

**KENTUCKY TRANSPORTATION CABINET**  
**KY 32 ALTERNATIVES STUDY, ROWAN/ELLIOTT COUNTIES**

***Reconstruction/Relocation of KY 32  
from KY 504 at Elliottville in Rowan County  
to KY 7 at Newfoundland in Elliott County***

**November 2009**

The Kentucky Transportation Cabinet (KYTC) has undertaken this planning study to gather information necessary to develop and evaluate alternatives for the possible reconstruction or relocation of a portion of KY 32 in Rowan and Elliott counties. The eastern terminus for the proposed project is KY 7 at Newfoundland in Elliott County and the western terminus is KY 504 at Elliottville in Rowan County. A map of the study area is shown on the following page.

Existing KY 32 between KY 7 and KY 504 is a two-lane, undivided highway with narrow lanes and minimal shoulders. There are an inordinately large number of horizontal and vertical curves, resulting in poor driving conditions that restrict sight distances and travel time. Of the 112 horizontal curves along this portion of KY 32, 99 (88.4%) do not meet the minimum design requirements. Also, 118 of the 134 vertical curves (88.1%) do not meet minimum design requirements. Although the posted speed limit is 55 mile per hour along the route, the actual average travel speed is estimated at approximately 40 miles per hour.

This portion of KY 32 is functionally classified as a Rural Major Collector and is on the State Secondary system. This is a regionally important route that connects the two county seats of Rowan and Elliott counties, Morehead and Sandy Hook, and provides access for southeastern Kentucky residents to and from Morehead. KY 32 is also a major access route to I-64, an east-west interstate route between Ashland and Louisville. Of special importance, I-64 is a direct route to Lexington, a major location of some types of jobs, businesses, services, and other facilities not available at Morehead.

### **Project Purpose and Need**

The primary purpose of the proposed KY 32 project is to improve highway access and safety to and from Sandy Hook, Elliott County, and southeastern Kentucky to businesses, medical facilities, post-secondary education facilities, other services or attractions, and I-64 at

Morehead through improved travel time, improved travel conditions at high crash locations, and improved travel conditions for emergency medical services and school buses.

As these needs are addressed, a number of secondary goals could provide additional benefits, as follows:

- Support, preserve, or enhance economic opportunities in Elliott County and the surrounding region;
- Support, preserve, or enhance tourism in the region;
- Incorporate context sensitive features.



