Environmental Overview

Alternatives Study for KY 163 from KY 90 to the Louie B. Nunn (Cumberland) Parkway
Metcalfe County, KY
Item No. 3-129.00

Prepared for:

Wilbur Smith Associates, Inc.
465 E High Street, Suite 100
Lexington, KY 40507

Prepared by:

Third Rock Consultants, LLC
2514 Regency Road, Suite 104
Lexington, KY 40503

January 17, 2007
Revised February 12, 2007

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January 17, 2007
Revised February 12, 2007

Prepared by:

Virginia Goodman

Reviewed by:

Rebecca Colvin

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1.0 PROJECT DESCRIPTION

Wilbur Smith Associates (WSA) was retained by the Kentucky Transportation Cabinet (KYTC) Planning Division to perform an alternatives study for KY 163 from KY 90 north to the Louis B. Nunn (Cumberland) Parkway at Edmonton in Metcalfe County, Kentucky. The alternatives study includes consideration of a connection (including a possible new interchange) to the Parkway. The identification of possible KY 163 corridors is being undertaken to improve safety and connectivity in Metcalfe County. The Study Area is approximately 8.5 miles long and 2,000 feet to either side of existing KY 163 from KY 90 to the southern boundary of Edmonton, and the width of Edmonton from the Nunn Parkway interchange east to the Industrial Park. The Study Area is shown on Exhibit 1, page 2.

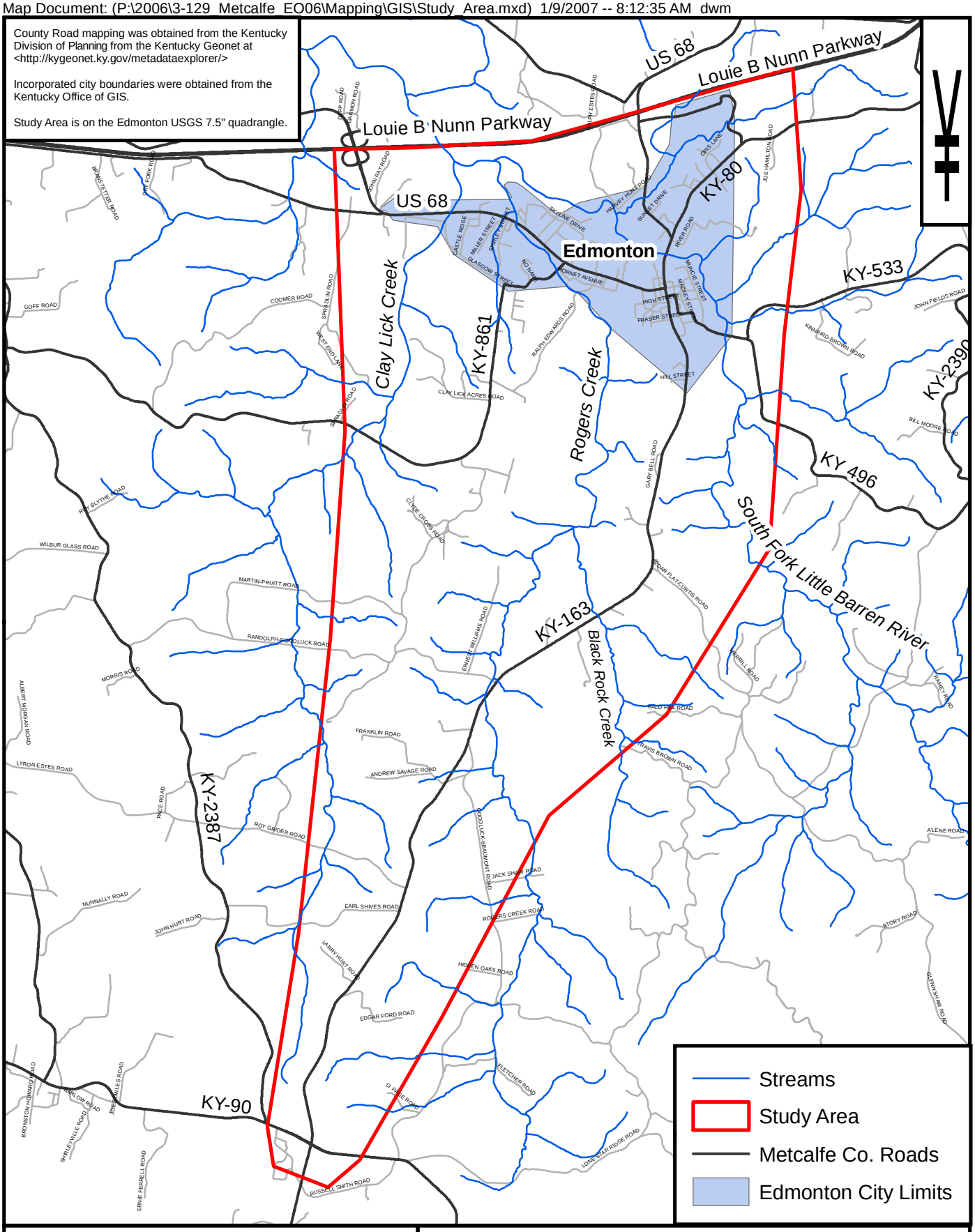
Third Rock Consultants, LLC (Third Rock) was retained by Wilbur Smith Associates to conduct an environmental overview of resources in the Study Area. Analyses were performed for Air Quality, Aquatic and Terrestrial Ecosystems, Socioeconomic (excluding environmental justice), and petroleum Underground Storage Tanks (UST)/Hazardous Materials. In accordance with its scope of work, Third Rock researched available data prior to performing the field reconnaissance. The field reconnaissance both verified existing information and supplemented findings with on-the-ground assessment of resources. Full baseline-level analysis was not performed. This report summarizes the environmental conditions in the Study Area and makes recommendations based upon the studies and findings for possible alternative locations. Areas that contain environmentally sensitive conditions or resources that should be avoided are documented as well. Exhibits of the Study Area documenting environmental conditions are shown on Exhibits 2 through 5, pages 3 through 6.

