$12.50	
New York	15	Urban Interstate	$1.13	$2.50	$2.61	$8.25
Oklahoma	17.3	Rural Minor Arterial	$1.00		$1.00	$2.00
New York	17.9	Rural Interstate	$0.32	$23.05	$0.67	$93.85
Texas	21.7	Urban Principal Arterial	$2.00	$2.50	$12.50	
Utah	22.5	Rural Principal Arterial	$2.00		$8.00	
Ohio	22.5	Rural Interstate	$1.00		$1.50	$3.25
Oklahoma	25	Rural Interstate	$4.00		$16.00	

Source: Toll Facilities in the United States: Bridges - Roads - Tunnels – Ferries. December 2007. Publication No: FHWA-PL-07-029

Table 18: Representative Toll Pricing in the US for Bridges

State	Length (mi.)	Road Type	Min Pass Fee	Max Pass Fee	Min Truck Fee	Max Truck Fee
Minnesota - North Dakota	0.1	Non-interstate	$0.63	$0.75	$0.63	$0.75
Illinois - Iowa	0.19	Non-interstate	$0.50		$0.50	
New York	0.2	Non-interstate	$2.00	$4.00	$2.00	$12.00
New York - Canada	0.2	Non-interstate	$3.00		$3.00	$55.00
Texas - Mexico	0.2	Non-interstate	$2.00	$7.00	$7.00	$20.00
Texas - Mexico	0.2	Non-interstate	$2.50	$6.00	$8.00	$20.00
Texas - Mexico	0.2	Non-interstate	$1.65			
Texas - Mexico	0.26	Non-interstate	$2.50		$7.00	$19.00
Texas - Mexico	0.3	Non-interstate	$1.65			
Alabama	0.39	Non-interstate	$1.50		$3.50	$5.00
New York	0.4	Non-interstate	$1.00	$2.25	$3.60	$27.00
Texas - Mexico	0.4	Non-interstate	$2.50			
Illinois - Indiana	0.5	Non-interstate	$1.00		$1.50	$3.00
New York - Canada	0.5	Non-interstate	$3.00		$3.00	$55.00
Texas - Mexico	0.5	Non-interstate	$1.65			
Alabama	0.59	Non-interstate	$1.25		$2.50	$3.25
Illinois - Iowa	0.6	Non-interstate	$1.00		$4.00	$10.00
New York	0.6	Non-interstate	$0.30	$1.00	$2.50	$9.00
Alabama	0.62	Non-interstate	$1.50		$3.50	$5.00
New York	0.7	Non-interstate	$0.30	$1.00	$2.50	$9.00
New York	0.7	Non-interstate	$1.75	$2.25	$3.60	$27.00
New York - Canada	0.7	Non-interstate	$2.70	$3.00	$5.40	$13.00
New York	0.8	Non-interstate	$1.00	$2.25	$3.60	$27.00
Illinois - Indiana	0.9	Non-interstate	$0.50		$0.70	$1.70
Interstate Bridges	1 to 5		$0.30	$6.00	$1.43	$108.00
Interstate Bridges	>5		$0.40	$4.00	$1.15	$53.44

Source: Toll Facilities in the United States: Bridges - Roads - Tunnels – Ferries. December 2007. Publication No: FHWA-PL-07-029

The following table (**Table 19**) shows the length of time it would take to pay for the given alternative / scenario combination. Assumptions used in this calculation include:

- 2040 ADT numbers
- Maximum percentage of trucks assumed per alternative
- Reduction in ADT due to tolling as derived from the Ohio River Bridges Study
- $1.00 fee for cars; $2.00 for trucks
- Inflation is not taken into consideration

Table 19: Number of Years with a Toll to Pay for Roadway

Alternative Corridors	Number of Years to Pay for Given Scenario							
	2-Lane, at-grade	2-Lane, at-grade, 10' Path	2-Lane, Limited Access	2-Lane, Limited Access, 10' Path	4-Lane, at-grade	4-Lane, at-grade, 10' Path	4-Lane, Limited Access	4-Lane, Limited Access, 10' Path
0	0	0	0	0	0	0	0	0
4-2	25	29	31	34	44	47	49	52
4-4	**23**	26	28	31	39	42	44	47
5-2	26	29	32	35	44	48	50	54
5-4	25	28	31	34	43	46	49	52
6-2	30	34	37	41	49	53	56	60
6-4	31	35	37	41	53	57	59	**63**

