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Executive Summary

The KY 44 to KY 480 Connector Study was initiated by the Kentucky Transportation Cabinet (KYTC) to evaluate a new north-south connector route between KY 44 and KY 480. The proposed connector will provide an additional crossing over the Salt River and address the rapid growth in Shepherdsville and Mount Washington in northern Bullitt County, Kentucky. The project study area includes an area bounded by KY 44 to the north, KY 480 to the south, I-65 to the west and the Pine Creek Barrens nature preserve to the east. The study was funded in the 2014-2020 KYTC Six-Year Highway Plan with \$3,000,000 for design. No further phases are included in the Highway Plan.

The purpose of the project is to enhance mobility and safety within Bullitt County by providing a new connector route between KY 44 and KY 480 with a crossing over the Salt River. Currently the only north-south connection over the Salt River between I-65 in Shepherdsville and US 31E in Mount Washington is Greenwell-Ford Road (CR 1017), which is a small county road. The proposed connection would serve rapidly growing residential communities and industrial areas along both KY 44 and KY 480.

Through a comprehensive evaluation of the study area and discussions with project stakeholders, conceptual roadway alternatives were developed and evaluated. The KYTC Division of Planning used the Kentuckiana Regional Planning and Development Agency (KIPDA, the Metropolitan Planning Organization serving Bullitt County) regional travel demand model to project traffic volumes to a future year of 2038. Given the trend of high residential and commercial growth in the area, the new KY 44 to KY 480 Connector would carry 14,200 to 16,000 vehicles per day (VPD) in the future.

The final study recommendation, shown on **Figure ES-1**, includes eight conceptual alternatives. These alternatives will satisfy the needs of a growing area by providing a north-south connector and avoiding the Heritage Hills Golf Course which would require residential relocations. These eight conceptual alternatives can be advanced to the preliminary design phase of the project and are summarized in **Table ES-1**.

The estimated construction costs were based upon the two-lane and four-lane typical sections and the cost is reflective of estimated earthwork, drainage, structures and pavement. Right of way relocations are based on a four-lane roadway ultimate design with 12 foot lanes and 8 foot shoulders. Structure lengths were based upon the estimated limits of the floodplains, resulting in a conservative approach, which will require further analysis during subsequent project phases. Estimated cost does not include construction of a new connector road north of KY 44. An extension of the proposed KY 44 to KY 480 Connector to the North was recommended by the Stakeholders Group. However, this option is not identified in the Six-Year Highway Plan and was not recommended for further consideration at this time.

KY 44 TO KY 480 CONNECTOR STUDY

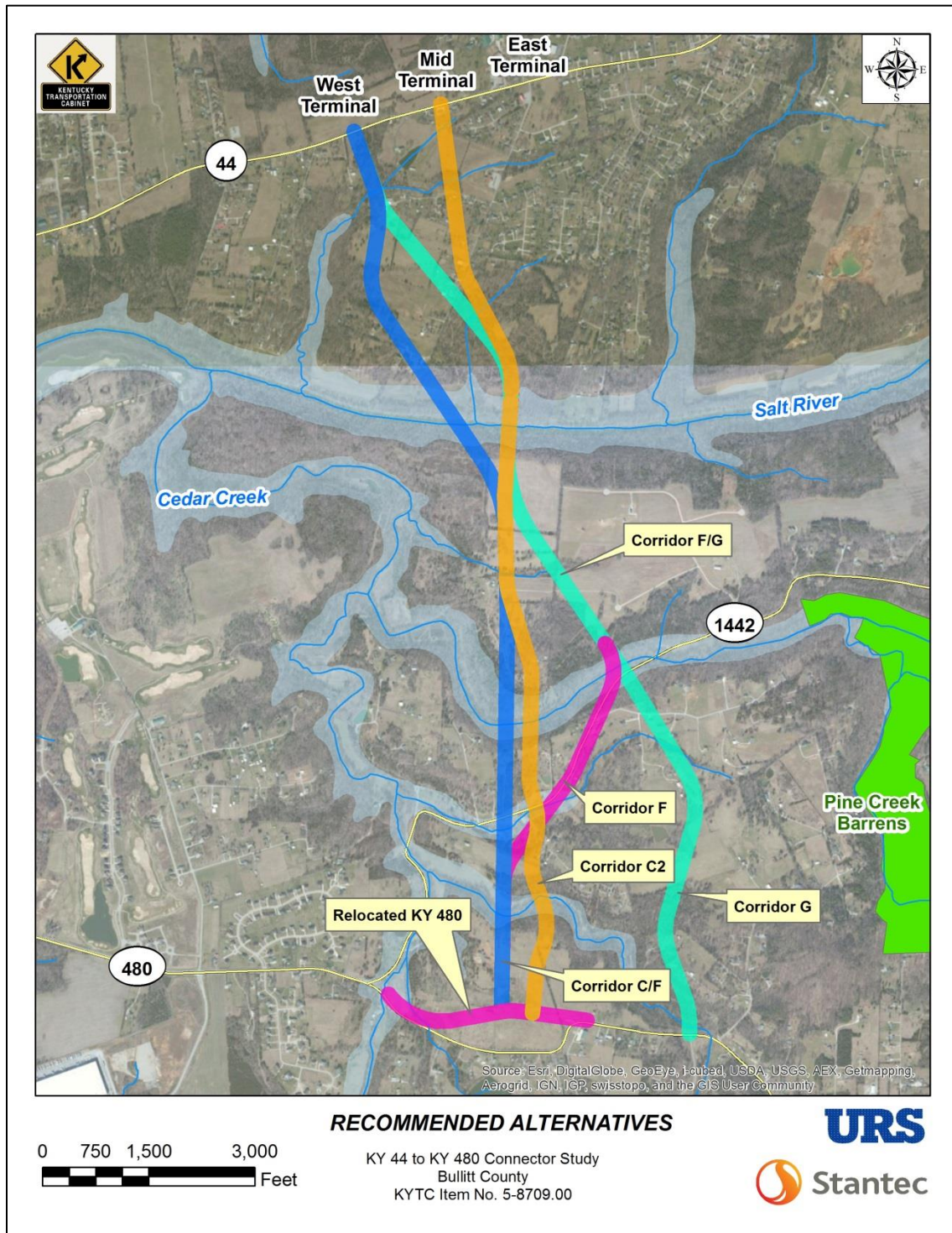


Figure ES-1 – Recommended Conceptual Alternatives

KY 44 TO KY 480 CONNECTOR STUDY

Corridor	Length (miles)	Structure Length (ft.)		Probable Relocations	Opinion of Probable Cost for two-lane Construction	Opinion of Probable Cost for four-lane Construction
		Salt River	Cedar Creek			
C-MID	2.5	790	2,660	15	\$26,800,000	\$49,800,000
C-WEST	2.5	790	2,660	8	\$27,000,000	\$49,900,000
C2-MID	2.5	790	1,350	15	\$19,900,000	\$35,600,000
C2-WEST	2.5	790	1,350	8	\$20,000,000	\$35,700,000
F-MID Connector	3.3	1,155	740	18	\$20,100,000	\$35,400,000
F-WEST Connector	3.4	1,185	740	11	\$20,600,000	\$32,000,000
G-MID	3.3	770	780	17	\$17,200,000	\$29,900,000
G-WEST	3.3	790	780	9	\$17,800,000	\$31,000,000

Table ES-1 - Recommended Conceptual Alternatives Summary

1.0 INTRODUCTION

The KY 44 to KY 480 Connector Study was initiated by the Kentucky Transportation Cabinet (KYTC) to evaluate a new north-south connector route between KY 44 and KY 480 which will provide another crossing over the Salt River and address the rapid growth in Shepherdsville and Mount Washington in Bullitt County, Kentucky. The project study area, highlighted in yellow in **Figure 1**, includes an area bounded by KY 44 to the north, KY 480 to the south, I-65 to the west and Pine Creek Barrens to the east, including a portion of the Salt River. The purpose of the study is to enhance mobility and safety within Bullitt County by providing a new connector route between KY 44 and KY 480.

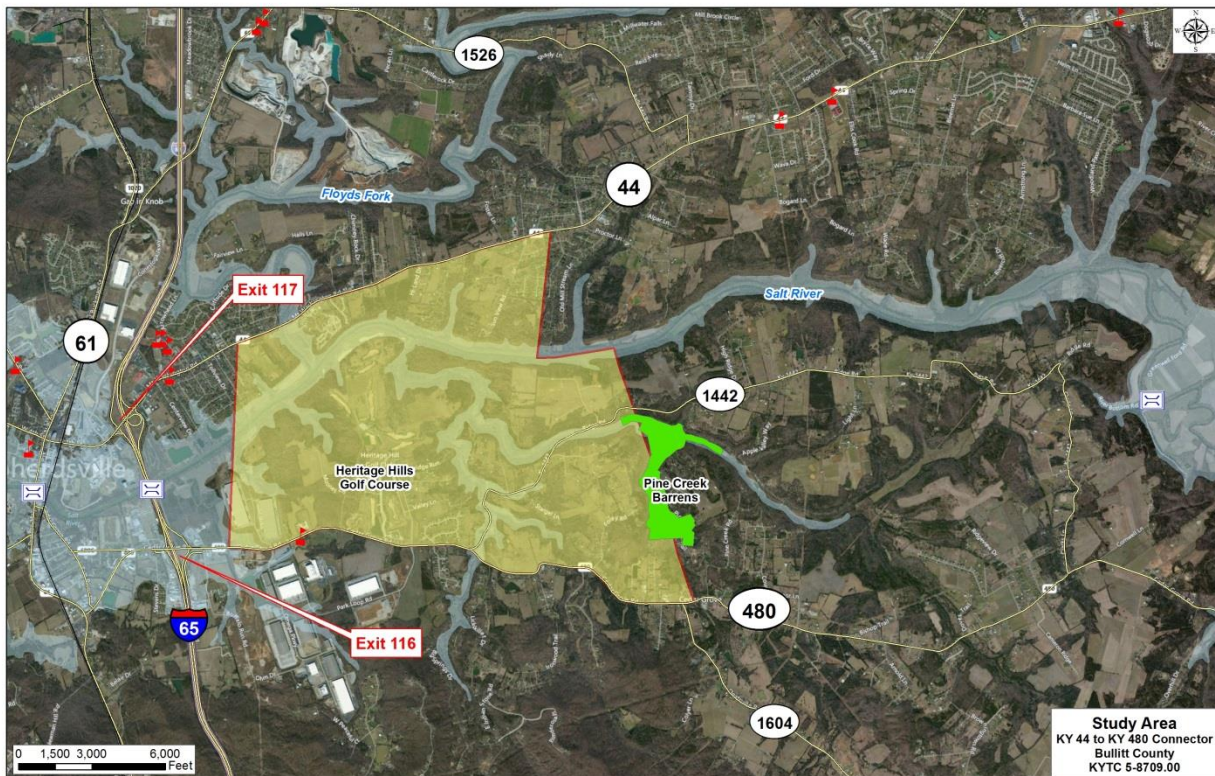


Figure 1 – Study Area

The new route between KY 44 and KY 480 is listed in the 2014-2020 KYTC Six-Year Highway Plan, as summarized in **Table 1**. The project is currently funded through the design phase with State Project (SP) funds. Future design, right-of-way, utility and construction phases for this project are not included in the 2014-2020 KYTC Six-Year Highway Plan.

KY 44 TO KY 480 CONNECTOR STUDY

Project Phase	Estimated Cost	Funding Code	Scheduled Fiscal Year
Design	\$3,000,000	State Project (SP)	2015

Table 1 - KY 44 to KY 480 Connector Study Listing in the Kentucky 2014 Highway Plan

1.1 DRAFT PURPOSE AND NEED

The purpose and need statement establishes why KYTC is proposing to advance a transportation improvement and drives the process for improvements, alternative consideration, analysis, and selection. The purpose of the project is to enhance mobility and safety within Bullitt County by providing a new connector route between KY 44 and KY 480.

The following needs have been identified:

- **Enhance Mobility**
 - *Due to the rapid growth within the area (commercial and residential), the existing roads cannot accommodate existing and future traffic volumes.*
 - *I-65 and US-31E are the prominent north/south transportation routes within this area but are separated by 14 miles.*
- **Enhance Safety**
 - *KY 480 and KY 1442 have a Critical Rate Factor (CRF) greater than 1.0 within the study area.*
 - *Between 2010 and 2013 there was 1 fatality, 61 injury and 123 property damage only crashes along state-maintained roadways within the study area*

1.2 STUDY AREA

The new connector between KY 44 and KY 480 travels over the Salt River and would serve both residential and industrial communities. Heritage Hills Golf Course is in the center of the study area which has several homes along the course. The Salt River crosses the study area as it flows west to the Ohio River. Floyds Fork connects to the Salt River on the east side of Shepherdsville. KY 480 (Cedar Grove Road) is an east-west route that serves industrial areas east of I-65 in southern Shepherdsville, such as Zappos, Gordon Food Services (GFS), Amazon, APL Logistics, and GSI Commerce. KY 44 is an east-west route that connects the two largest cities in Bullitt County, Mount Washington and Shepherdsville. I-65 is one of the heaviest traveled interstates in Kentucky and is one of the main freight corridors in the state. Two interchanges serve Shepherdsville; Interchange Exit 116 serves KY 44 and Interchange Exit 117 serves KY 480. Both provide access to major industrial areas.

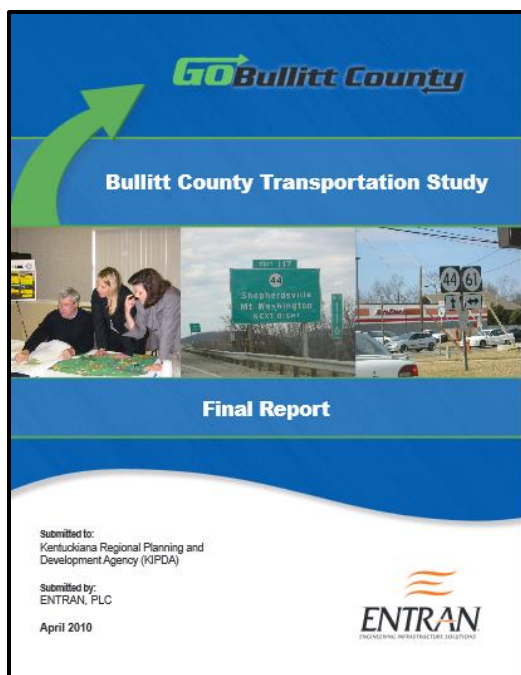
KY 44 TO KY 480 CONNECTOR STUDY

Currently the only north-south connection over the Salt River between I-65 in Shepherdsville and US 31E in Mount Washington is Greenwell-Ford Road (CR 1017), which is a small county road. Only a small number of vehicles use Greenwell-Ford Road due to the narrow roadway widths and sharp turns. As a result drivers are forced to use I-65 or US 31E which are separated by 14 miles to travel over the Salt River.