Map Document: (P:\2006\3-129_Metcalfe_EO06\Mapping\GIS\Study_Area.mxd) 1/9/2007 -- 8:12:35 AM dwm

County Road mapping was obtained from the Kentucky Division of Planning from the Kentucky Geonet at <http://kygeonet.ky.gov/metadataexplorer/>

Incorporated city boundaries were obtained from the Kentucky Office of GIS.

Study Area is on the Edmonton USGS 7.5" quadrangle.



THIRD ROCK CONSULTANTS

Exhibit 1 - Study Area
KY 163 Alternatives Study
Metcalfe County
Item No. 3-129.00

Daycare
KY-3524
Industrial Park
Louie B Nunn Parkway
LN-9008-131
LN-9008-11
CR-68-10
Toll Station
UST Maintanance Garage
Church and Park
Sewage Disposal Pond
Dunham Lake
US 68
KY 80
Fairgrounds
Edmonton
Stockyard
Park
South Fork Little Barren River
Health Dept.
Park
Clay Lick Creek
KY 861
Rogers Creek
KY 163
KY 533
Mobile Home Park
Tree Nursery
KY-496
Tree Nursery
Proposed 38.5 Acre
Industrial Park #2
KY-861

N
W
E
S

- UST Sites
- Solid Waste Site
- Church
- Cemetery
- School
- Water Tank
- Water Well
- Spring
- Landfill
- Oil & Gas Wells
- Water Line
- Sewer Line
- Agricultural District
- Edmonton City Limits
- Industrial Park
- 500 Year Floodplain
- Study Area
- National Wetland Inventory Wetlands
- Stream
- Rural Residential and Agricultural
- Commercial

1 0.5 0 1 Miles

Exhibit 2
Environmental Conditions-North
KY 163 Alternatives Study
Metcalfe County
Item No. 3-129.00

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Map Document: (P:\2006\3-129_Metcalfe_EO06\Mapping\GIS\Socio_Exhibits\EnviroFootprint_South.mxd) 1/9/2007 -- 8:26:49 AM dwm