As shown by this table, it is possible to pay for the new route during a 30-year bond period. However, this means the roadway would have to be constructed as a two-lane facility. The maximum number of years to pay for the highest cost alternative (6-4 with 4-lanes, limited access, and a 10-foot path) would be 63 years using tolls.

From this review of available toll information, several conclusions can be drawn:

- Tolling would decrease the amount of traffic that would use the proposed connector road.
- The majority of states surrounding Kentucky have toll roads.
- Based on similar roadways, tolls between $1 and $2 may be appropriate at the present time, however these prices may increase once the road is actually constructed.
- Tolls will likely be different for cars and vehicles with more than two axles, and tolls may increase according to the number of axles.
- Tolling the bridge over the Kentucky River only does not seem to be cost-effective.
- Tolling could pay for the project or a large portion thereof.
- A more complete toll study will need to be performed at a later date if this is considered for one of the build alternatives during any further project development phases.

14.2 Project Privatization

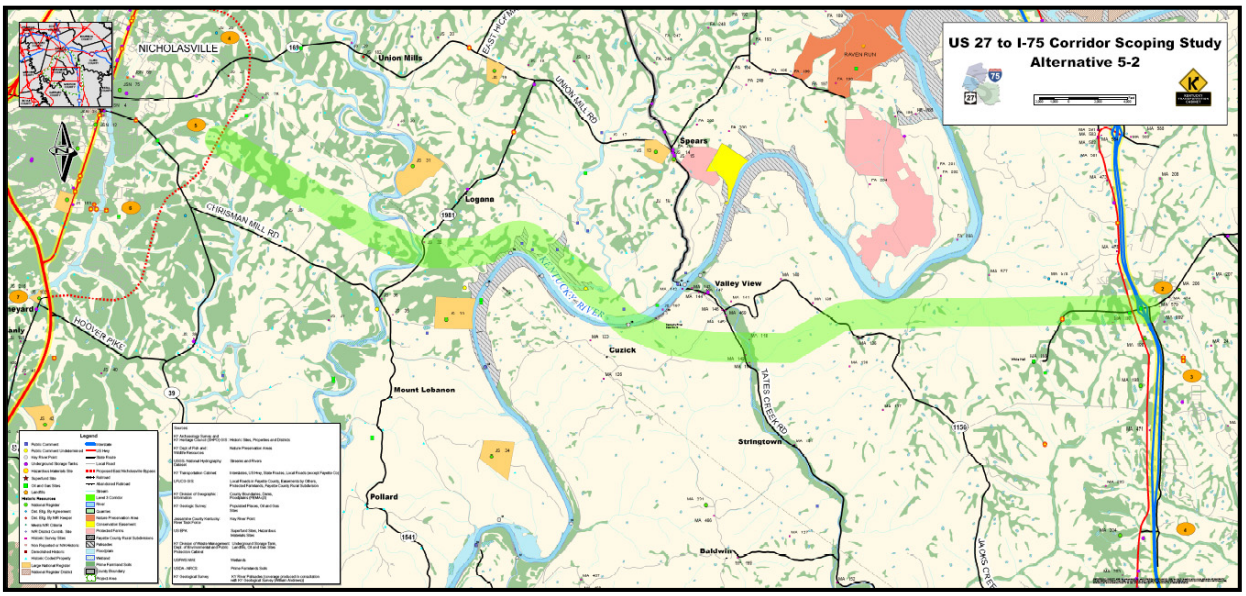
Project privatization is a method of funding road projects that involves selling a toll road to a private company for a fixed number of years, in exchange for a large upfront payment. The benefits of this method are that it provides a large sum of money that allows for initial investment in capital costs of other roadway projects. Projects that have been funded by this method in the United States in the last few years have involved toll roads being sold for between $1 and $4 billion. Once the toll road has been sold the private company becomes responsible for maintenance of the roadway as well as toll operations. While project privatization does provide a very large amount of money initially and relieves the public of having to maintain and operate the road, there are some drawbacks to this method of funding. The first is that the public does not receive the full value of the tolls. While a large sum of money is received upfront, private companies would not invest in the roadway if they could not make a profit. The profit they make is money that could have been put back into roadway funds. Secondly, control of the roadway is lost. Many contracts include non-compete clauses that state that competing roadways cannot be built. The private company is not concerned about the transportation system as a whole, only that people are using the particular toll road. While project privatization does provide a large initial payoff, contracts must be carefully negotiated with performance based specifications to ensure that the public's best interest is served.