1.3 PREVIOUS STUDIES

Through Bullitt County and the Kentuckiana Regional Planning and Development Agency (KIPDA) the Bullitt County Transportation Study¹ named "Go Bullitt" was developed in 2010 to analyze county-wide transportation mobility and assist in developing a long range transportation plan for Bullitt County. This study established a need for existing routes to be improved and new roadways to be constructed to relieve congestion and increase efficiency among all routes within Bullitt County as well as those that travel to surrounding counties.

Candidate improvements, including both short and long-term projects, were developed and evaluated over the course of the study. Short-term improvements, which included spot improvements, were low-cost, safety oriented projects that could be completed in a relative short time frame. The five long term projects are new roadways or significant changes to existing roadways. The recommended projects, shown in **Figure 2**, were prioritized based upon the severity of the issues being addressed for the roadway as well as input from the study's Steering Committee. The prioritization order ranked projects from High to Low. A low project does not indicate a project should not be carried forward but rather it should wait until projects ranked High or Medium have been completed.



¹ http://www.krisslowry.com/bullitt/Bullitt%20Co_Bullitt%20County%20Transportation%20Studyreduced.pdf

KY 44 TO KY 480 CONNECTOR STUDY

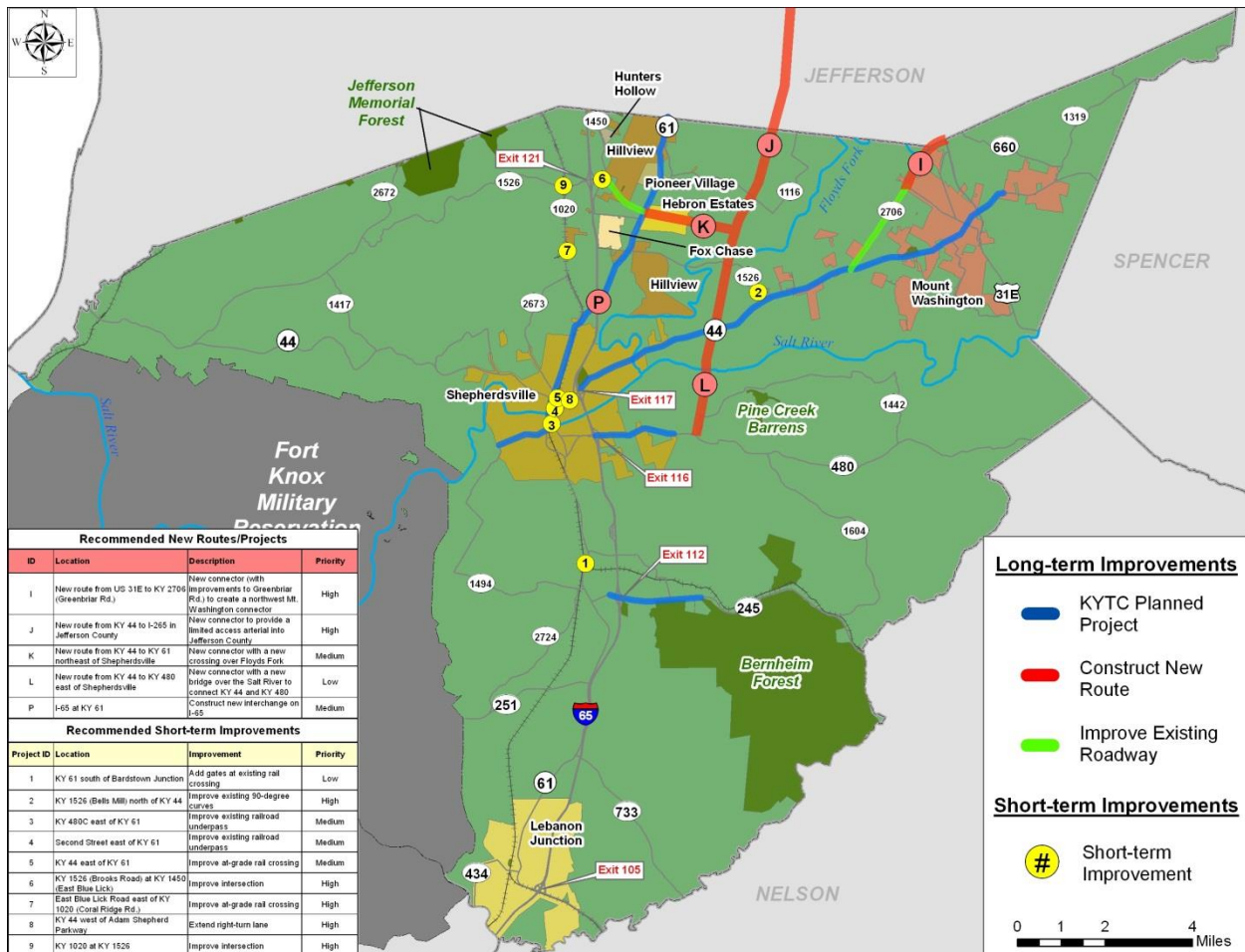


Figure 2 – Recommended Projects from the Bullitt County Transportation Study

The proposed short term improvements from the 2010 Bullitt County Transportation Study were all recommended for implementation and have public support. These projects were developed after existing conditions were analyzed and discussions were held with the public. **Table 2** lists the short term recommended projects. Several of the improvements include improving the rail crossing or underpass, which can be costly.

KY 44 TO KY 480 CONNECTOR STUDY

Project ID	Location	Improvement	Priority
1	KY 61 south of Bardstown Junction	Add gates at existing rail crossing	Low
2	KY 1526 (Bells Mill) north of KY 44	Improve existing 90-degree curves	High
3	KY 480C east of KY 61	Improve existing railroad underpass	Medium
4	Second Street east of KY 61	Improve existing railroad underpass	Medium
5	KY 44 east of KY 61	Improve at-grade rail crossing	Medium
6	KY 1526 (Brooks Road) at KY 1450 (East Blue Lick)	Improve intersection	High
7	East Blue Lick Road east of KY 1020 (Coral Ridge Rd.)	Improve at-grade rail crossing	High
8	KY 44 west of Adam Shepherd Parkway	Extend right-turn lane	High
9	KY 1020 at KY 1526	Improve intersection	High

Table 2 - Recommended Short Term Improvements

The proposed long term projects from the 2010 Bullitt County Transportation Study included new routes and a new interchange which can provide increased traffic efficiency and can be more desirable rather than improving existing routes. The Steering Committee provided input into the development of the new route alternatives and assisted in evaluating and prioritizing the recommended concepts, shown in **Table 3**, to be carried forward for future project phases.

ID	Location	Description	Project Purpose	Priority
I	New route from US 31E to KY 2706 (Greenbriar Rd.)	New connector (with improvements to Greenbriar Rd.) to create a northwest Mt. Washington connector	Provide a more efficient and more direct connection from US 31E to KY 44 that will divert some traffic from Mount Washington	High
J	New route from KY 44 to I-265 in Jefferson County	New connector to provide a limited access arterial into Jefferson County	Provide an additional travel alternative for traffic to/from Louisville with a new crossing over Floyds Fork	High
K	New route from KY 44 to KY 61 northeast of Shepherdsville	New connector with a new crossing over Floyds Fork	Provide an improved connection between KY 61 and KY 44 as an alternative to KY 1526 (Bells Mill) and provide improved access to existing I-65 interchange	Medium
L	New route from KY 44 to KY 480 east of Shepherdsville	New connector with a new bridge over the Salt River to connect KY 44 and KY 480	Provide a better connection between KY 480 and KY 44 while providing an additional crossing over the Salt River	Low
P	I-65 at KY 61	Construct new interchange on I-65	Provide a new interchange on I-65 to improve access to northern portions of Shepherdsville and areas to the north	Medium

Table 3 - Recommended Long-Range Projects

KY 44 TO KY 480 CONNECTOR STUDY

The proposed KY 44 to KY 480 Connector is an attractive concept because it would help accommodate growth within the northern portion of Bullitt County. Although this was ranked as a low priority in 2010, population growth has made this a higher priority for KIPDA. **Figure 3** depicts population estimates and projections contained within the KIPDA regional travel demand model. As shown, northern Bullitt County is expected to grow significantly between 2000 and 2030, further straining the already burdened transportation network.

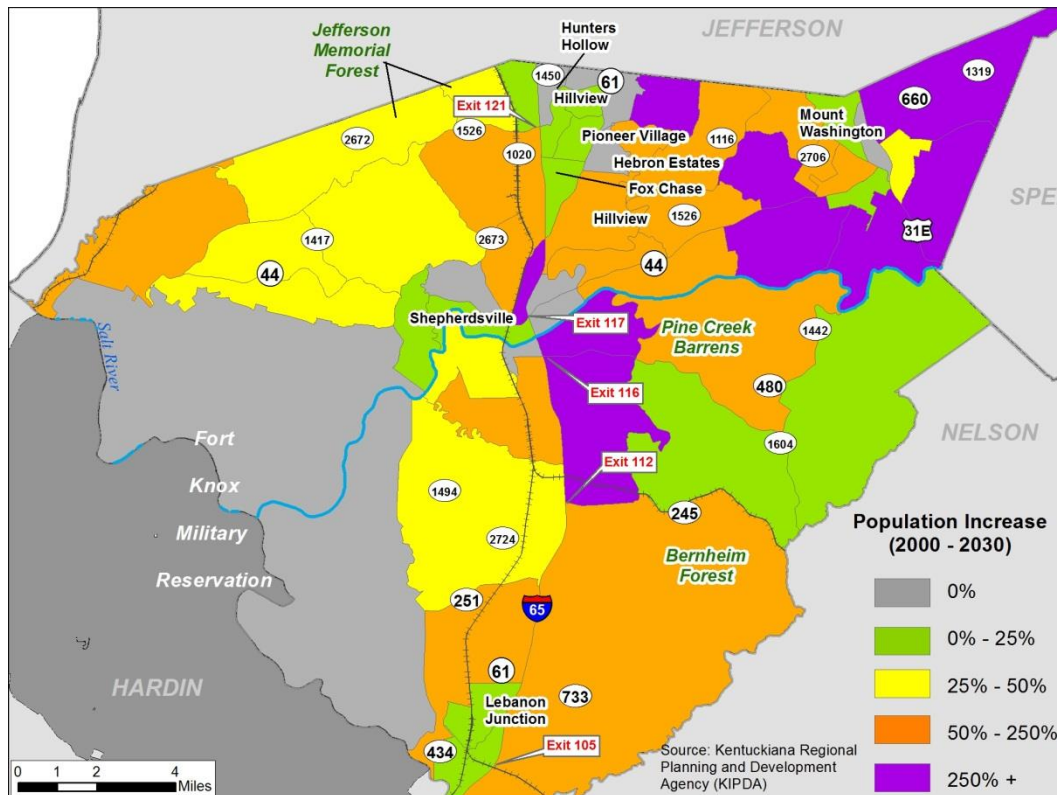


Figure 3 – Anticipated Bullitt County Population Growth
(Source: KIPDA Regional Travel Demand Model)

2.0 EXISTING CONDITIONS

Conditions of the study area's existing transportation network are examined in the following section. The information compiled includes roadway facilities and geometrics, crash history, and traffic volumes within the study area. Data for this section were collected from the KYTC's Highway Information System (HIS) database, aerial photography, as-built plans, and field review.

2.1 ROADWAY SYSTEM

Functional classification is the grouping of roads, streets and highways into integrated systems ranked by the level of mobility for through movements and access to adjoining land. This grouping acknowledges that roads serve multiple functions and it provides a basis for

KY 44 TO KY 480 CONNECTOR STUDY

comparing roads. Functional classification can be used for, but is not limited to, the following purposes:

- Provide a framework for highways serving mobility and connecting regions and cities within a state.
- Provide a basis for assigning jurisdictional responsibility according to the roadway's importance.
- Provide a basis for development of minimum design standards according to function.
- Provide a basis for evaluating present and future needs.
- Provide a basis for allocation of limited financial resources

Figure 4 shows the functional classification of roadways within the study area.

There are two north-south roadways adjacent to the study area. Interstate 65 (I-65), which travels through Shepherdsville is a Rural Interstate and is the primary north-south route west of the study area and provides regional connectivity for both commerce and the traveling public. US 31E, which travels through Mount Washington is a Rural Minor Arterial and is the primary north-south route east of the study area. Greenwell-Ford Road (CR 1017) is the only other bridge crossing over the Salt River between I-65 and US 31E. Greenwell-Ford Road is a small county road. In the northern portion of the study area, KY 44 is a Principal Arterial roadway that provides east-west connectivity between Mount Washington and I-65 interchange exit 44 in Shepherdsville. In the southern portion of the study area, KY 480 is a Major Collector that provides an east-west link between US 31E and I-65 interchange exit 116. The I-65 interchange at KY 480 provides large truck access to and from the Cedar Grove Business Park. Many warehouse distribution centers are located within the Business Park.

In compliance with the Surface Transportation Assistance Act of 1982 (STAA), Kentucky has established a network of highways on which commercial vehicles with increased dimensions may operate. These "STAA" vehicles include semi-trailers with 53-foot long trailers and single-unit trucks with a total length of 45 feet. These designated truck routes are shown on **Figure 5**. I-65 is the only designated truck route in proximity to the study area. No roads within the study area are designated as truck routes.