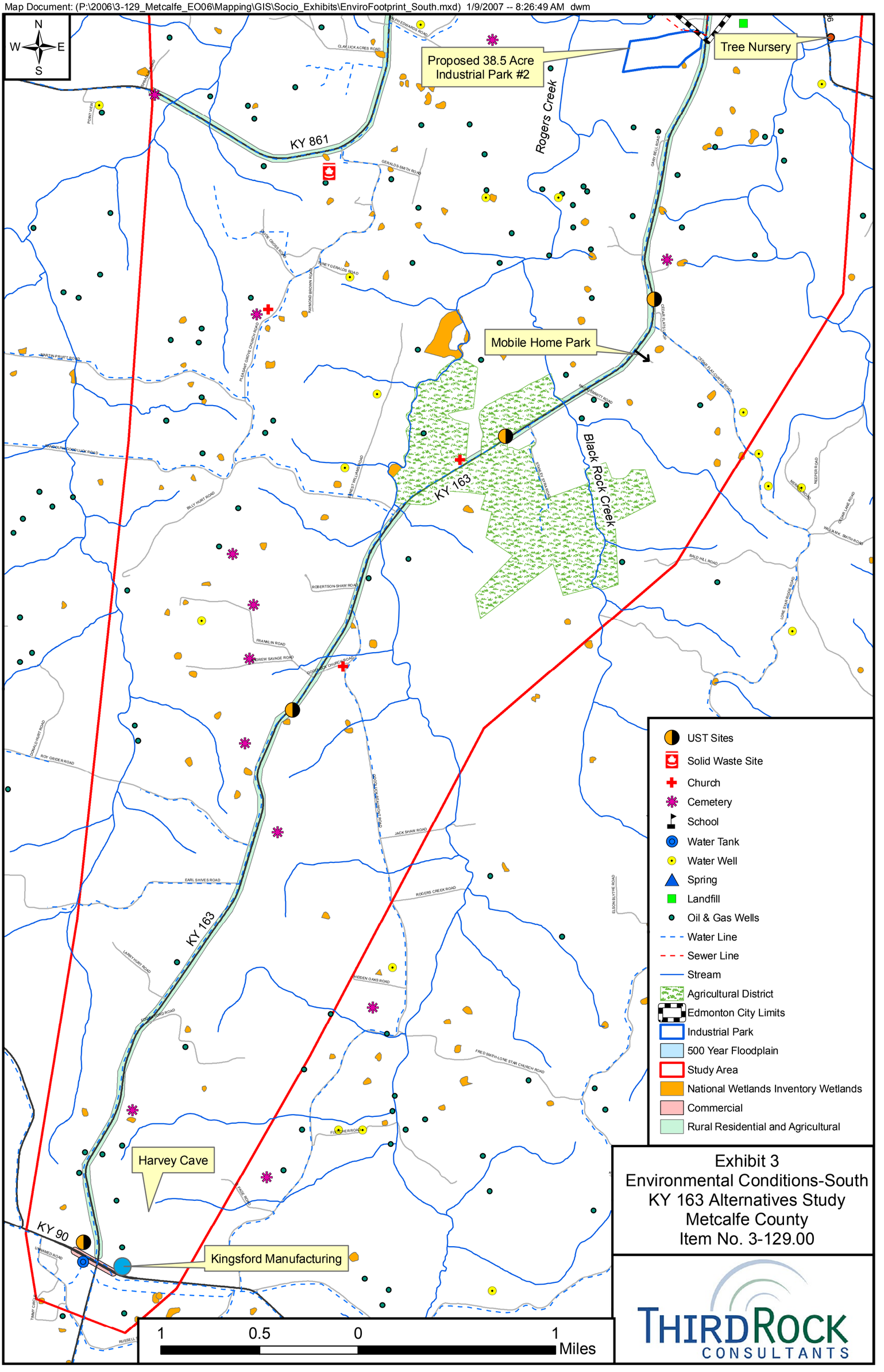

Exhibit 3
Environmental Conditions-South
KY 163 Alternatives Study
Metcalfe County
Item No. 3-129.00

THIRD ROCK CONSULTANTS

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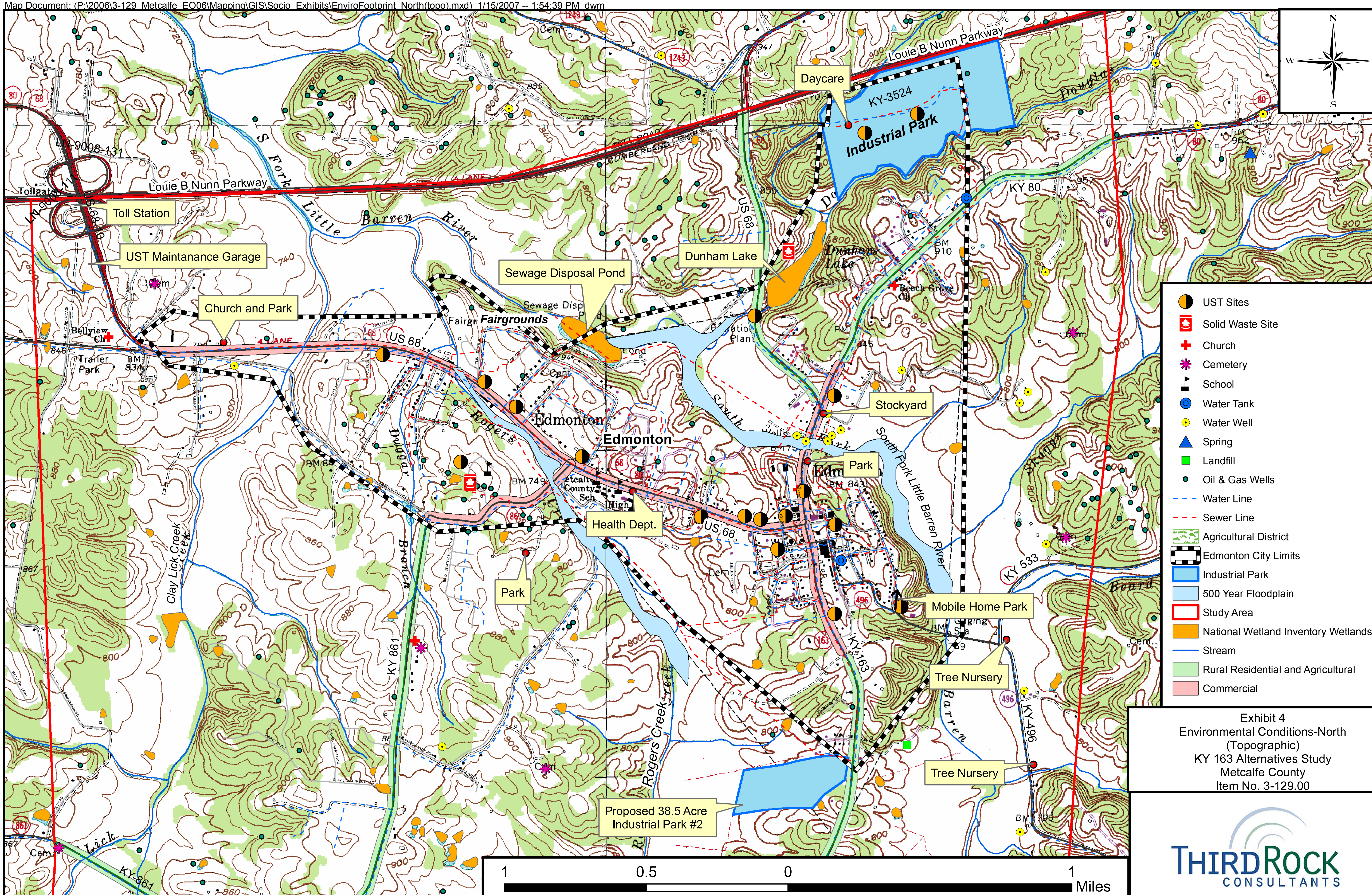