15.0 RECOMMENDATION

The recommendation for the US 27 to I-75 Corridor Scoping Study is Alternative Corridor 5-2, shown in **Figure 24**. This alternative corridor was selected as the recommendation over the other alternative corridors and the no-build option for the following reasons:

- Good connectivity with KY 3055 / KY 627 interchange.
- Most public support of all alternatives.
- No known impacts to Environmental Justice areas.
- Fewer impacts to floodplains and historic sites than the similar Alternative Corridor 4-2.
- Crosses the faults in the area more perpendicular (better) than Alternative Corridor 4-2.
- Has the lowest cost of a two-lane alternative ($181 - $245 million)

Figure 24: Recommended Alternative Corridor 5-2



Generally, it was agreed upon by the project development team and the project work group that the terminus point on I-75 at the KY 3055 / KY 627 (Boonesboro exit) makes the most sense as there is currently an interchange at this location and provides good potential for regional connectivity beyond I-75. In the west, it was decided that a connection to the proposed Eastern Nicholasville Bypass would be more advantageous on the northern side of Nicholasville as opposed to the southern side. The northern locations (Locations 4 and 5) are expected to attract more traffic and thus increase the potential revenue, utilizing tolling as a funding mechanism. When comparing locations 4 and 5, location 5 had more advantages, assuming the Eastern Nicholasville Bypass is

built. If the bypass is not constructed prior to the further development of this project, shifting the western termini point to Location 4 may be beneficial to connect to US 27 in the shortest path possible, although this may add to the projects costs.

With cost constraints a major concern for this project, a two-lane rural typical section with wide shoulders and alternating passing lanes is recommended for the initial construction phase. Right-of-way should be purchased at the outset of this project for the possibility of a future four-lane section. While analysis has shown that traffic operations of a two-lane section will fail by the year 2017, the failure is related to the lack of passing opportunities. By providing alternating passing lanes, the traffic operations of the highway should remain at an adequate level beyond 2017.

Funding the project is a challenge given limited current resources, and as such it is proposed based on initial analysis in this document that the roadway will be tolled. The general analysis performed in this report indicated that a two-lane roadway could be paid for within a thirty-year bond period by tolls, assuming $1.00 for cars and $2.00 for trucks. This revenue might actually be higher in reality as it is likely trucks will be charged a higher price. Currently, Kentucky does not have any toll roads in operation. However, they do have a toll authority in place which could be a sufficient enabling mechanism to manage the collection system and take on the legal authority for project development, construction and operations. Generally, the new highway is expected to have limited access, with an interchange at US 27, I-75, and possibly two others in the middle at major crossings / interchanges. Limiting access is important to keep the route free-flowing as much as possible. It was also discussed that in order to keep the facility functioning as a true connector, that development should occur along frontage roads that tie into the major crossings and not the connector itself. The exact location of the interchanges and tolling collection logistics and methodology will require additional study beyond this project.

Another component of this project is a ten-foot multi-use path in conjunction with the new roadway. Additional study will be required for the path, including consideration of logical termini points, proximity of it to the roadway and the method for crossing the Kentucky River. It may be possible to deviate from the new highway corridor and use portions of the Rhiney B abandoned railroad bed, including a river crossing on the old alignment. These decisions are to be made in a future design phase of the project. Overall, there has been great demand for a path based on public survey response and discussion at the PWG. However, it was agreed by the PWG and PDT members that while desirable, the inclusion of the path should not limit the advancement of the entire new connector project.