2.1.1 Utilities

Utilities potentially affected by this project include overhead power and telephone lines as well as underground water, sewer and gas lines. Utility Companies located in the corridor include:

- | | |
|--|------------------------------------|
| - Salt River Electric Cooperative (Electric) | - Louisville Water Company (Water) |
| - Louisville Gas and Electric (Gas) | - Shepherdsville Sewer (Sewer) |
| - Windstream (Telephone) | - Time Warner (Cable) |

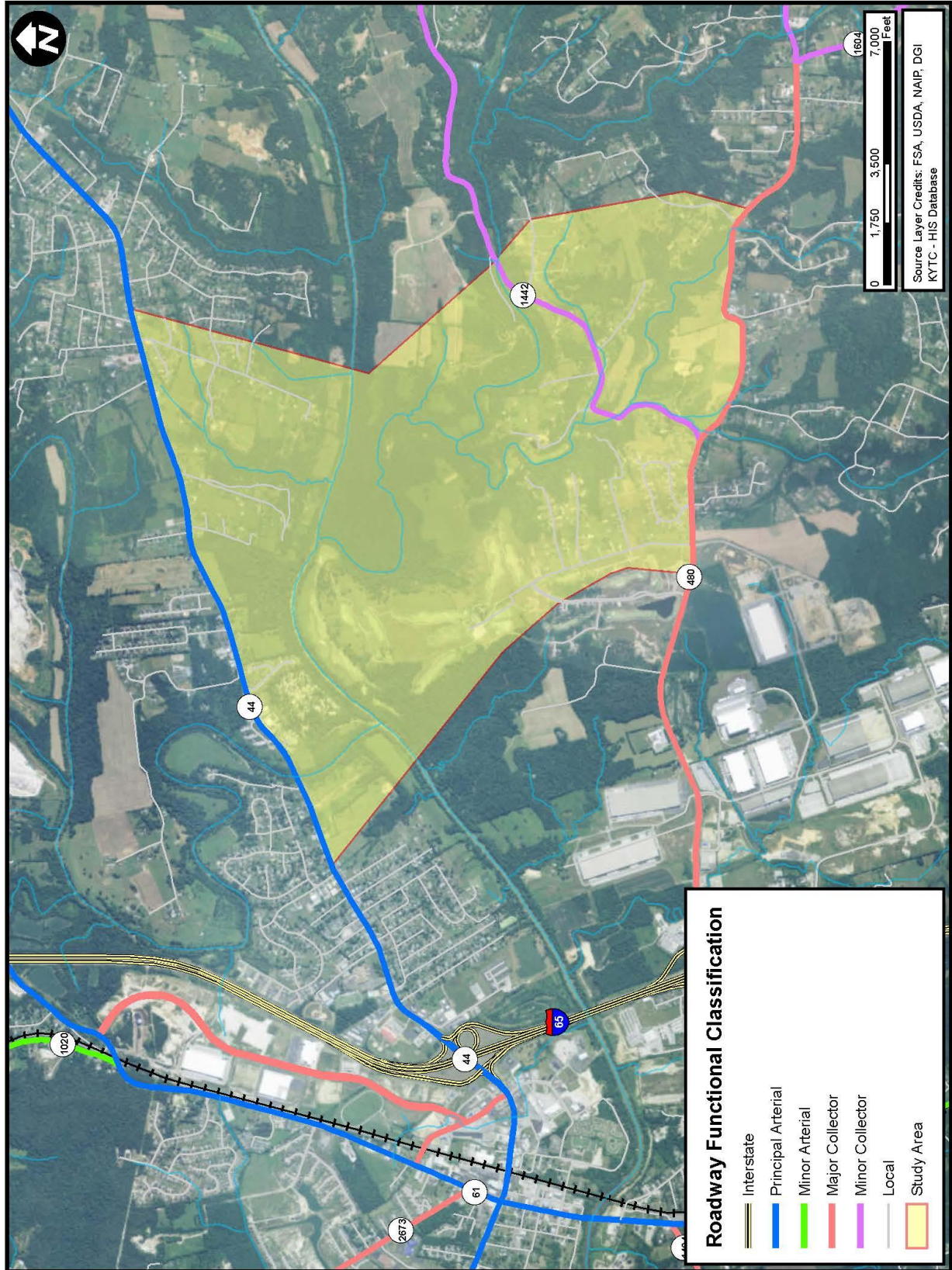


Figure 4 – Functional Classification for Study Area Roadways

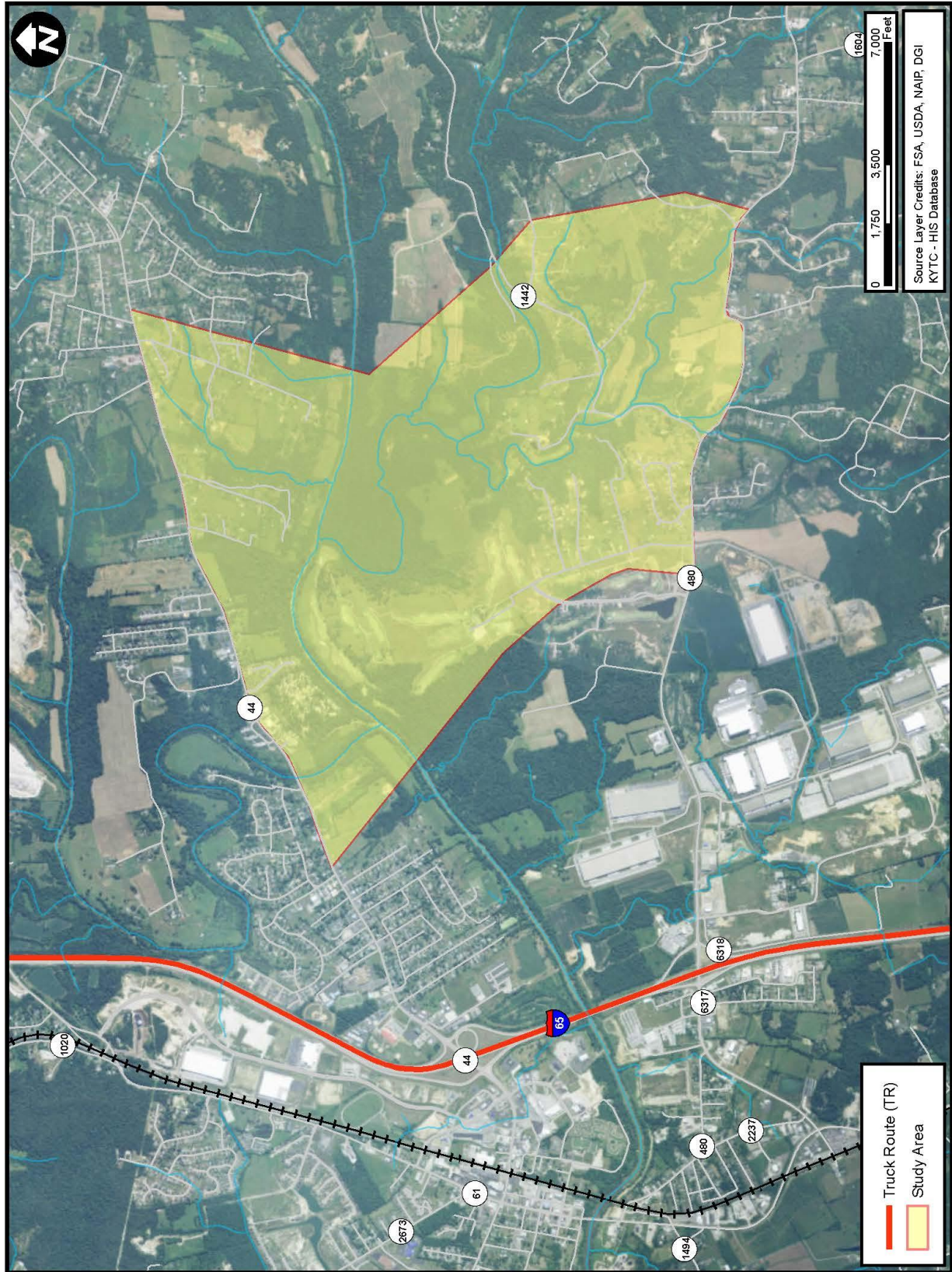


Figure 5 – Designated Truck Routes

2.2 ROADWAY GEOMETRIC CHARACTERISTICS

As part of the study effort, designers conducted a review of existing geometrics along study area roadways and compared those geometrics to the common geometric practices for Rural Collector Roads listed in Exhibit 700-02 and Rural Arterial Roads listed in Exhibit 700-03 of the 2006 KYTC Highway Design Manual². Roadway characteristic data came from the KYTC Highway Information System (HIS) database.

Lane Widths

The current estimated lane widths along study area roadways are shown on **Figure 6**. Current KYTC design guidelines suggest a minimum of 11-foot wide lanes on arterial and collector roadways with an average daily traffic (ADT) between 1,500 and 2,000 vehicles per day (vpd) and a minimum of 12-foot wide lanes on arterial and collector roadways with an ADT greater than 2,000 vpd. With the exception of one small segment on KY 1442 and KY 480 near I-65, which has 12-foot lanes, all Kentucky state-maintained roadways in the study area have 10-foot or narrower lanes, which is less than the recommended minimum.

Shoulder Widths

Estimated shoulder widths are shown on **Figure 7**. Most of the shoulders along the arterial routes are between three and five feet, which is less than the recommended minimum of six feet for roadways with an ADT between 1,500 and 2,000 and eight feet for roadways with an ADT greater than 2,000 vpd. The one exception is the segment of KY 44 from just west of Hoot Owl Camp Road to Boardwalk Avenue. This section has shoulders that are eight feet wide.

Horizontal and Vertical Geometry

Horizontal and vertical deficiencies are shown on **Figure 8**. On KY 480, there are infrequent horizontal curves which can cause reduced operating speeds. On the portion of the roadway west of the intersection with KY 1442, the vertical grades meet the design standards for the terrain that is present. For the eastern portion there are areas where the sight distance is substandard. No horizontal and vertical data were available for KY 44.

Speed Limits (Posted)

Speed limits are shown on **Figure 9**. All state maintained routes within the study area have a posted speed limit of 55 mph, with the exception of the segment of KY 44 between the I-65 ramps to just east of Big Clifty Drive. This area has a posted speed limit of 45 mph.

2.2.1 Bridges

There are three bridges over the Salt River in Bullitt County (I-65, KY 61 and Greenwell-Ford Road). This relatively few number of crossings focuses north-south travel onto a limited number of roadways. From the National Bridge Inventory (NBI), existing bridge sufficiency ratings are identified in **Figure 10**.

² <http://transportation.ky.gov/Highway-Design/Highway%20Design%20Manual/Geometric%20Design%20Guidelines.pdf>