Map Document: (P:\2006\3-129_Metcalfe_EO06\Mapping\GIS\Socio_Exhibits\EnviroFootprint_South(topo).mxd) 1/15/2007 -- 3:54:51 PM dwm

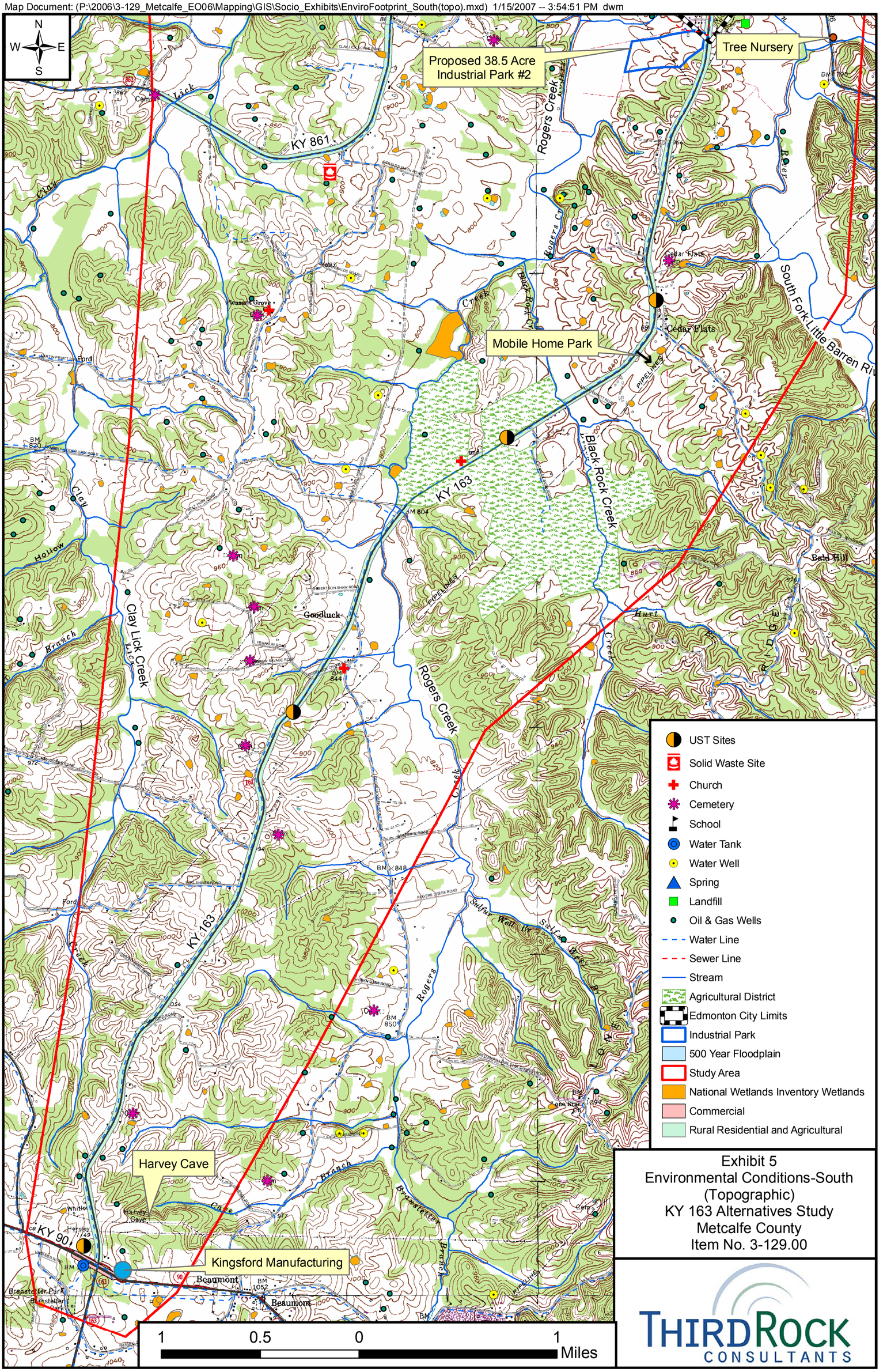

Exhibit 5
Environmental Conditions-South
(Topographic)
KY 163 Alternatives Study
Metcalfe County
Item No. 3-129.00

THIRD ROCK CONSULTANTS

2.0 ENVIRONMENTAL SETTING

Metcalfe County is located in the Pennyrile region of Kentucky, a Mississippian plateau with large areas of karst. The region extends from Land Between the Lakes on the west to the Pottsville Escarpment (running north-south roughly along I-75) to the east. Elevation of the county ranges from 560 feet to 1,120 feet above sea level. The highest point in the county is located along KY 163 just north of KY 90. The county has a land area of 291 square miles and a 2000 census population of 10,037, ranking it 99th of 120 counties. Average population density is 34.5 persons per square mile.

Metcalfe County has cold winters and hot, humid summers. January is typically the coldest month, with average maximum and minimum temperatures of 47.3° F and 26.6° F. July is typically the hottest month, with average maximum and minimum temperatures of 89.9° F and 65.0° F. Average annual precipitation is about 48 inches. The average length of the growing season is 183 days.