15.1 Design Elements

The following design elements are assumed which form the basis for the cost estimate for the recommended alternative.

- Two 12-foot travel lanes (11-foot lanes could be considered as appropriate assuming 11-foot meets design speed criteria)
- 10-foot paved shoulders
- 300-foot right-of-way

For cost estimation purposes, passing lanes were assumed to occur in each of the three project sections, one in each direction, for approximately one mile in length. This equates to six miles of passing lanes, which is almost half of the entire corridor. The exact location and length of the passing lanes will be determined during the design phase of this project.

The right-of-way estimate was adjusted from the previous estimates as refinements have been made to each of the corridors and a more definitive typical section has been recommended. The estimate is wide enough to encompass an eventual four-lane typical section as well as a 10-foot multi-use path with sufficient buffer between the roadway and the path. Additional width is included for clear zone, with additional area included to compensate for the unknowns of cut and fill and slope requirements. Overall, the right-of-way estimate is conservative and can be refined during the design phase.

15.2 Design Issues

Of particular concern for this project is the western terminus with the proposed Eastern Nicholasville Bypass as well as the Kentucky River crossing. At the time of this report, the Eastern Nicholasville Bypass is in the Six Year Highway Plan and has design plans in the works for future construction. However, the actual completion of the project is uncertain. The current proposal for the recommended new US 27 to I-75 connector begins along the bypass and is therefore dependent on the completion of the bypass prior to construction of the connector. If the bypass is not completed, revisions to the design will need to be made to adjust the connection to US 27 just north of Nicholasville. The cost estimates provided below show the additional cost expected under this scenario in the footnote.

The Kentucky River crossing will require a new bridge, which forms a significant portion of the cost of this project. The bridge will go through an environmentally sensitive area (the Palisades), and care must be taken to ensure the least invasive river crossing is proposed. The intent of the project would be to showcase the Palisades and provide a tourism opportunity. It is expected that the Valley View Ferry will continue in operation and the new bridge should also be placed in such a location as to not impact the view shed or operations of the ferry. These are all considerations that will need to be taken into account during the future design phases of the project.

15.3 Cost Estimate

Final 2008 planning level cost estimates have been developed for the recommended alternative, based on the design elements discussed in the previous section (**Table 20**).

The estimated construction costs, right-of-way, utility, and design are included. Mitigation costs were not prepared at this time. These cost estimates, in 2008 dollars, are for planning purposes only and are subject to further refinement during the design phase.

Table 20: Recommended Alternative Cost Estimate

Base Estimate* (Initial 2-Lane)	**Right-of-Way** (Includes Area Needed for Ultimate 4-Lane and Multi-Use Path)	**Utilities**	**Limited Access*** (4 Interchanges)	**Total**	**Add-Ons**		
						Multi-Use Path*	**Passing Lanes***
$168,000,000	$7,000,000	$3,000,000	$23,000,000	$201,000,000	cost:	$41,000,000	$22,000,000
					total with add-ons:	$264,000,000	

*Includes Design and Construction

Notes:

1) If the Eastern Nicholasville Bypass is not in place prior to the development of this project, the estimate to construct the section of bypass from the proposed intersection with Corridor 5-2 to US 27 (including the interchange at US 27, right-of-way, and utilities) was $61,000,000 in 2004 dollars. This also assumes a 4-lane section.

The costs in **Table 20** are presented such that depending on funding, specific components can be included as part of the total package or taken off to keep the project within a specific budget. Overall, for a limited access two-lane roadway with a multi-use path and passing lanes (including right-of-way and utilities) the total cost in 2008 dollars is $264 million.