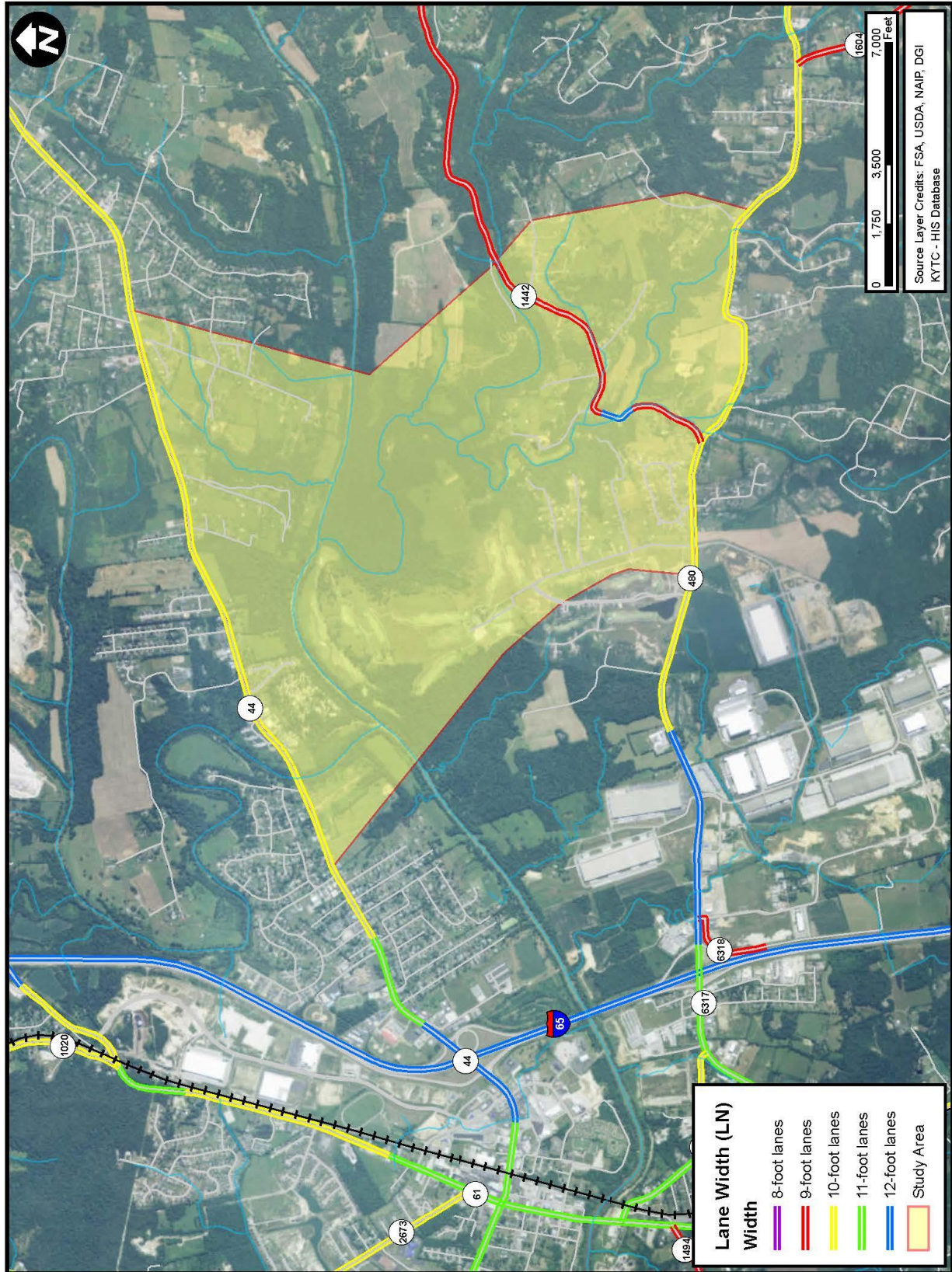


Figure 6 – Lane Widths

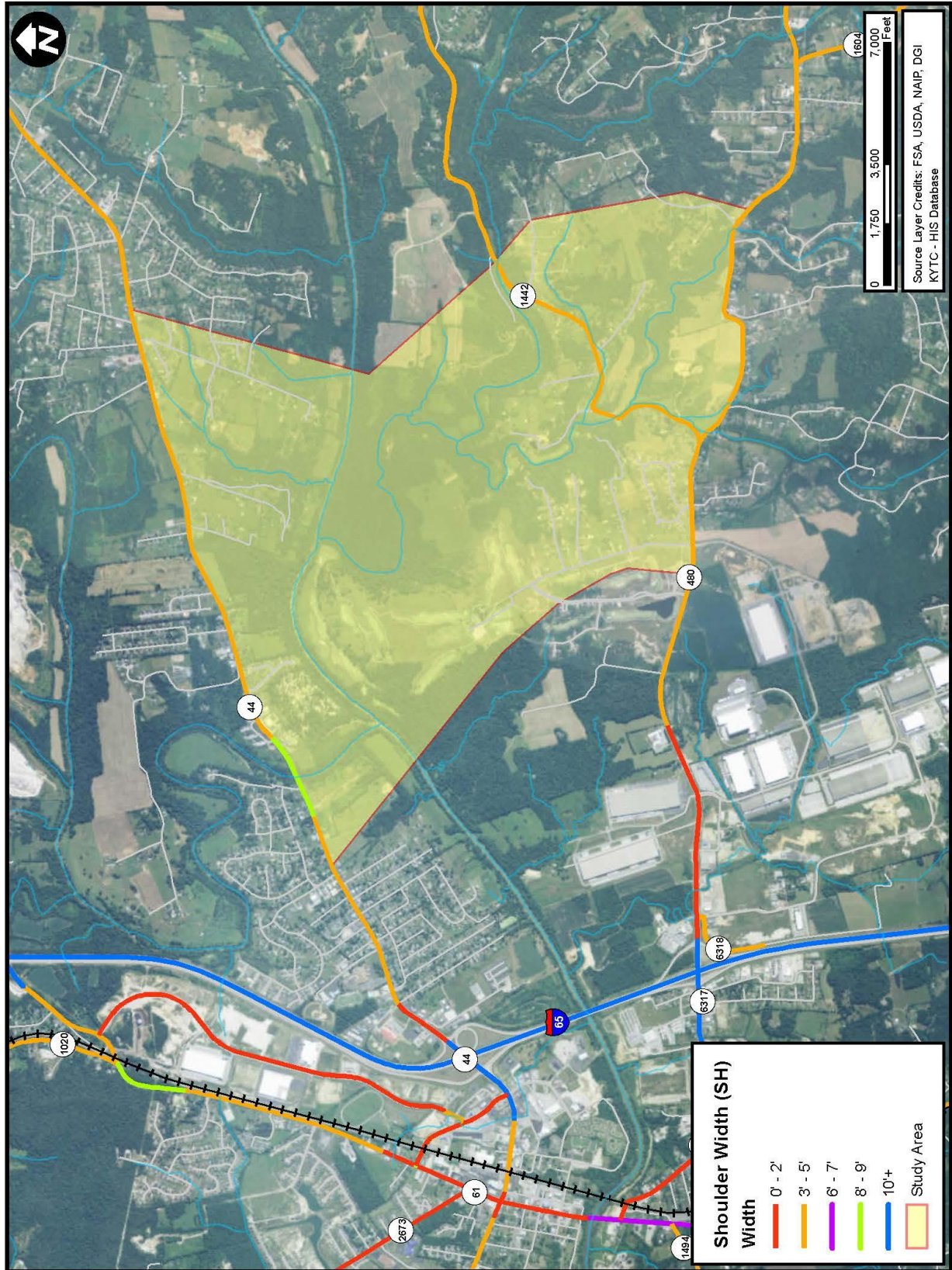


Figure 7 – Shoulder Widths

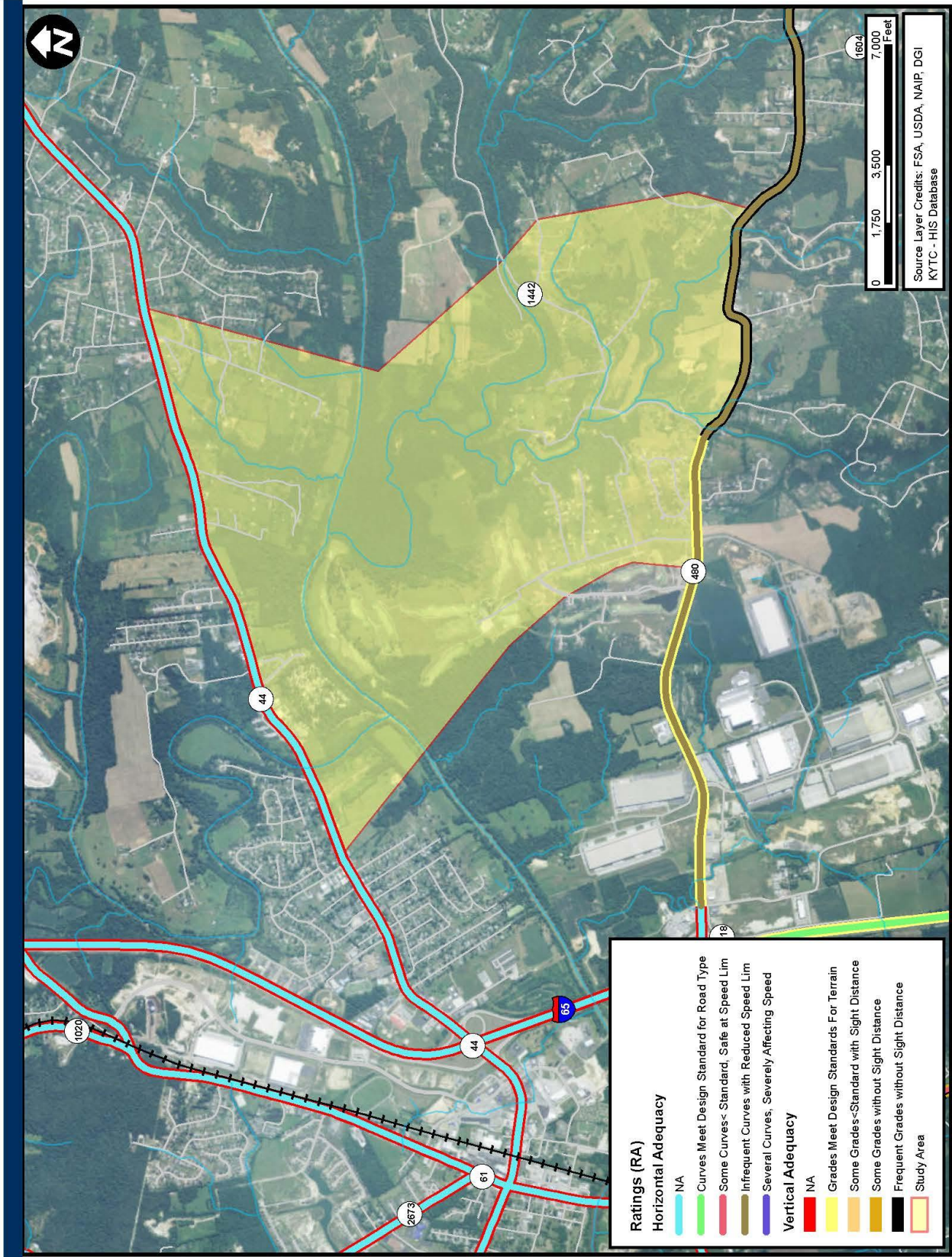


Figure 8 – Horizontal and Vertical Deficiencies

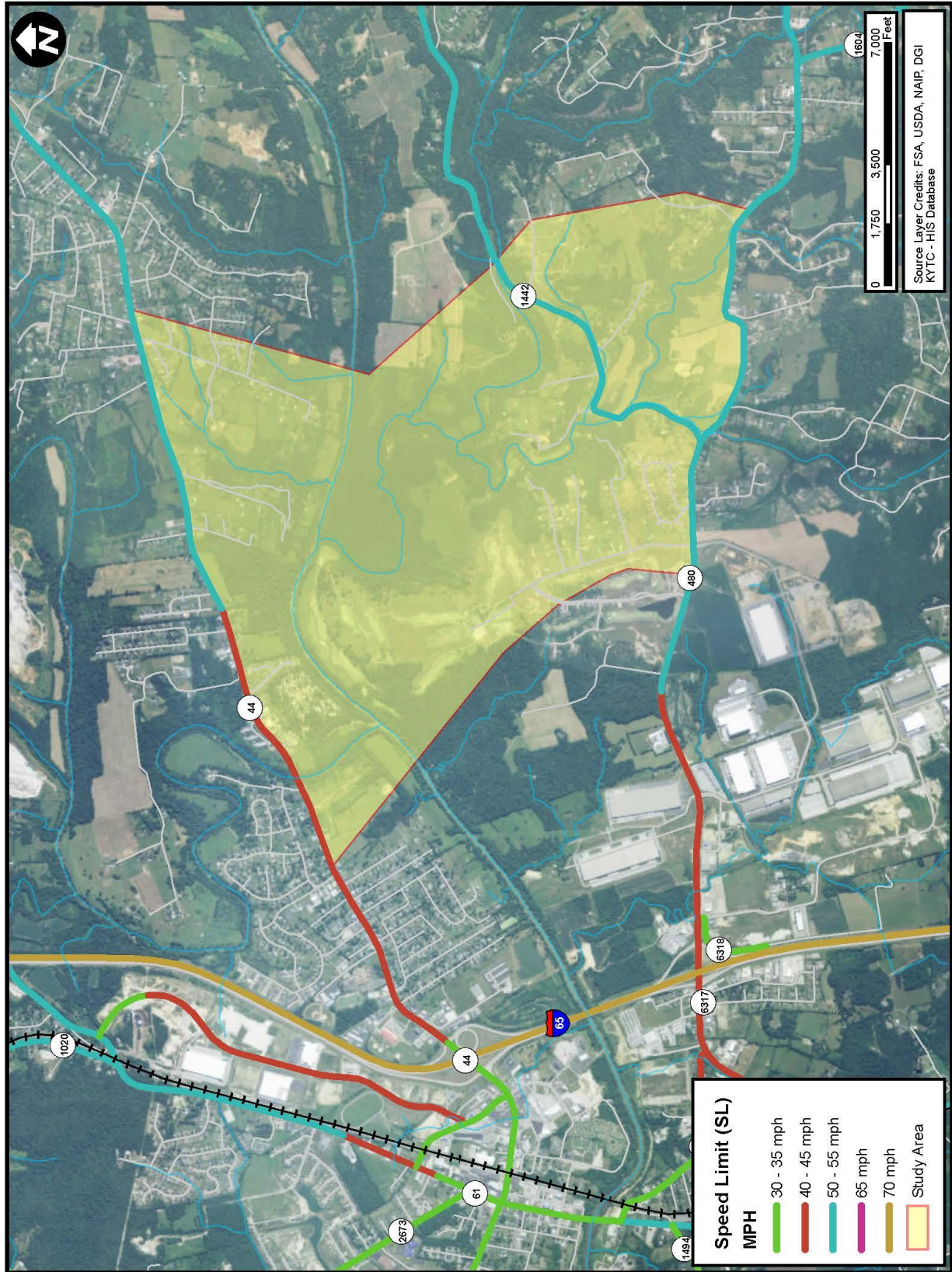


Figure 9 – Speed Limit

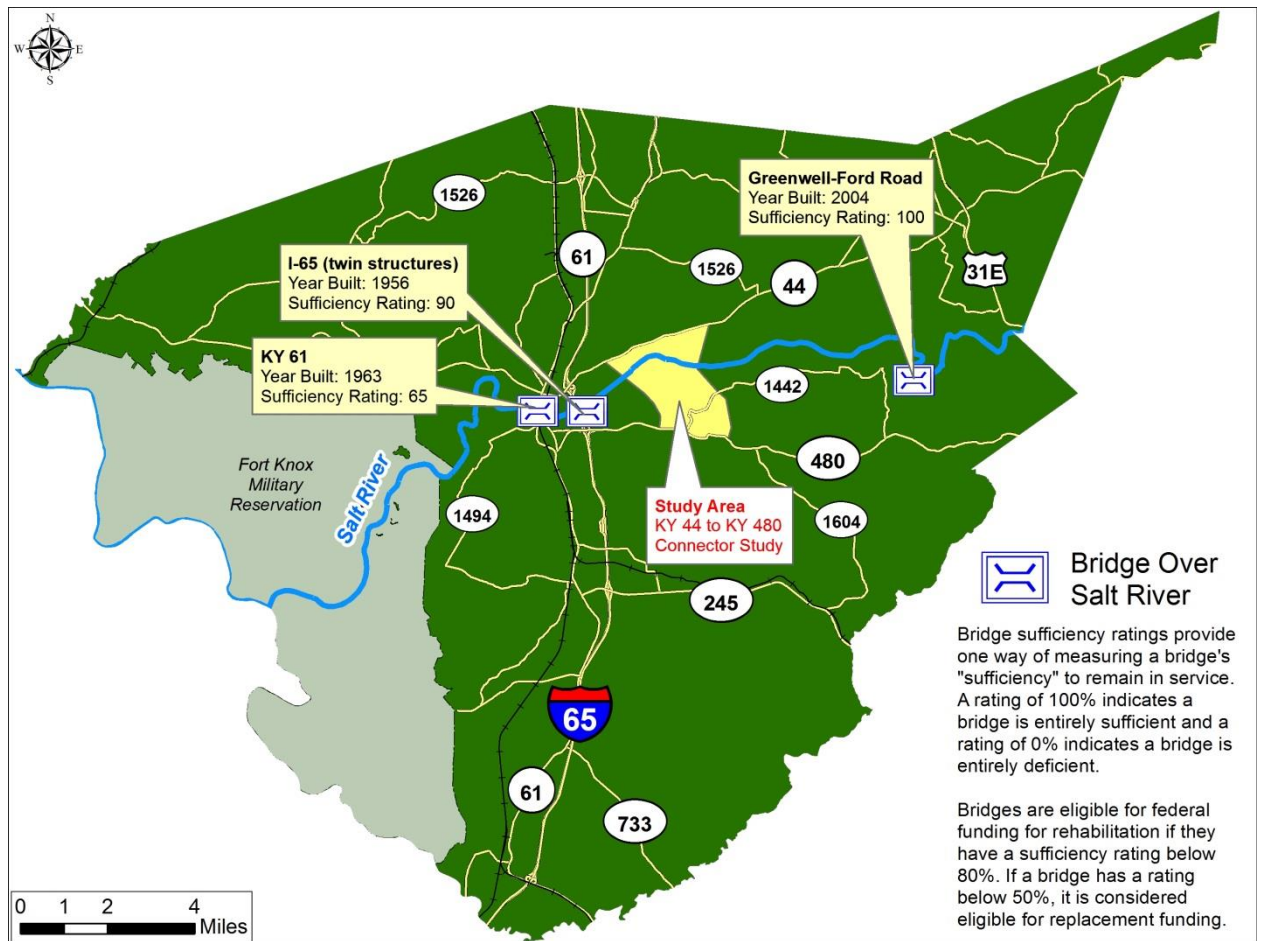

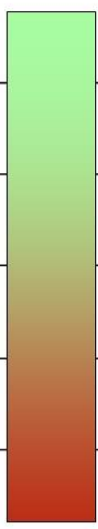







Figure 10 – Bridges over the Salt River

2.3 EXISTING TRAFFIC VOLUMES

Level of service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience³. There are six levels of service, having letter grades A through F. Level-of-service (LOS) A is associated with free-flow conditions, high freedom to maneuver, and little or no delay. Conditions at or near capacity typically are associated with LOS E. At LOS F, traffic conditions are oversaturated and beyond capacity, with low travel speeds, little or no freedom to maneuver, and high delays. **Figure 11** is a visual display of LOS.