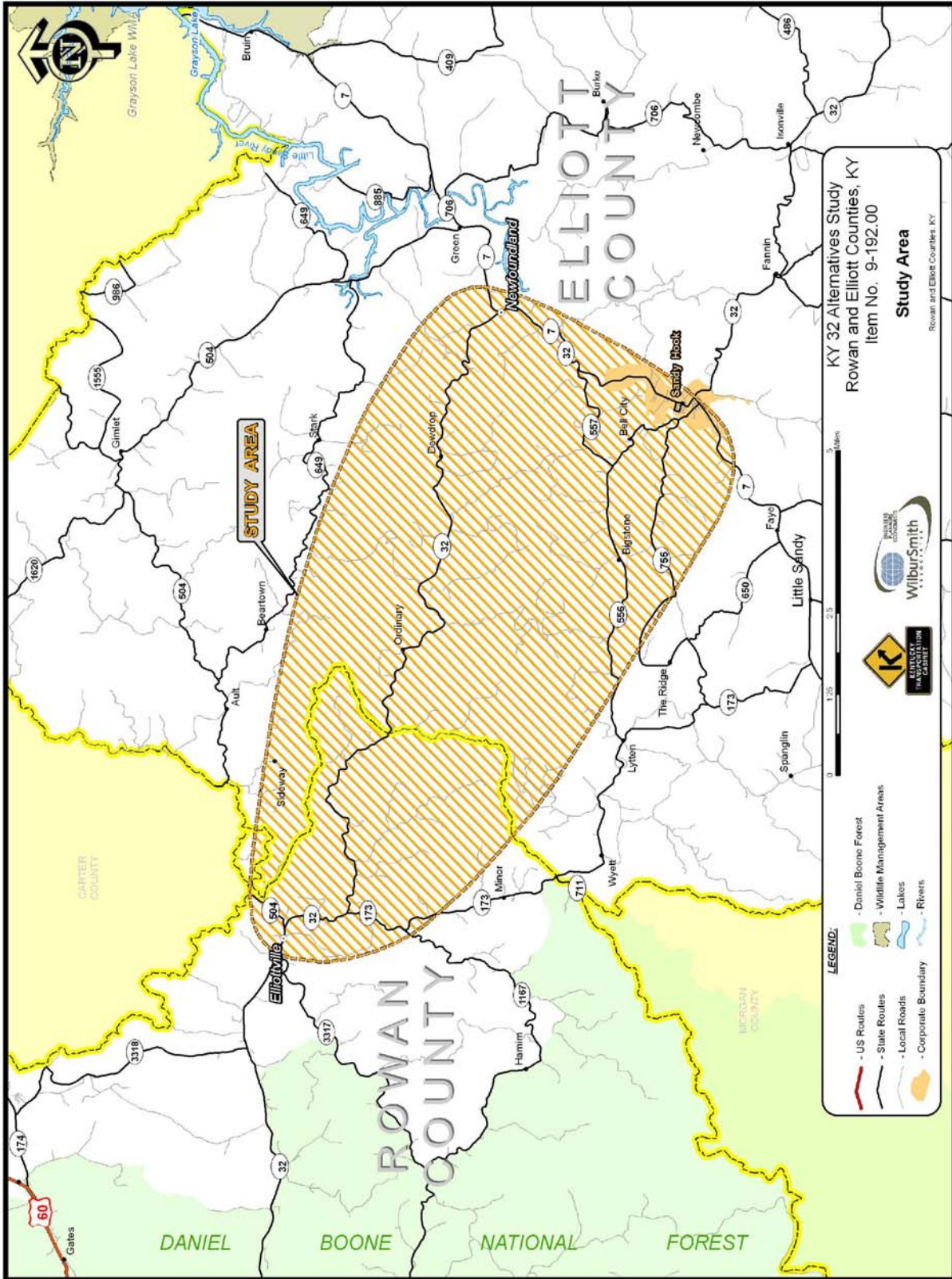
*Typical Corridor View along KY 32*

### **Traffic Characteristics**

Existing traffic volumes along KY 32 in the study area range between 470 and 3,670 vehicles per day (vpd), with the higher volume north of KY 173 and the lower volume at the mid-point of the study section.

Existing truck percentages are approximately 5% of the total traffic along the route.

KY 32 currently operates at Level of Service (LOS) B or C. Typically, a minimum of LOS C is considered acceptable in rural areas.



Assuming no transportation improvements, Year 2030 traffic was estimated based on historic traffic growth using a compounded annual growth rate of 2.0%, resulting in about a 50% increase. The future 2030 average daily traffic (ADT) is estimated to range from 730 to 5,670 vpd. The study portion of KY 32 is expected to continue operating at LOS B and C.

An investigation of the crash history for 2004-2007 showed a number of vehicle crashes along the study corridor. The Critical Rate Factor (CRF) was used to analyze this data. The CRF is a measure comparing the frequency of crashes to average crash rates on similar roads in the state; a CRF greater than 1.00 at a given location indicates that crashes may not be due to random circumstances.

In the study area, high crash spots were found on KY 32 at two curves just north of KY 7 and one fatality was reported on Hogtown Hill just south of Elliottville. Several injury crashes were reported at or near KY 173.

### Environmental Issues

A number of environmental factors and sensitive land uses were identified through the course of this study, including:

- Laurel Creek and Big Caney Creek, which are classified as Cold Water Habitats, Exceptional Waters and Reference Reach Streams;
- Prime farmland;
- Potential endangered or threatened species habitat, including the federally endangered Indiana bat, gray bat, Virginia big-eared bat, northern riffleshell mussel and pink mucket mussel.
- Potential water quality issues associated with the large number of streams in the project area;
- Numerous cemeteries and possibly some unmarked graves;
- Known and potential historic structures and archaeological sites;
- Karst topography and potential abandoned mines;
- A major crude oil pipeline crossing existing KY 32 near Elliottville;
- An estimated 60 to 70 oil wells; and
- Hazardous materials or UST sites.

### Public Involvement

Throughout the study, local citizens, public officials, and interest groups were given the opportunity to provide input. In addition, input was solicited from many local, state, and federal agencies. Survey responses from the first public meeting indicated that approximately 86% of the respondents felt that KY 32 needs to be improved. Preserving churches, cemeteries, homes, Laurel and Big Caney Creek, other natural resources, and farmland were the primary concerns.