Most of the Study Area is in a rural setting. KY 163 traverses ridgetops and crosses the Black Rock Creek and Rogers Creek valleys. The terrain is rolling and mostly open fields. Homes and farmsteads are scattered along the road. East of the Study Area, the terrain becomes steeper and heavily wooded. Timber is harvested from the forests east of Edmonton.

3.0 EXISTING CONDITIONS REPORT

Third Rock performed field reconnaissance for sensitive air quality receptors, aquatic and terrestrial resources, socioeconomic issues, and underground storage tank/hazardous materials concerns.

3.1 Air Quality

A specific air quality study was not performed. A field reconnaissance was conducted on December 20, 2006, to identify sensitive receptors.

Metcalfe County is part of the South Central Kentucky Air Quality Control Region. The county is currently designated in attainment for all transportation-related air pollutants. Alternatives arising from the Planning Study are not anticipated to adversely impact air quality.

The Study Area is located in a predominantly rural area (rolling fields with scattered homes and farmsteads). Sensitive receptors for air pollutants in the Study Area could include outdoor use areas associated with residences, churches and cemeteries, parks, and schools.

Based on the rural nature of the Study Area, it is estimated that current and future concentrations of transportation-related air pollutants will not exceed the National Ambient Air Quality Standards (NAAQS) established by the United States Environmental Protection Agency (US EPA). The emissions of air pollutants arising from any alternative developed from the alternatives study are not expected to have a negative impact on the ambient air quality nor affect the attainment status of Metcalfe County. Because the proposed project is state-funded, it is not listed in the Statewide Transportation Improvement Program, Fiscal Years 2005-2007.

3.2 Aquatic/Terrestrial Resources

A field reconnaissance was performed on December 19, 2006, by a qualified Third Rock biologist.

Four perennial bedrock streams are located in the Study Area: Clay Lick Creek, Black Rock Creek, South Fork Little Barren River, and Rogers Creek (see Exhibits 3 and 5, pages 4 and 6). Although most stretches appear to be channelized, banks are fairly stable with little evident instream erosion. However, all three streams contain substantial evidence of excessive nutrients (*i.e.*, significant amounts of periphyton). South Fork Little Barren River appeared to be the most degraded. Along a 2,000-foot stretch

South Fork Little Barren River Next to Stockyard

within the city limits, this stream receives effluent from the Edmonton wastewater treatment plant and runoff from a medium-sized stockyard. The stream itself has an odor below the stockyard. This section of stream would be a good candidate for remediation of any project-related aquatic resource impacts.

Rogers Creek, North View

Tributary of South Fork Barren River

Numerous ephemeral and intermittent streams are located along the corridor as well. These streams are primarily bedrock, with some having cobble and small boulder substrates.

Springs exist throughout the corridor, however not all appear on the Kentucky Geological Survey (KGS) geographic information system (GIS) data layer. Most hillsides were observed to have seeps or true springs coming out of them, and several springhouses on private property were observed. Springs can be affected by transportation projects, which alter groundwater flow through landscape modification.

Spring Flowing from Harvey Cave

Few natural jurisdictional wetlands were observed. Farm-ponds are abundant throughout the area (shown on National Wetland Inventory [NWI] mapping) but were not commonly jurisdictional (contained no connection to streams). The largest wetland was in the floodplain of Rogers Creek near the crossing of KY 163. However, all that remains of this large wetland are obvious prior converted wetlands. NWI mapping does show natural wetland areas on the west side of Rogers Creek and the west side of Clay Lick Creek just south of US 68-KY 80. Due to the limited scope of the field reconnaissance, these wetlands were not field verified or delineated.

Portions of the Study Area are located in a significant karst region. Karst is evident throughout the landscape surrounding the existing KY 163 corridor as evidenced by the undulating terrain and a known cave near the southern terminus. This cave is known locally as Harvey Cave. The cave was examined approximately 500 feet from the entrance. It was very wet, with a significant spring flowing from the cave and from the adjacent draw. In conversation with local residents, it was reported that there are hieroglyphs somewhere in the cave on the walls. None were observed. However, this suggests that there is potential for archaeological findings elsewhere throughout the Study Area.

Harvey Cave, North Entrance

Flow Stone within Harvey Cave

Kentucky Geological Survey geologic mapping indicates potential for karst features to range from intense to non-karst (see Figure 1 below). Karst potential and documented sinkholes are highest at the northern and southern boundaries of the Study Area. The most karst features occur near Harvey Cave and west of KY 163 near KY 90.