³ *Highway Capacity Manual*, Transportation Research Board, National Research Council, Washington, D.C., 2010.

What is Level of Service (LOS)?			
A			Desirable
B			Desirable
C			Acceptable
D			Moderately congested
E			Congested
F			Severely congested

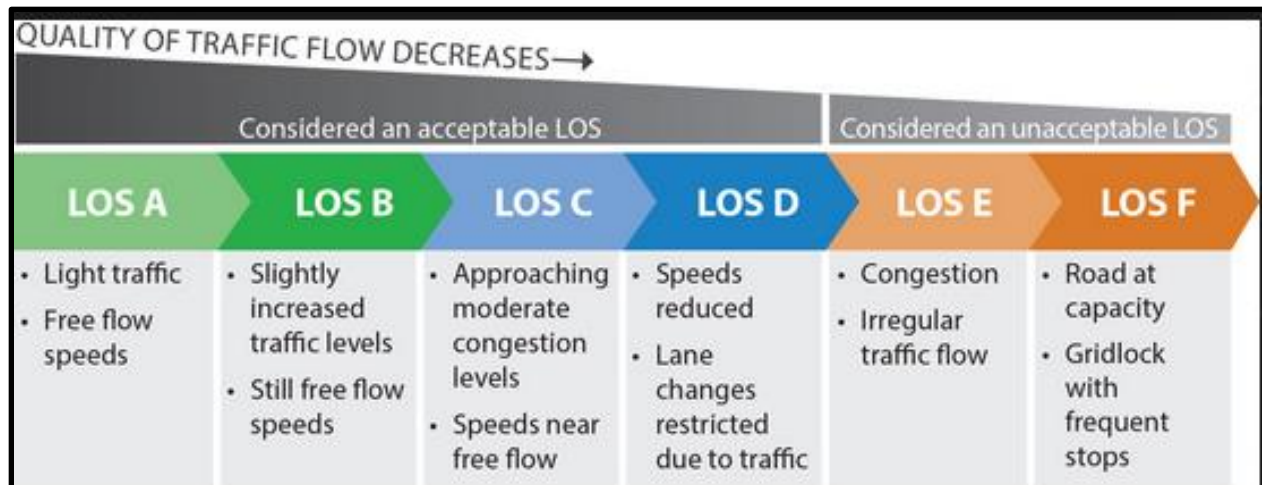


Figure 11 – Visual Display of Level of Service (LOS)

Levels of service for different facility types are based on service measures deemed most appropriate for describing operations. For interstates, freeways and multilane highways, LOS is based on density (expressed in passenger car equivalents per mile). For arterial streets, LOS determinations are based on the percent of free-flow speed. This measure includes delay at signalized intersections. For two-lane highways, levels of service are determined based on two parameters – average travel speed and percent time following in a platoon.

Average daily traffic (ADT) volumes and Level of Service (LOS) values are shown on **Figure 12**. ADT volumes on state-maintained routes in the study area range from 1,000 vehicles per day (vpd) on KY 1442 to 12,100 vpd on KY 480.

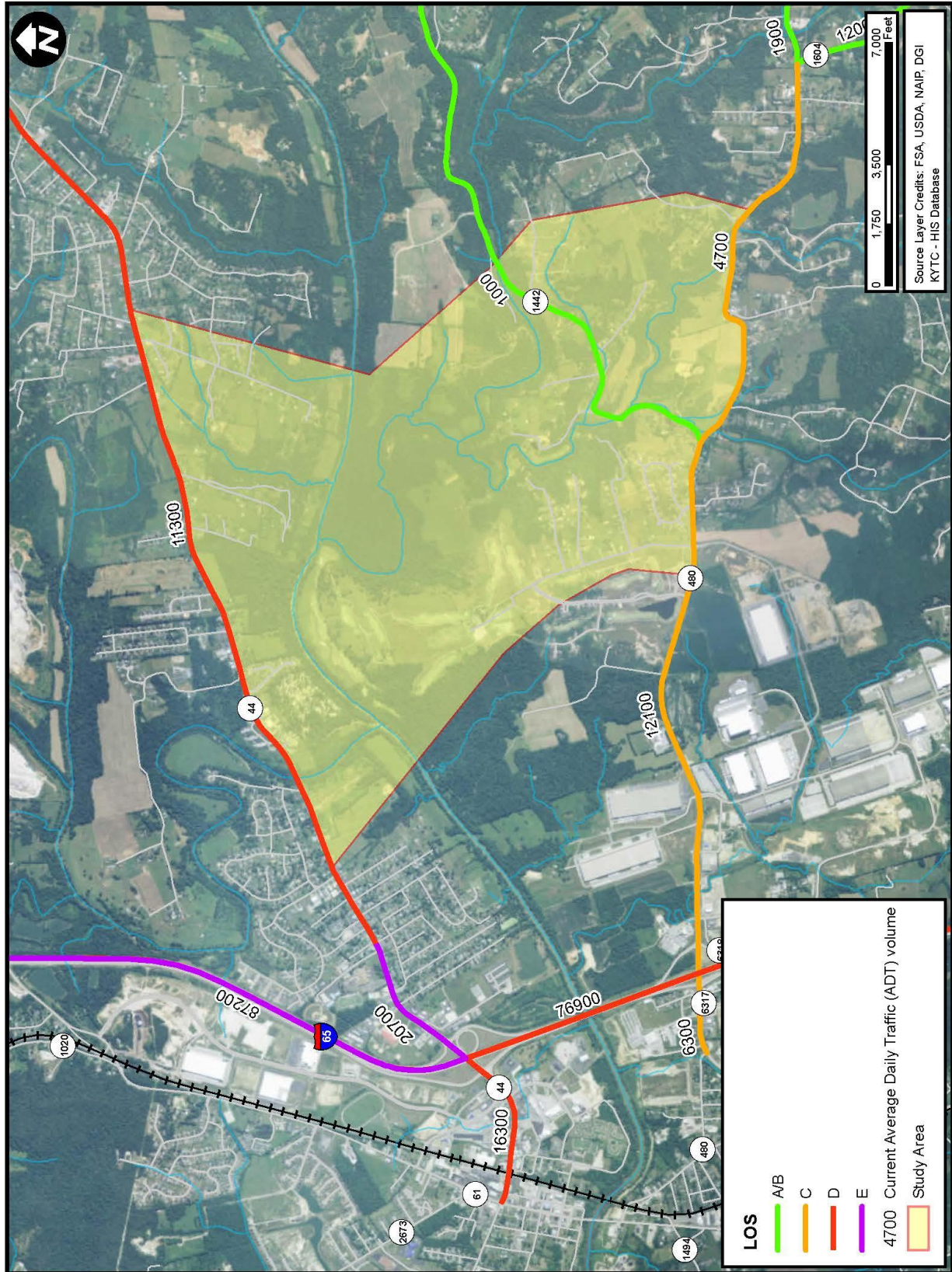


Figure 12 – Current Average Daily Traffic (ADT) Volumes and Level of Service (LOS)

KY 44 TO KY 480 CONNECTOR STUDY

At the facility level, LOS can be computed using methods that involve detailed data and operational parameter input.

The three state-maintained roadways within the study area operate at different levels of service based on current ADT. As might be expected, KY 1442 has the least amount of traffic and operates at a LOS of A/B. KY 480 has a LOS of C, while KY 44 operates at a LOS D.

2.4 CRASH HISTORY

Historical crash data was collected along the existing roadways within the study area for a three-year period between 2010 and 2012. **Figure 13** presents a summary of all crashes reported within the study area over that time period. The crash records and locations are included in **Appendix A**.

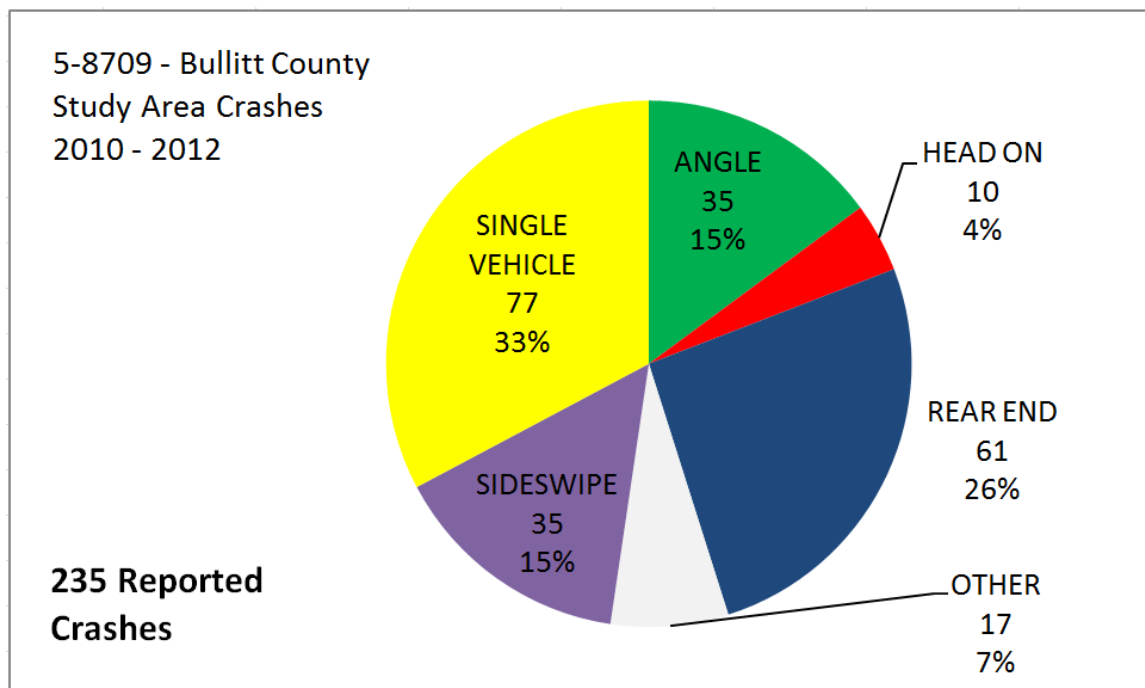


Figure 13 – Summary of Crashes (2010-2012)

A total of 235 crashes, including county routes, were reported within the study area. Single vehicle crashes were the most commonly reported type (77 crashes, 33 percent) followed by rear ends (61 crashes, 26 percent). Angle and sideswipe collisions were tied for the third most common crash type (35 crashes, 15 percent).

Table 4 presents a summary of the crashes on state-maintained roadways within the study area.

KY 44 TO KY 480 CONNECTOR STUDY

Roadway	Total Crashes	Fatal Crashes	Injury Crashes	Property Damage Only (PDO) Crashes
KY 44	83	0	30	53
KY 480	96	1	30	65
KY 1442	6	0	1	5
Total	185	1	61	123

Table 4 - Crash History (2010–2012) for State Maintained Roadways within the Study Area

A total of 185 crashes were reported on state-maintained roadways within the study area with 83 occurring on KY 44 (0 fatality/30 injury/53 PDO), 96 occurring on KY 480 (1/30/65), and six occurring on KY 1442 (0/1/4).

Critical Rate Factors (CRFs) were determined as part of this analysis. The CRF value is calculated by dividing the actual crash rate along a particular roadway segment by the critical rate, which is the maximum accident rate for which it can be said that crashes are occurring randomly based on roadway characteristics and traffic. A CRF less than 1.0 indicates that crashes occur at random, and greater than 1.0 suggests that conditions may exist that contribute to non-random occurrences. The CRF analysis is summarized on **Figure 14**.

KY 44, within the study area, has a CRF between 0.8 and 1.0. That is, crashes appear to be occurring randomly based upon roadway characteristics and traffic. Both KY 480 and KY 1442 have a CRF greater than 1.0, suggesting other factors may be contributing to crashes.



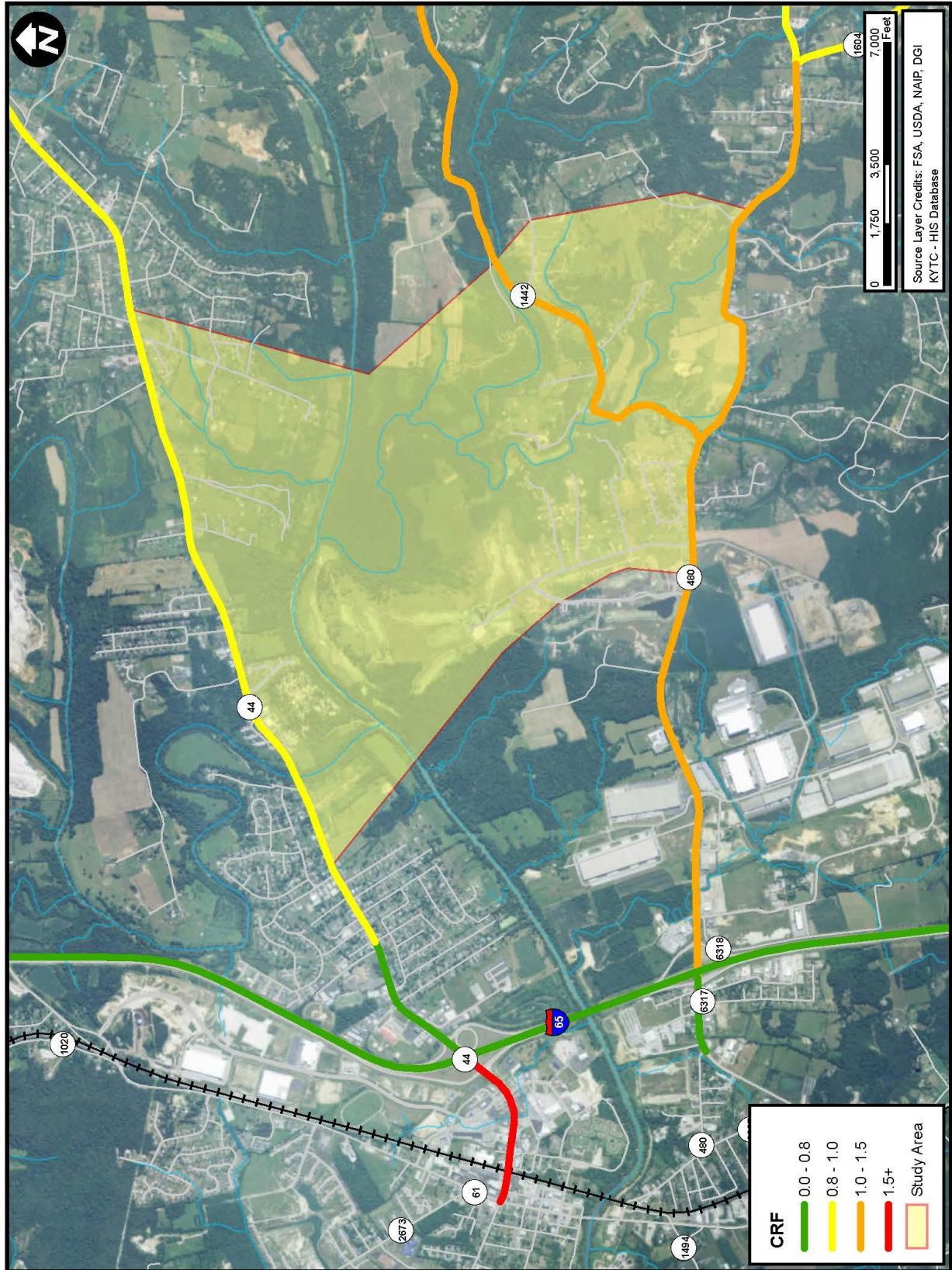


Figure 14 – Crash History (2010-2012) and Critical Crash Rate Factors (CRF)

3.0 ENVIRONMENTAL OVERVIEW

An environmental overview was performed to determine potential impacts of the proposed project. The complete document is included in **Appendix B**. The following sections discuss both natural and human environment resources present within the study area.