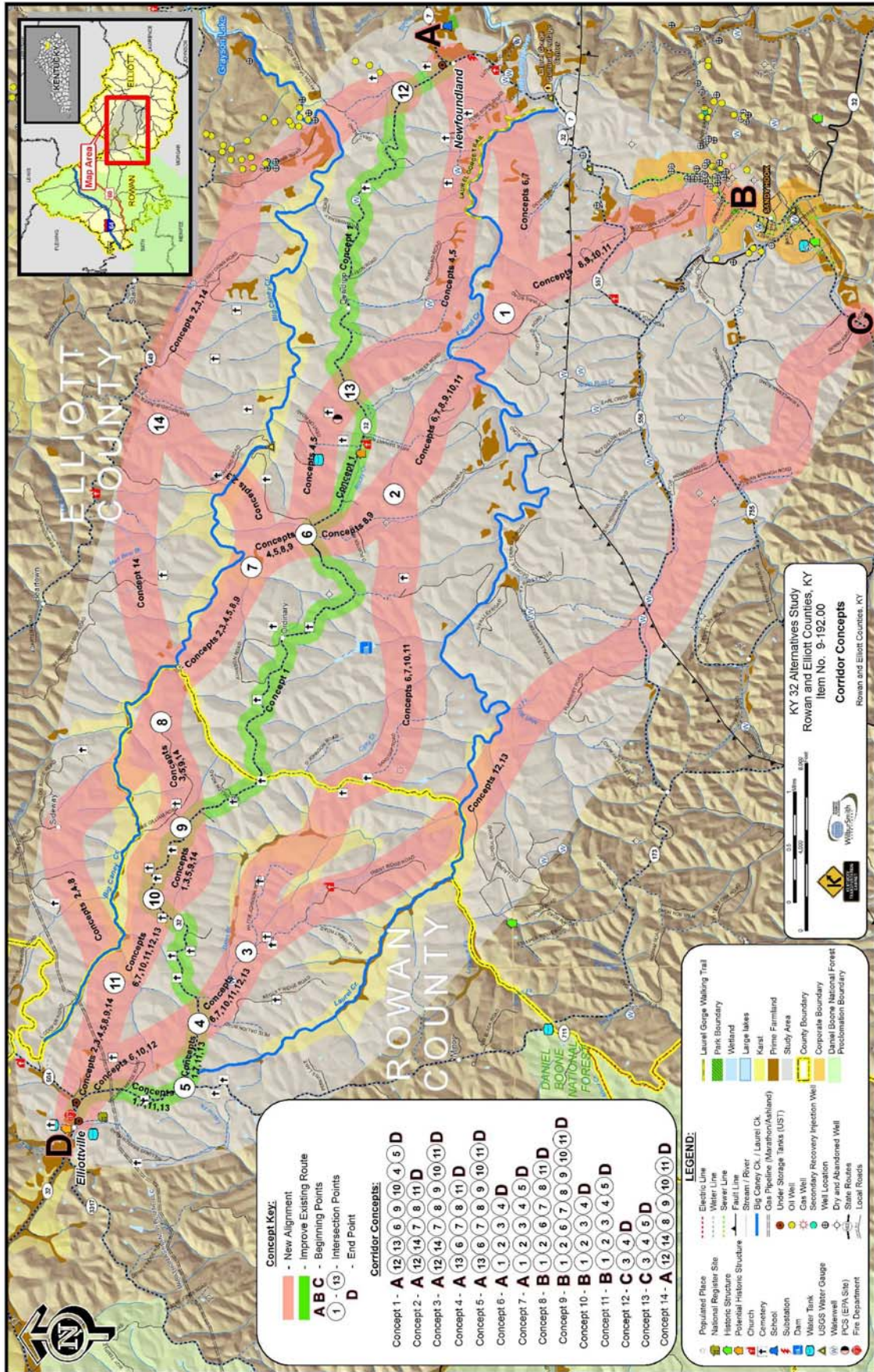
*Second Public Meeting*

### Alternatives Evaluation Process

A tiered evaluation process was undertaken to evaluate the proposed alternatives. Initially, 14 corridor concepts were developed. A map of these preliminary corridor concepts are shown on the following page.

The corridors were evaluated as part of a Level 1 Screening process. Findings were presented to the project team, and a number of these alternatives were not recommended for further study because they did not adequately meet the Level 1 criteria. This resulted in three corridor alternatives, and one Practical Solution alternative (Alternative 1P) along with the proposed spot improvements to be carried forward for further evaluation.

As part of the Level 2 Screening process, environmental and geotechnical assessments were conducted for the remaining four Alternative Corridors, a Spot Improvements Alternative, and the No Build Alternative. Local citizens, public officials, and representatives of government resource agencies were then given the opportunity to react to the proposed improvement alternatives through a second round of public involvement activities.