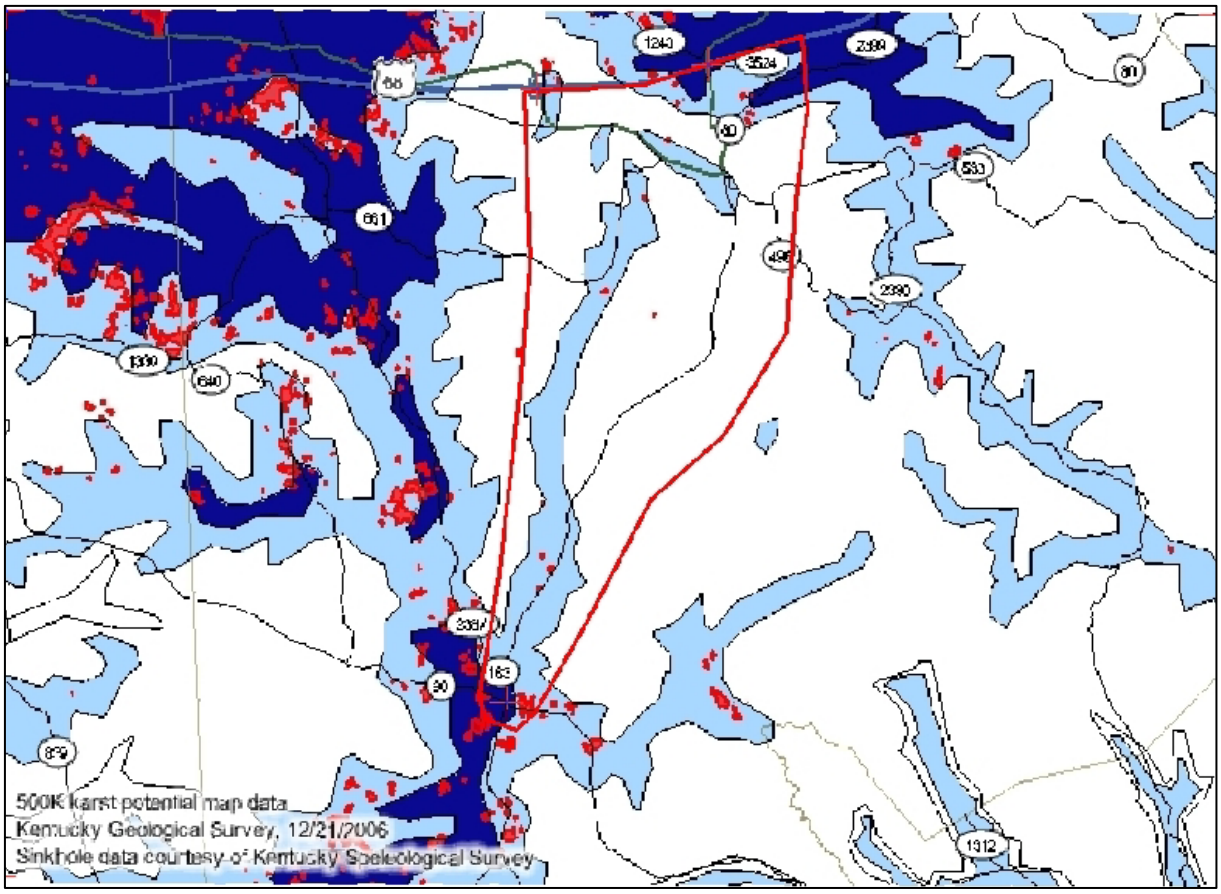

FIGURE 1 – KARST POTENTIAL

In the above figure, dark blue represents intense karst potential, light blue indicates the area is prone to karst features, and white is non-karst. The red line indicates the Study Area and red points indicate sinkholes. Thus, a significant amount of the Study Area contains little or no karst potential.

3.3 Threatened and Endangered Species

The U.S. Fish & Wildlife Service (USFWS) in 2005 listed gray bat (*Myotis grisescens*) as a federally endangered species known to occur in Metcalfe County. Indiana bat (*M. sodalis*) was listed as potentially occurring in the county. The Kentucky State Nature Preserves Commission and Kentucky Department of Fish & Wildlife Resources concurred with the gray bat listing. Eggert's sunflower (*Helianthus eggertii*) was also listed by USFWS; however, this species was delisted effective September 19, 2005. Agency species listings are contained in Appendix A.

The gray bat formally attained endangered species status on April 28, 1976. A recovery plan was approved July 8, 1982. It is the largest species of *Myotis* found in the eastern United States. Its historical North American range includes the cave regions of the central and south central United States. Within Kentucky, the species is most common in the cave region of the south central portion of the state.

Gray bats occupy caves or cave-like habitats throughout the year and tend to use the same caves each year. Beginning in March, females migrate from cold (42 to 52° F) hibernacula and enter warm caves (57 to 77° F) that have deep vertical passages with large rooms and associated stream systems. Such habitats are typically in close proximity to rivers or reservoirs where the bats forage for aquatic insects. Summer maternity colonies contain a few hundred to many thousands of pregnant females. Adult males and juveniles use other caves during the summer that are in close proximity to maternity caves. Mating begins in September as females migrate back to winter hibernacula, followed by males and juveniles. Most gray bats have begun to hibernate by November.

Major reasons for the decline in gray bat populations include channelization of streams, impoundment of waterways and flooding of adjacent hibernacula and/or nursery sites. Deforestation, application of insecticides, destruction or improper gating of caves, commercialization of caves, and vandalism are also contributing factors of the decline in the gray bat populations (Slone and Wethington 2001; USFWS, TESS 2004).

The Indiana bat formally attained endangered species status on March 11, 1967 (USFWS 1999). A recovery plan was approved March 1, 1999. The historic range for this species consisted of the central and southeastern United States. Within Kentucky, two caves, Bat Cave in Carter County and Coach Cave in Edmonson County, have been designated as critical habitat for the species (USFWS 1976).

Indiana bats hibernate during the winter months in large, cool caves (hibernacula) where they form tight clusters containing hundreds of individuals. Each spring, the females emerge from these hibernacula and migrate to summer (maternity) habitat consisting of hardwood forests. Maternity colonies are formed in these areas under the exfoliating bark of dead trees or loose bark of living trees. The migration of males is variable. Some males do not migrate, others migrate only a short distance to smaller, warmer caves, and others migrate to the same habitat as females.