3.1 NATURAL ENVIRONMENT

Natural environment resources located within the study area include: surface streams; floodplains; wetlands; ponds; groundwater; threatened, endangered and special concern species and habitat; and woodland and terrestrial areas. Information concerning each resource was obtained from publicly available secondary sources, such as maps and Geographic Information Systems (GIS) files, with limited on-site survey and verification. This study presents impacts to floodplains, streams and tree habitat which include the Indiana Bat.

3.1.1 Threatened and Endangered Species

Information concerning federal endangered, threatened and special concern species and unique habitats in the project vicinity was obtained from the United States Fish and Wildlife Service (USFWS). Several endangered species were identified. These include the Kentucky Glade Cress, mussel populations, Indiana Bat and Grey Bat.

3.2 HUMAN ENVIRONMENT

Through review of secondary source information and field reconnaissance, potentially sensitive resources were identified in the study area. These resources include potential relocation of residential properties as well as a loss of agricultural revenue for land owners.

3.3 GEOTECHNICAL OVERVIEW

The KYTC Division of Structural Engineering, Geotechnical Branch provided a Geotechnical Overview for the study area, a copy of which is found in **Appendix C**. The review noted the study area is well known for exposed bedrock as well as alluvial, terrace, and lacustrine deposits. The predominant formation is the Louisville Limestone Formation which is susceptible to developing karst related issues. It was noted that site-specific geotechnical investigations are critical throughout this region.

Foundations for bridges in the study area are generally founded on bedrock. Smaller structures such as retaining walls and box culverts are commonly founded on shallow foundations or bedrock. Native soils in the area are generally suitable for embankment construction, accommodating embankments to a height of 30 feet with 2:1 sideslopes if proper compaction methods are used. However, in no case should soil cuts be steeper than 2:1. California Bearing Ratio (CBR) values used in pavement design are generally low for subgrades in the area,

ranging from two to five. Chemical modification of subgrade or the use of rock roadbed is sometimes recommended in the area.

3.4 ENVIRONMENTAL JUSTICE OVERVIEW

Issues pertaining to minority, elderly, disability and low income (persons living in poverty) populations in the project study area were evaluated and documented by as a part of the Environmental Overview. The Environmental Justice Summary reports can be found in **Appendix B**. The report concluded that, based on evaluation of data obtained from the U.S. Census Bureau, Environmental Justice (EJ) populations above the state and county averages with respect to race, income, and disability are not present within the study area.

4.0 PUBLIC INVOLVEMENT

Public outreach helped guide the KY 44 to KY 480 Connector Study, particularly in identifying potential issues and developing alternatives. Public involvement was undertaken through a two-step process that involved meetings with project stakeholders and local officials. In addition, the Project Team met with the Bullitt County Concerned Citizens to discuss options for the Connector Road. Information and Summaries for all project meetings, including project team meetings, are found in **Appendix D**.

4.1 STAKEHOLDERS GROUP

A Stakeholders Group consisting of project stakeholders and local officials, and a citizens group was established to solicit feedback at critical stages of the study. **Table 5** includes a list of the stakeholders and local officials invited to participate in the study.


Member	Title / Representing
Bill Duffy	Concerned Families
Dan Cline	Bullitt County Chamber of Commerce
Happy Cahoe	Bullitt County Economic Development Authority
J. Scott Wantland	Bullitt County Economic Development Authority
John Bradshaw	Bullitt County Magistrate
John Sniden	Bullitt County Economic Development Authority
Keith Davis	Bullitt County Public Schools Superintendent
Layne Troutman	Shepherdsville Fire Department
Melanie Roberts	Bullitt County Judge Executive
Roanne Hammond	Planning & Zoning
Rudy Hawkins	Bullitt County Fiscal Court
Ruthie Ashbaugh	Bullitt County Magistrate and Fiscal Court
Steve Froeliche	Concerned Families

Table 5 - Stakeholders Group Members

KY 44 TO KY 480 CONNECTOR STUDY

A Stakeholders meeting was held on September 26th, 2013 at the Shepherdsville Government Center. Approximately 25 individuals attended. The Project Team exhibited displays depicting the existing conditions. The purpose of this meeting was to update the committee on the project status, discuss the project's purpose and need, provide an overview of the existing conditions for the study area and gather input for goals of the study.

A comment form was also provided to allow for a mechanism to collect and document public feedback (as seen on right); 7 completed comment forms were received. Of those 100 percent indicated a future extension to the north should be considered while 57 percent wanted a future extension to the south also considered with the proposal. Almost all responses, 83 percent, wanted the project team to use the existing county roads for an alternative. Minimizing the impacts to homes and business, the natural environment and providing pedestrian and bicycle access were also favorable according to the results received.



NEW CONNECTOR (KY 480 TO KY 44 WITH SALT RIVER CROSSING)
BULLITT COUNTY
 KYTC ITEM #: 5-8709.00

CONSIDERATIONS/ISSUES SUMMARY

PROJECT TEAM SHOULD CONSIDER:	RESPONSES	
	YES	NO
FUTURE EXTENSION TO THE NORTH	7	
FUTURE EXTENSION TO THE SOUTH	3	4
USE OF EXISTING COUNTY ROADS FOR ALTERNATIVE	5	1
MINIMIZE IMPACTS TO HOMES/BUSINESSES	5	
MINIMIZE IMPACTS TO FLOODPLAINS	2	4
MINIMIZE IMPACTS TO NATURAL ENVIRONMENT	4	2
PROVIDE PEDESTRIAN FACILITIES/BICYCLES	5	

COMMENTS

"Extension to the North of 44 should be considered as a priority (high). The area of study is excellent."


"A connector road east of Cedar Grove Elementary should be designed for residential traffic and business growth related to residential use. Additionally, should provide for future growth down to KY 245 while relieving KY 44. The future extension to I-65 and KY 245 seem paramount."


"Connector needs to extend further North or at least be planned for in the future. 44 has to much traffic now."

"Please try to keep the trucks away from the school and buses. Also away to get these trucks into the Business Park rather than Omega Parkway. Also try to use the smallest number of residences that might be disturbed."

"This connector is important but also connecting to Gene Snyder eventually."

"1. Get input from Bernheim/Parklands Floyds Fork 2. Go to the East—Far to the East. 3. Divert/avoid school traffic."





Results from the surveys are found in **Appendix D**.

5.0 DEVELOPMENT OF ALTERNATIVES

5.1 CONCEPT DEVELOPMENT

A series of new connector roadway concepts were developed initially, shown on **Figure 15**. The initial concepts included three possible northern termini on KY 44, referred to as the West Terminal, Mid Terminal and the East Terminal. Five locations along KY 480 were evaluated for a possible southern terminus. Fourteen concepts originating from the termini were developed for the corridor. Along KY 480, the project team elected to consider realigning the route between KY 1442 (Ridge Road) and Ironwood Trail to bypass the existing deficient horizontal and vertical curves along this portion of KY 480. All options that would connect to KY 480 east of Ridge Road would include this realignment.

KY 44 TO KY 480 CONNECTOR STUDY

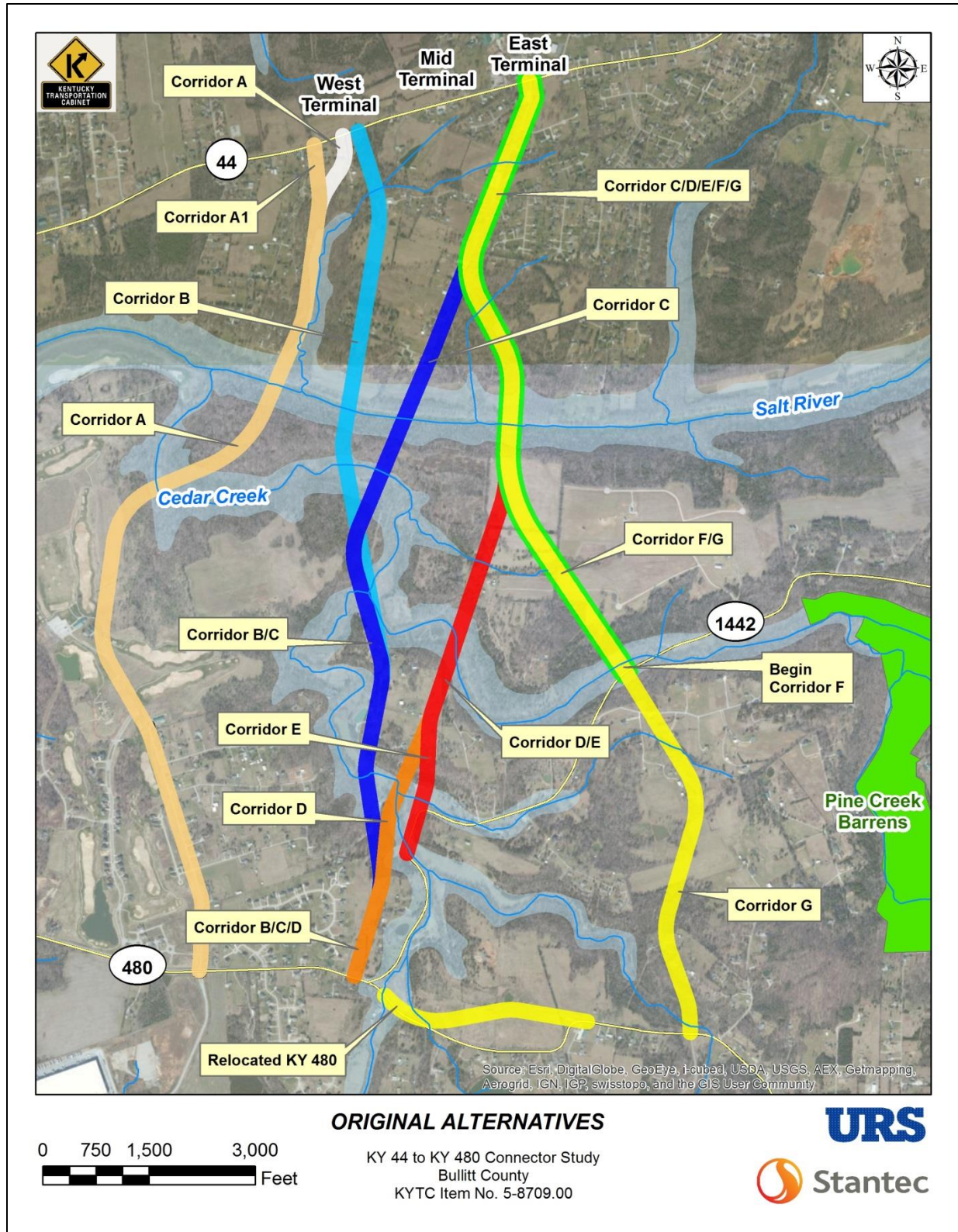


Figure 15 –Conceptual Alternatives

KY 44 TO KY 480 CONNECTOR STUDY

Numerous constraints were revealed while defining these concepts. Heritage Hills Golf Course and neighborhood is located to the west of the study area. The Concerned Families of Bullitt County, consisting largely of neighborhood residents as well as other interested citizens, developed a conceptual alternative on their own which was located to the west near I-65. This connection would not serve the Purpose and Need for the project as well as the proposed eastern connections and was therefore dismissed.

A significant portion of the study area is characterized by stream crossings, wetland areas, difficult terrain, and significant floodplain encroachment. It is envisioned that any new route traversing floodplains in this area will be built on structure (bridges and/or box culverts).

The project team discussed various typical sections for potential consideration, including an option with fewer than four-lanes. The recommended typical sections are shown in **Figure 16**. It was decided early that a two-lane initial option (one lane per direction) and four-lane ultimate option (two-lanes per direction) would be considered as the study progressed. In an effort to minimize right of way impacts the four-lane typical section included two 12-foot lanes per direction, 8 foot shoulders (paved and earth) and a 20 foot raised median.

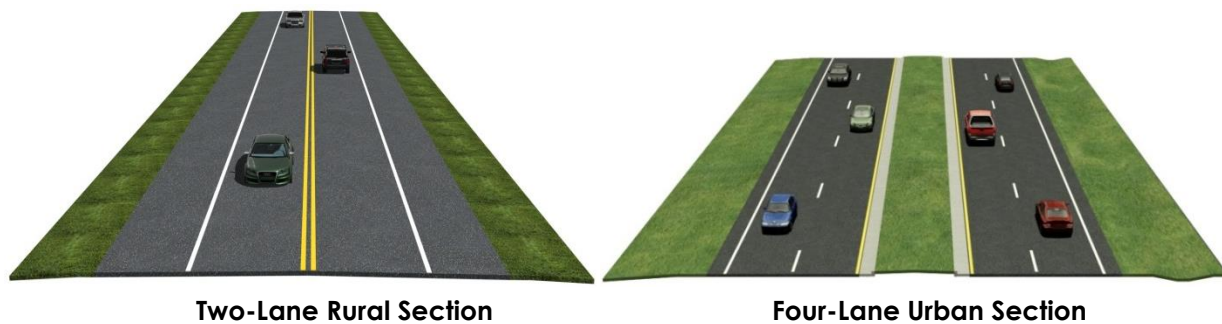


Figure 16 – Typical Sections

5.2 TRAFFIC FORECASTS

For this study, the KYTC Division of Planning worked with KIPDA to utilize the regional travel demand model to developed traffic forecasts. A 2038 forecast year was developed for the KY 44 to KY 480 Connector Study using the KIPDA model. Road network data in the model was reviewed and modified to reflect current configurations. In addition, recent class count data was incorporated to help revalidate the model.