Results of the Level 2 Screening were summarized and presented to the project team for discussion. The result of this meeting was the recommendation of a preferred build alternative. This alternative was divided into individual construction segments, which were then prioritized.

In addition to the corridor concepts, 10 potential spot improvements were identified based on crash history, KYTC District input, public input, and locations with less than a 25 mph design speed.

## Recommendations

The final recommendation is an improvement along the existing route (Alternative 1), with the option of incorporating a practical solutions footprint. However, the initial Alternative 1 corridor has been widened to provide an opportunity for sections to be constructed off existing KY 32, if warranted, as shown in the map on the following page.

Concurrent with this recommendation, lower cost, short-term spot improvements have been prioritized and are also recommended to improve Hogtown Hill, the intersection at KY 173, and several substandard curves along the route. As funds become available, these improvements should be designed consistent with an overall improvement of the existing route in the future. The KYTC should continue to review these spot improvement locations and should have the flexibility to revise the proposed project description and/or rearrange these priorities in the future, as needed, based on the level of available funds and changing conditions over time.

## Typical Section

For planning level cost estimates, two potential cross-sections were used, one using full design guidelines and one using a “practical solution” option.

Applying full design guidelines for a Rural Major Collector and a 55 mile per hour design speed, a typical section was assumed for cost estimating purposes only. This included 12-foot driving lanes, 8-foot graded shoulders, and 12-foot 6:1 cut-and-fill slopes, resulting in a 20-foot clear zone. The improvement to KY 32 was assumed to be a two-lane section with turn lanes at major intersections.

For planning purposes only, a “practical solution” option was developed for improvement of the existing roadway, which included a typical section with 11-foot driving lanes and 8-foot graded (6-foot paved) shoulders.

While these typical sections developed for the planning study can provide some guidance, the typical section should be decided in the next phase of project development to allow flexibility to address issues that arise and to further explore the practical solutions option.

## Cost Estimates

As shown in the following table, the full-design cost estimate for the recommended alternative is \$97.5 million, and the practical solution design cost estimate is \$51,500,000. Therefore, costs could vary greatly depending on decisions made in future project phases.

Phase of Project Development	Cost Estimate: Full Design	Cost Estimate: Practical Solution
Design	\$6,400,000	\$2,700,000
Right-of-Way	\$16,500,000	\$11,400,000
Utility Relocation	\$10,900,000	\$10,900,000
Construction	\$63,700,000	\$26,500,000
<b>Total</b>	<b>\$97,500,000</b>	<b>\$51,500,000</b>

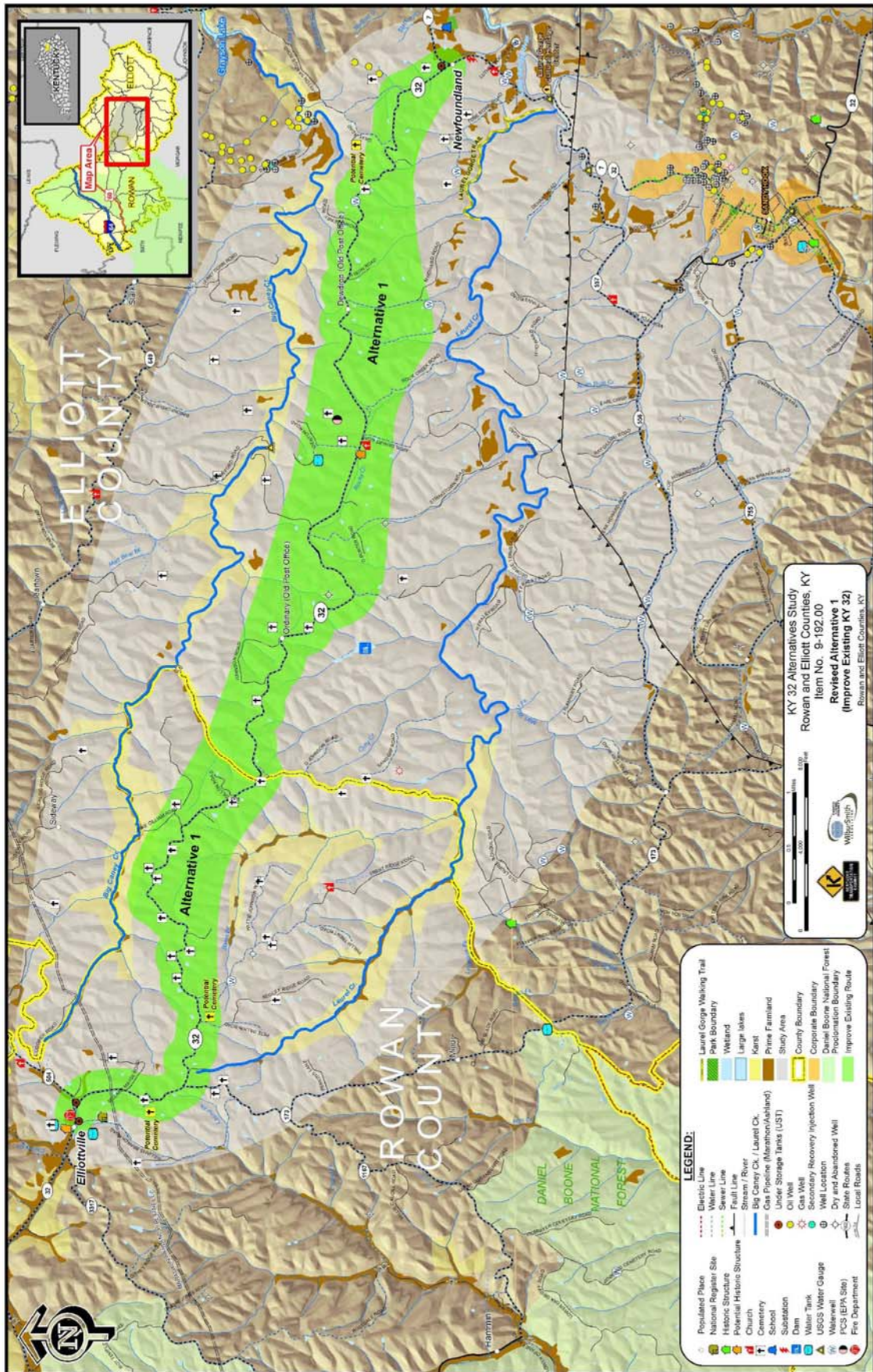
The total cost for all of the recommended spot improvements is \$15.5 million.