Major reasons for the decline in Indiana bat populations include channelization of streams, impoundment of waterways and associated flooding of bottomland forests, deforestation, application of insecticides, destruction or improper gating of winter habitat (*e.g.*, mines, cisterns, and caves), commercialization of caves, and vandalism of cave habitat (Barbour and Davis 1974; USFWS 1999, 2004; Slone and Wethington 2001).

Summer bat habitat for the Indiana bat is plentiful near the Study Area. The forests contain significant amounts of mature hardwoods with exfoliating bark, especially near the Industrial Park just south of the Louis B. Nunn Parkway. The proximity of streams provides good foraging corridors for both species of bats. Roosting habitat for gray bat and winter hibernating habitat for Indiana bat is potentially present in the Study Area due to karst features. Because of its very wet environment, however, Harvey Cave does not represent suitable roosting or hibernating habitat for gray or Indiana bat.

Indiana Bat Habitat Near KY 90

3.4 Socioeconomic

A field reconnaissance was conducted on December 20, 2006, by a qualified Third Rock socioeconomist.

3.4.1 Land Use

According to the Edmonton city clerk's office, no planning or zoning exists for either the city or the county. However, Metcalfe County has been exploring such options.

The northwestern-most portion of the Study Area begins at the US 68/KY 80 and Louie B. Nunn Parkway interchange (see Exhibits 2 and 4, pages 3 and 5). Less than a mile to the south along the US 68/KY 80 roadway, the project quickly becomes a "strip development" serving the city of Edmonton. US 68/KY 80 from approximately Demumbrum Lane into the city center is dominated by retail shops, gas stations, restaurants, churches, and public facilities (*e.g.*, two schools, health department, park, fairgrounds). Limited residential use exists near the fairgrounds.

Strip Development Along US 68-KY 80

US 68 West of City Center Near Fairground Entrance

In the city center, the expected facilities are found. These include such facilities as the justice center, historic courthouse, city police, water company, a funeral home, churches, and various small shops and businesses along with a limited numbers of restaurants.

US 68 and KY 80 proceed north of the city center and diverge approximately one-half mile from the center of Edmonton. Where the two roads continue to run together, the land use is still consistent with a small town and includes a small park, a stockyard, an auto repair shop and gas station. After the two roadways diverge, KY 80 quickly becomes a rural residential area with some agricultural activity associated with these homes. One apartment complex does exist along Tree Top Drive.

Near the northeastern-most portion of the Study Area, KY 80 provides access to an existing industrial park. KY 3524 serves the park. The industrial park includes such manufacturers as Carhartt Inc., Sumimoto Electric Wiring Systems, and Sumitomo Electric (Wintec America, Inc.). A daycare facility is also located within the industrial park presumably in support of the industrial facility workers and their families. At its western edge, the industrial park has its main entrance, which connects to US 68.

US 68 from the Louie B. Nunn Parkway south is somewhat steep, forested terrain until near Dunham Lake. Dunham is a currently a recreational use lake but was formerly a public water supply for the community (water is now provided by Barren River Lake). The area between Sunset Drive and the KY 80 intersection is residential with commercial facilities being located near the intersection of US 68 and KY 80.

Stockyard

US 68, South View Near Nunn Parkway

KY 496 and KY 533 comprise the main roadways southeast of the city center. From the edge of the city of Edmonton to the crossing of the South Fork Little Barren River, the area is still in

commercial development. A mobile home park is located along Scott Drive. From the South Fork Little Barren River crossing to the eastern edge of the Study Area, KY 496 is open bottomland. Two tree nurseries exist along this stretch of KY 496. Public reports are that several lumberyards exist along KY 496 and KY 533, although the field reconnaissance indicated that none of the facilities are within the Study Area boundary. KY 533 to the eastern border of the Study Area is rural residential with some agricultural activity.

KY 163 is the main roadway serving north/south travel between Edmonton and KY 90. Just beyond KY 90 is the southernmost boundary of the Study Area. KY 163 upon leaving Edmonton is quickly dominated by rural residential and agricultural activity. Agricultural activity is primarily pastureland for cattle. Churches and cemeteries are also found along the roadway. Roads intersecting KY 163 are fairly frequent but for the most part do not connect to other north/south roadways. The topography east and west of KY 163 is generally bounded by north/south ridgelines that often cause the intersecting roadways to stop at these ridgelines. At the KY 90 intersection, commercial and industrial activity resumes. A gas station, a sizable lumberyard, a tack shop, and large manufacturing facility (Kingsford Manufacturing) all exist at or close to this intersection.

KY 163 South of Edmonton

One other roadway in the Study Area runs in a general north/south direction before turning due west to intersect the western boundary of the Study Area. KY 861 runs south out of Edmonton from US 68/KY 80. Metcalfe County High School exists at the intersection of KY 861 and US 68/KY 80. Edmonton Memorial Park and a small residential subdivision, Bridgeview Heights, are just beyond the school. After turning due south, KY 861 becomes rural residential

Edmonton Memorial Park

with more sizable agricultural activity. For example, a very well kept dairy farm exists along the route. Until the western edge of the Study Area, KY 861 is dominated by residential and agricultural activity. At least one church and cemetery exist along the roadway as well.