While KIPDA's current version of the regional travel demand model for Bullitt County was developed within the past four years, the socioeconomic data used for the 2013 base year were built from the 2010 Census household and population data. This data was then factored to match 2030 population forecasts taken from the Kentucky State Data Center (KSDC). The forecasted population growth rate was 1.6% per year as shown in **Figure 17** below.

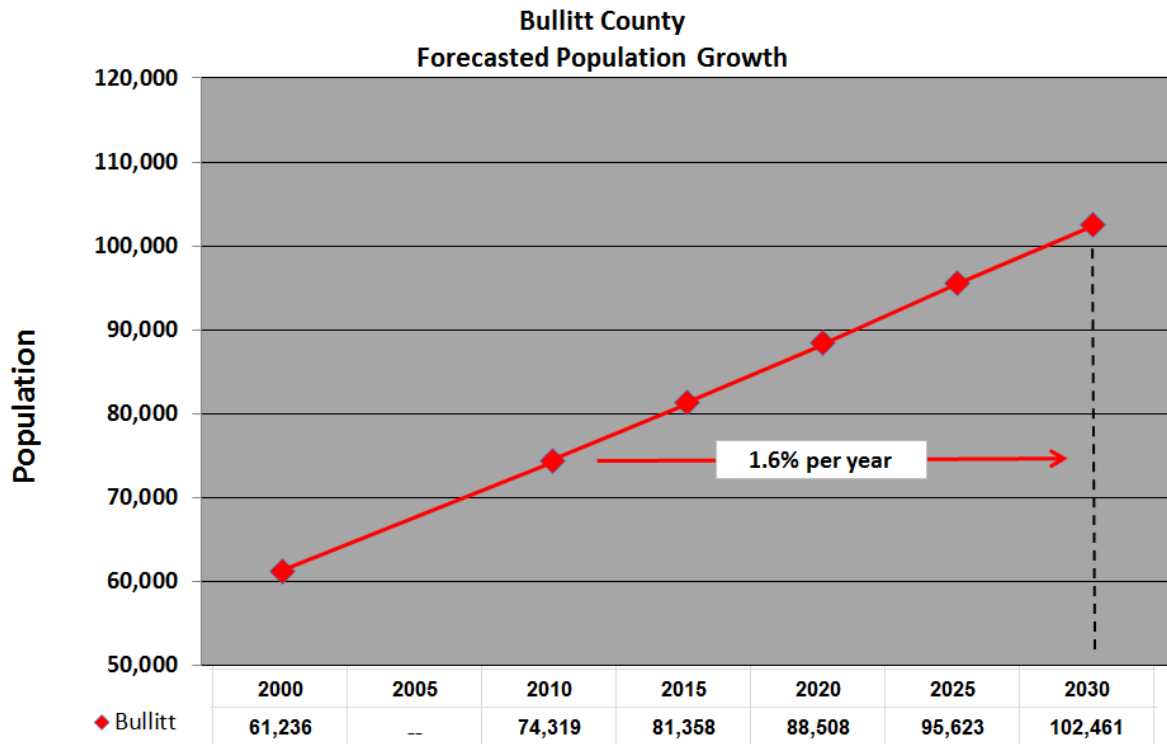


Figure 17 – 2013 Bullitt County Population Forecasts
(Source: Kentucky State Data Center)

5.2.1 Future Year Updates

The 2038 network reflects the current Existing and Committed (E+C) road projects that provide new or additional roadway capacity. These projects as shown in **Figure 18** include:

- Major Widening of KY 44 between Shepherdsville and Mount Washington;
- New interchange at KY 61 and I-65; and
- The proposed Mount Washington Connector, a new route providing a northwest connector around Mount Washington.

The KYTC Division of Planning provided a preliminary traffic forecast report for the project team in September 2013, found in **Appendix F**.

KY 44 TO KY 480 CONNECTOR STUDY

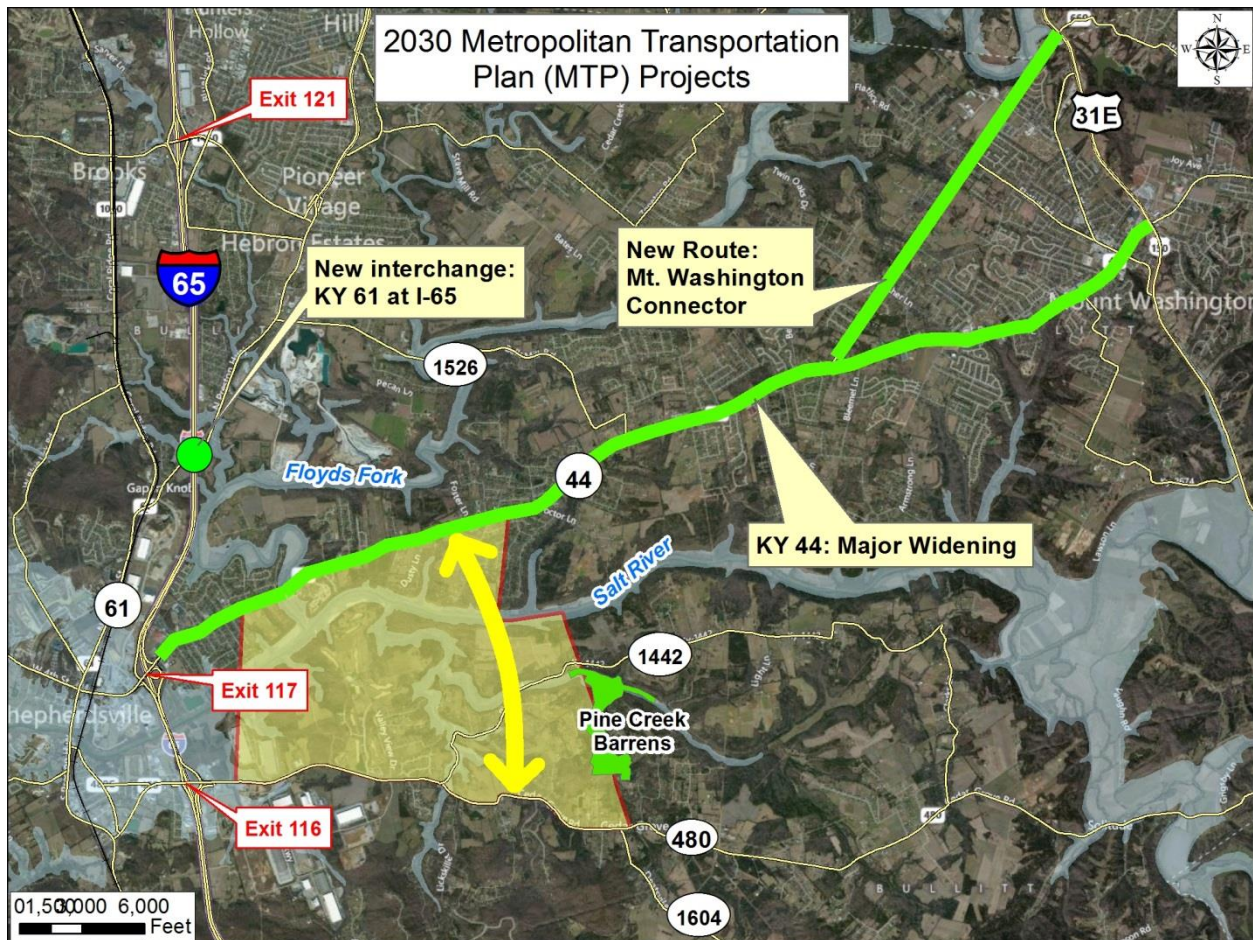


Figure 18 – 2030 Metropolitan Transportation Projects

At the Stakeholders meeting held on September 26, 2013 in Shepherdsville, it was suggested the project study should consider an extension to the north of KY 44 to either I-265 in Jefferson County or to I-65 via a future interchange at I-65 and KY 61. Investigating the possibility of a northern extension required the project team to revisit the initial connector concepts to ensure an extension north of KY 44 would be feasible. A cursory analysis identified two general option locations for the northern extension including KY 61 north of I-65 (Option 1) and KY 1526 (Bells Mill Road) east of KY 61 (Option 2).

The KYTC Division of Planning developed the 2038 traffic volumes for the proposed roadway and the northern extension based on growth rates from the KIPDA regional travel demand model and likely development trends within the study area. As the type and intensity of development has grown, the forecasting task examined a future growth scenario to estimate the future demand for travel.

Figure 19 and **Figure 20** display the revised traffic forecast projections received in April, 2014 for the proposed roadway and northern extension options. Depending on the future desire to extend the connector to the north, projected traffic volumes along the KY 44 to KY 480 Connector would range from 14,200 to 16,000 vehicles per day. **Appendix F** includes the latest traffic forecasting report.

KY 44 TO KY 480 CONNECTOR STUDY

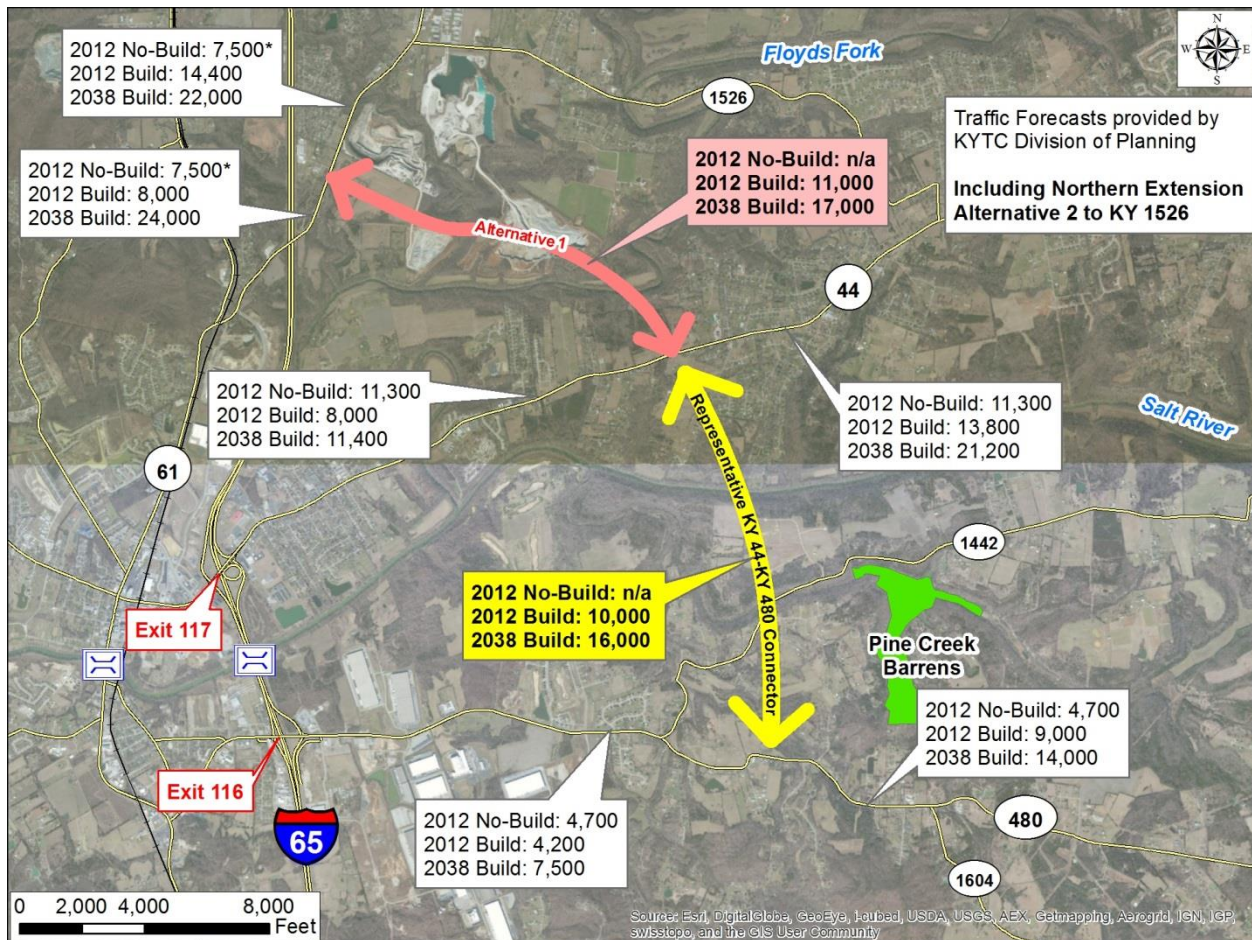


Figure 19 – Existing (2012) Traffic Estimates and 2038 Traffic Forecasts for Option 1