15.4 Right-of-Way and Utility Relocation Impact Assessment

General right-of-way impacts were assessed as part of the planning and evaluation stage for this project by the KYTC District 7 office. Revisions were made for the recommended Alternative Corridor 5-2 based on the estimated right-of-way required for the recommended typical section. With right-of-way for a future four-lane highway and a multi-use path on one side, an estimated 300 feet of right-of-way was determined. Using this estimate and the KYTC's cost per acre for right-of-way purchase as determined earlier in this study, a new right-of-way cost was developed specific to this alternative. With this estimate, right-of-way costs would be approximately $7 million. This estimate (in 2008 dollars) can be used for planning purposes, but is subject to refinement during the design phase.

General utility relocation costs were also developed by the KYTC District 7 office. Given the general planning level of this document, these costs seemed to be adequate for this recommendation and as such were included in the final recommendation cost unadjusted.

15.5 Project Phasing

While ultimately it would be desired to construct the new facility in one stage, the lack of available funding may make that difficult. Therefore, a recommended phasing schedule is provided below to ensure the highest priority segments are completed first. It was decided that the most logical project sections are:

1. US 27 to KY 1981
2. KY 1981 to KY 169
3. KY 169 to I-75

The prioritization for these segments is from west to east as indicated by the numbers above. Design could be completed for all segments at the same time with the phasing schedule implemented during construction.

15.6 Multimodal Facilities

There is strong support for a multi-use trail to be built next to the roadway. The cost of the trail is estimated at $23 million dollars, in 2008 US dollars. Several potential alternative funding options have been discussed and further study of these options should be conducted. One option is to charge a toll for bicyclists using the path. Another option is to finance the construction of the path using tourism dollars. The current administration is looking for locations for new ATV, equestrian, mountain biking and hiking trails to promote “adventure tourism” in Kentucky. In an article in the Lexington Herald Leader on September 17, 2008 the columnist wrote about a week-long bicycle tour he participates in every summer in a different part of rural Virginia. According to the article over 2,000 people from across the country participate and hundreds of thousands of dollars are brought into the economy. The preferred alternative would cross the Kentucky River and provide remarkable views of the Palisades, making a multi-use path in this location a potential for increased tourism and economic development to the area. With tourism funding as well as the option of collecting tolls from users of the path, it is recommended that a multi-use path be included in the design of the roadway, and creative funding mechanisms be used to pay for construction.

15.7 Intelligent Transportation Systems (ITS)

The role of Intelligent Transportation Systems (ITS) on this project is most applicable to toll demand management. If warranted, based on further study, a dynamic demand responsive system to price the roadway and collect tolls could be implemented. Such systems are currently in place in Southern California and are gaining in popularity as a way to manage congestion. The idea is fundamentally based on adjusting pricing depending on the time of day and vehicular volume. Generally higher tolls are charged during the peak hours with lower tolls charged during off-peak times. This methodology has the potential to increase revenue for paying for the roadway and alleviating congestion on portions of US 27 and I-75. Consistent travel times can also be managed for the new connector roadway, and this information passed on to motorists thereby improving travel time reliability.

15.8 Commitment Action Plan

KYTC is committed to incorporating appropriate pedestrian and bicycle facilities into all proposed highway projects. KYTC is also committed to working with KTC / SHPO as

the project progresses to avoid, to the greatest extent possible, impacts to any identified existing and / or National Register eligible properties.

15.9 Next Steps / Implementation

Upon conclusion of this study, the next step would be to have the project recommendation listed in the next Six Year Highway Plan. Prioritization of roadway projects in the Commonwealth typically begin in the Spring of each year (the next opportunity is Spring 2009) for the next plan, therefore all representatives with input on the ranking of projects should be notified of this project, along with its proposed funding scenario.

While the KYTC is limited in its ability to purchase and reserve right-of-way for future unfunded projects, Jessamine and Madison County may be free to investigate ways to restrict development in the area of the proposed corridor through their own planning and zoning processes. This may assist in relieving future right-of-way costs.

Prior to purchase of right-of-way, final design plans will need to be completed as well as possibly additional environmental analysis to comply with the National Environmental Policy Act (NEPA). Funding sources will be a deterministic factor in the level of effort required prior to the purchase of right-of-way and ultimately project construction.