Funds totaling \$33,850,000 for planning, design, right-of-way, utility relocation, and construction are identified in the *Six-Year Highway Plan FY 2008-2014*, with construction scheduled for 2014.

## Construction Considerations

A number of issues were identified through this study that should be considered in future design and construction phases, as follows:

- Erosion and Sediment Control - Measures should be utilized to control erosion and sedimentation during and after the commencement of earth-disturbing activities. Consideration should be given to erosion control methods; a *Best Management Practices for Construction Activities* guide is available from the Kentucky Division of Conservation.



- Air Quality - According to the Kentucky Environmental and Public Protection Cabinet, Division of Air Quality, the following Kentucky Administrative Regulations apply to the proposed project: (1) 401 KAR 63:010 Fugitive Emissions; (2) 401 KAR 63:005 Open Burning; (3) the Clean Air Act; and (4) Title 23 and Title 49 of the United States Code. Applicable local government regulations should also be considered.
- Waste Management - Solid wastes occurring as part of the construction process should be disposed of at a permitted facility. Underground storage tanks and other contaminants should be properly addressed as they are encountered.
- Traffic Operations - Maintenance of traffic and residential access should be preserved throughout the construction process.
- Geotechnical Considerations - The primary geotechnical challenges appear to be:
  - Stability of major cuts into hillsides would require close scrutiny before and during construction to minimize risk of failure due to groundwater seepage, unfavorably jointed bedrock, and layers of weak materials. As recommended by the KYTC Geotechnical Branch, new roadway(s) should cross perpendicular to the Little Sandy Hook Fault to minimize slope design and maintenance issues.
  - Since unidentified mines for coal and the Olive Hill Clay Bed of Crider exist in the study area, impacts to design and construction costs could be significant.
- Numerous oil, gas and water wells are located in the recommended corridor.

## Additional Information

Additional information regarding the KY 32 Alternatives Study can be obtained from the following KYTC Division of Planning staff members:

- Keith Damron, P.E., Director
- Steve Ross, P.E., Branch Manager
- Jill Asher, P.E., Team Leader
- Thomas Witt, P.E., Project Manager

The following address and phone number can be used to reach these individuals:

Division of Planning  
Kentucky Transportation Cabinet  
200 Mero Street, 5<sup>th</sup> Floor  
Frankfort, KY 40622  
Phone: (502) 564-7183

Study documents can be viewed at the following website:

[http://www.planning.kytc.ky.gov/projects/dist\\_9.asp](http://www.planning.kytc.ky.gov/projects/dist_9.asp)