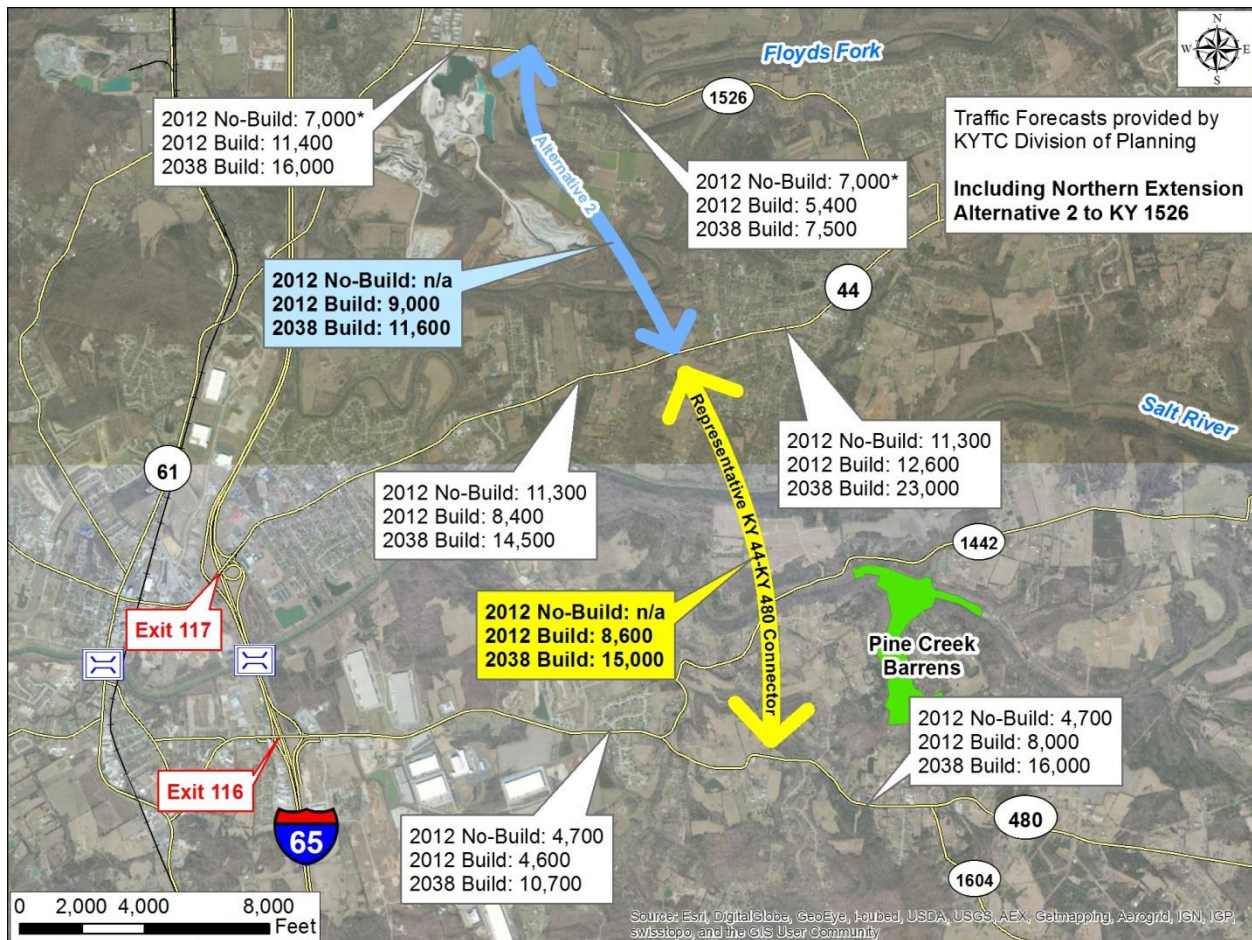


Figure 20 – Existing (2012) Traffic Estimates and 2038 Traffic Forecasts for Option 2

5.3 REVISED CONCEPTS

Based on input from the Stakeholders meeting, updates to the initial concepts were developed and presented at the second project team meeting. In addition, the Stakeholders requested consideration of a northern extension from KY 44. The revised concepts, consisting of 14 variations, are shown on **Figure 21**. Accommodating a northern extension eliminated consideration of an eastern terminal on KY 44 as impacts to neighborhoods to the north would be significant. The west and mid terminals remain viable candidates for terminating the connector on KY 44.

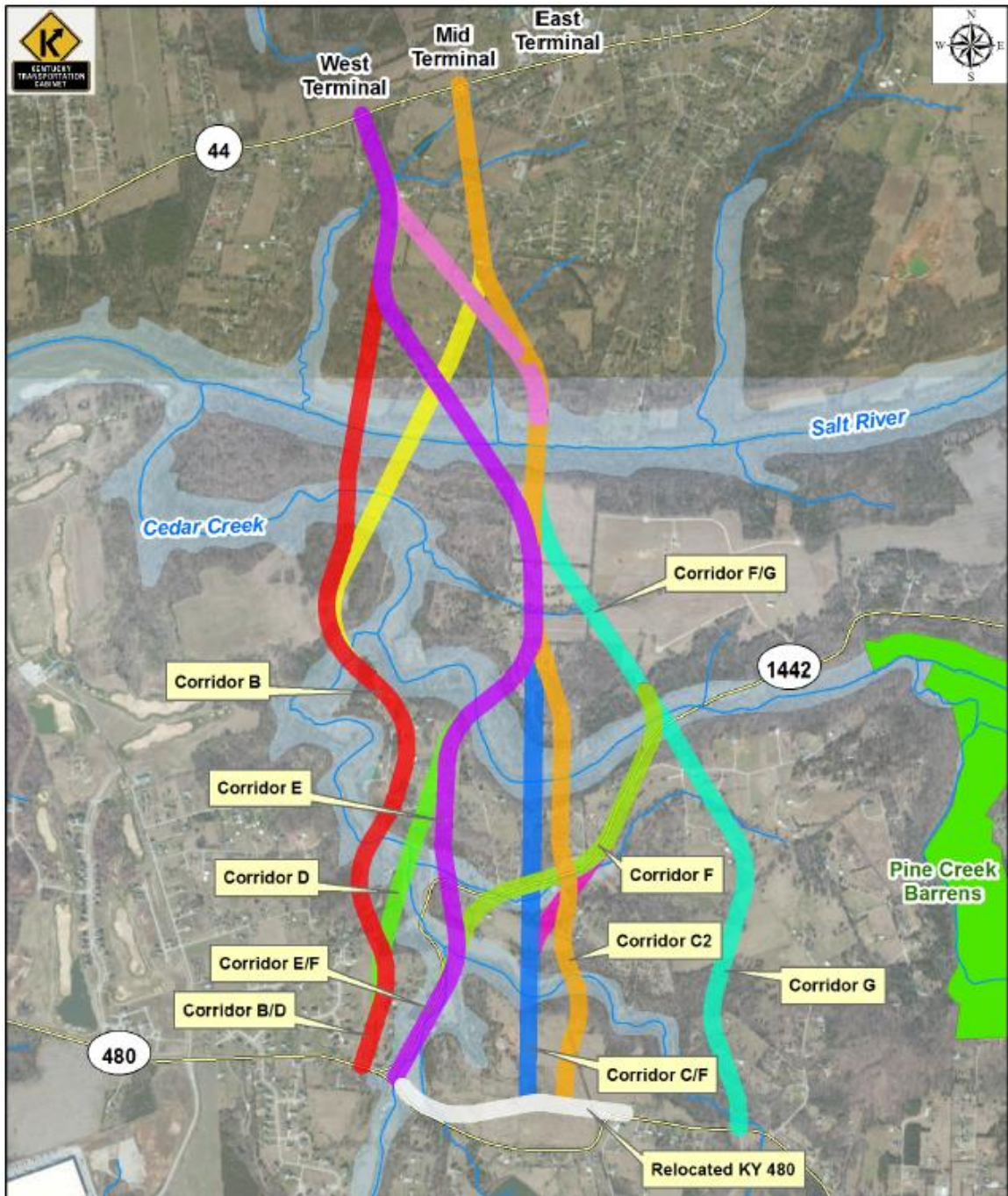


Figure 21 – Revised Connector Roadway Concepts

The Revised Connector Roadway Concepts are described in more detail below:

Corridor B

1. Contains 2 concepts each between 2.4 – 2.5 miles in length
2. Up to 19 relocations
3. Cost estimate between \$53 - \$55.2 million

KY 44 TO KY 480 CONNECTOR STUDY

Corridor C

1. Contains 2 concepts including the KY 480 realignment totaling 3 miles in length
2. 12/13 relocations
3. Cost estimate between \$64.8 million

Corridor C2

1. Restructured lengths over Cedar Creek
2. Cost estimate between \$46.3 million

Corridor D

1. Contains 2 concepts each being 2.5 miles in length
2. 7-14 relocations
3. Cost estimate between \$47.2 – \$48.6 million

Corridor E

1. Contains 2 concepts each being 2.5 miles in length
2. 12-13 relocations
3. Cost estimate between \$44 - \$50.6 million

Corridor F

1. Contains 2 concepts including the KY 480 realignment each between 2.9 – 3.4 miles in length
2. 11-19 relocations
3. Cost estimate between \$45.7 - \$49.2 million

Corridor G

1. Contains 2 concepts including the KY 480 realignment each 3.3 miles in length
2. 9-17 relocations
3. Cost estimate between \$37.4 - \$38.8 million

6.0 RECOMMENDATIONS

At the April 2014 project team meeting, it was decided to advance 8 conceptual alternatives as recommendations for further evaluation in the next phase. The final study recommendations are shown on **Figure 22**. Given the residential areas adjoining the Heritage Hills Golf course, the project team eliminated the western corridors (B, D and E) from further consideration. Corridors to the east of Ridge Road (KY 1442) were chosen to carry forward. Structure lengths to cross the Salt River and Cedar Creek are estimated based upon available FEMA floodplain mapping. As mentioned previously, all concepts that connect to KY 480 east of Ridge Road (Corridors C, F_{MID}, F_{WEST}, and G) require a realignment of a portion of KY 480 which is included in the construction cost estimate. **Table 6** summarizes the recommended corridors for advancement to the next phase of the project.

KY 44 TO KY 480 CONNECTOR STUDY

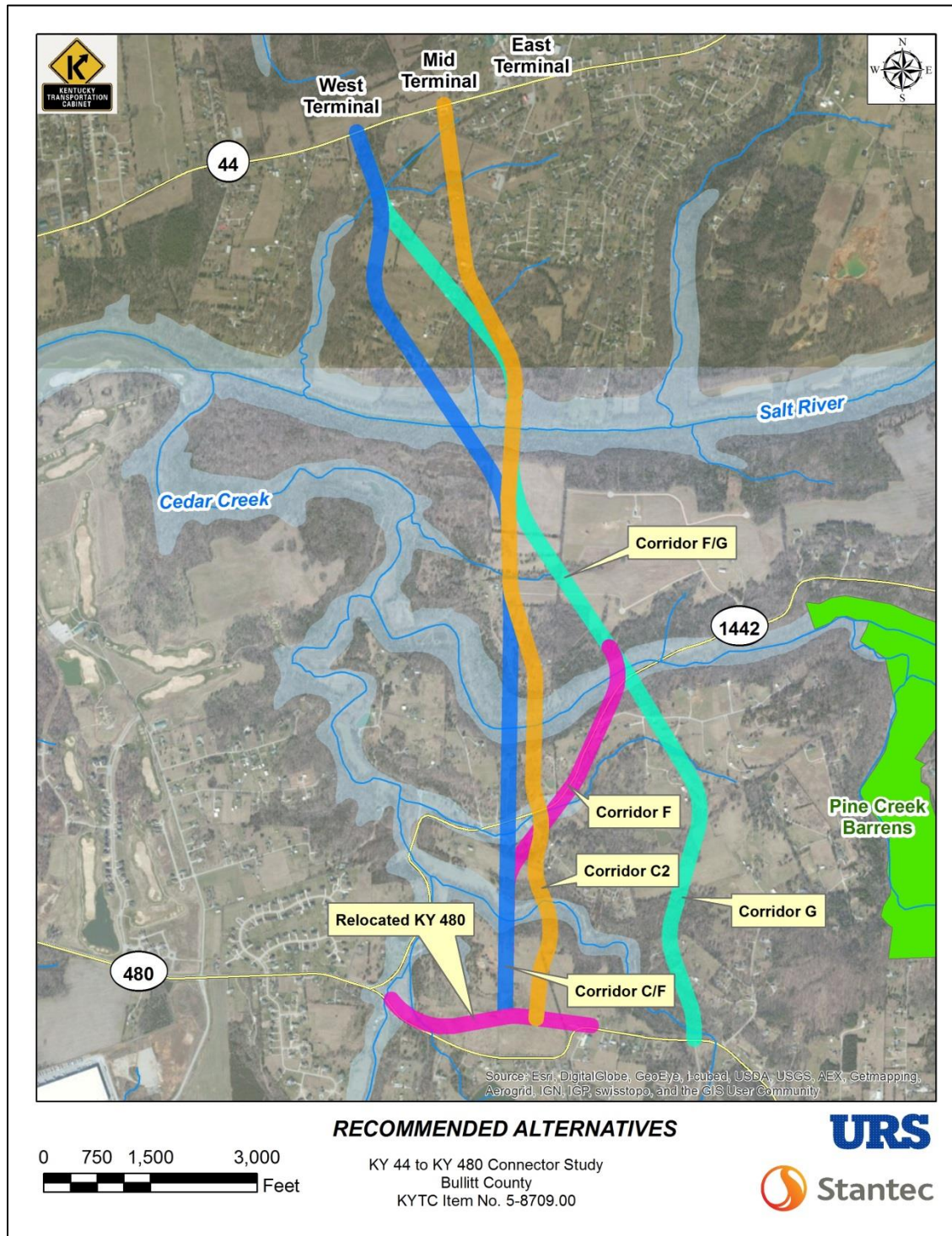


Figure 22 – Recommended Conceptual Alternatives

KY 44 TO KY 480 CONNECTOR STUDY

Corridor	Length (miles)	Structure Length (ft.)		Probable Relocations	Opinion of Probable Cost for two-lane Construction	Opinion of Probable Cost for four-lane Construction
		Salt River	Cedar Creek			
C-MID	2.5	790	2,660	15	\$26,800,000	\$49,800,000
C-WEST	2.5	790	2,660	8	\$27,000,000	\$49,900,000
C2-MID	2.5	790	1,350	15	\$19,900,000	\$35,600,000
C2-WEST	2.5	790	1,350	8	\$20,000,000	\$35,700,000
F-MID Connector	3.3	1,155	740	18	\$20,100,000	\$35,400,000
F-WEST Connector	3.4	1,185	740	11	\$20,600,000	\$32,000,000
G-MID	3.3	770	780	17	\$17,200,000	\$29,900,000
G-WEST	3.3	790	780	9	\$17,800,000	\$31,000,000

Table 6 – Recommended Conceptual Alternatives Summary

Estimated construction costs were calculated for the two-lane and four-lane typical sections. Cost is reflective of the estimated earthwork, drainage, structures and pavement. Right of way relocations are based on a four-lane roadway. The structure lengths were based upon the estimated limits of the floodplains, resulting in a conservative approach that should be revisited during subsequent project phases. The F-MID corridor has the highest number of probable residential relocations. Corridor C-WEST has the highest construction cost estimate for both a two-lane and a four-lane roadway with 8 potential residential relocations. Additionally, the alignment will require one bridge over 2,500 feet in length. Corridor G includes the two shortest structure lengths over the Salt River and Cedar Creek.

6.1 NEXT STEPS

The next phase would be to advance the 8 recommended corridors into Phase 1 Design (Preliminary Engineering and Environmental). Further analysis and public involvement will refine the corridors. As data is collected the concepts will be evaluated for benefits/impacts and cost. Ultimately a preferred alternative will be selected for advancement to final design as funding is identified in the Six-Year Highway Plan.