3.4.2 Agricultural Activity

As noted in the *Land Use* section, considerable portions of the Study Area are comprised of rural residential and agricultural activities. Although farming operations with significant on-site investments are not evident as a result of the field reconnaissance, much of the Study Area, particularly to the south and southwest of Edmonton, indicates that farming is a prevalent activity and source of income for many residents. KY 163 and KY 861 in particular show such evidence of farming activity.

Farming is a prevalent activity in Metcalfe County as a whole. According to the 2002 Census of Agriculture, in Metcalfe County, nearly 132,000 acres are farmed in Metcalfe County with over 55 percent of land being cropland followed by nearly 30 percent woodland, 11 percent pasture, and 4 percent other uses. From 1997 to 2002, the number of farms dropped by 7 percent from 1,018 farms to 950. The average size of farms increased approximately 5 percent from 133 acres in 1997 to 139 acres in 2002. The 2002 average size farm in Metcalfe County was slightly smaller than the state average of 160 acres. The trend toward fewer farms but larger farms is consistent with the state, however.

In terms of the total value of agricultural products sold, Metcalfe County ranks 38th out of Kentucky's 120 counties. The market value of production increased by 18 percent between 1997 and 2002, from just over $25 million to nearly $30 million. In value of sales by commodity group, the County ranks 3rd in the state in milk and other dairy products from cows. By number of livestock inventory items, Metcalfe County ranks 17th in the state in broilers and other meat-type chickens. The County's inventory of broilers and other chickens is 744,000.

Metcalfe County has one agricultural district located in the Study Area. Kentucky's Agricultural District and Conservation Act (KRS 262.850), allows a landowner or a group of landowners

who own at least 250 contiguous acres in active agricultural production to petition their local conservation district to form an agricultural district. Agricultural district standing provides the following benefits to landowners:

- Land enrolled cannot be annexed. If land enrolled in an agricultural district is condemned by a state agency, the agency must mitigate the impact on the conversion of that land to non-farm uses.
- Land enrolled is eligible for differential assessment by the local Property Valuation Administrator.
- Deferment of paying the assessed cost against their land for the extension of water lines across their property, as long as the land remains enrolled in the program.
- Higher ranking when applying for state cost share assistance.
- Higher ranking in the application review process for the Purchase of Agricultural Conservation Easements Program (PACE).

The county's one agricultural district is located on both sides of KY 163 just south of Black Rock Creek. The district is 473 acres total and is shown on Exhibits 3 and 5, pages 4 and 6.

Online data for prime farmland soils and soils of statewide importance are not available. The U.S. Department of Agriculture Soil Survey for Metcalfe County was reviewed to determine soil types in the Study Area. Most of the Study Area except for a small area near Cedar Flat and Black Rock Creek contains soils of the Baxter-Crider-Clarksville association. These soils are typically associated with nearly level to moderately steep, well drained terrain. Small amounts of Huntington and Lindside soils may be found along the stream banks. These soils are highly fertile and deep. Upon development of alternatives, further consultation with the District Conservationist will determine the amount of prime and statewide important farmland of concern related to such alternative(s).

3.4.3 Transportation

Major transportation routes through the Study Area are limited. However, three of these roadways are significant travel corridors for Metcalfe County and areas well beyond. Those

routes include the Louie B. Nunn Parkway, US 68/KY 80, and KY 163. The Louie B. Nunn Parkway is a major east/west route connecting Somerset, to the east, to near Bowling Green, to the west. The Parkway is also part of the route proposed for future use as the I-66 corridor.

US 68 and KY 80 are also significant east/west routes serving Metcalfe County and the city of Edmonton. US 68 and KY 80, which run together across most of the Study Area, serve as the main route through Edmonton. This route is often congested with truck traffic and is a major traffic consideration within the city. KY 80 runs the entire east/west distance of the state. US 68 extends across the entire state as well, but in Edmonton turns to the northeast to span the entire state in a northeasterly direction.

KY 163 is the major north/south route through the county. At its northernmost point, KY 163 begins in Edmonton and extends to the south through Monroe County to its end at the Tennessee border.

South of Edmonton to KY 90, major east/west routes are lacking. As noted previously, ridgelines and general topography considerations have limited such east/west options. Two roads do extend out of Edmonton in a general east/west direction. These include KY 533 and KY 496. These routes are traffic generators for the City of Edmonton due to the prominence of lumberyards located beyond the Study Area boundaries. Lumber hauling trucks use these routes to gain access to markets accessed via the parkway. South of Edmonton, along KY 163, east/west routes consist of county roads until reaching KY 90. KY 90 begins to the west at Cave City and extends in an easterly direction to its end south of Somerset.

Most truck traffic is generated north and east of the city from the industrial park and the lumberyards. Because there is no alternative route around Edmonton, these trucks are all funneled through the US 68/KY 163 intersection in Edmonton to reach the parkway or KY 90. The large multi-axle trucks create significant congestion throughout the day within the community.

3.4.4 Population

The Study Area falls within portions of two of the three 2000 census tract boundaries for Metcalfe County: Census Tract 9602 and Census Tract 9603. Total population for the county is 10,037; population for the city is 1,586. Because the county's census tract populations are fairly evenly distributed accounting for the fact that the City of Edmonton is within one of the census tract boundaries, data provided below is for the county, and state as appropriate, rather than by census tract. No comparative data presented below was available for the city.

Metcalfe County grew at a rate slightly above that of Kentucky. Total population increased from 1990 to 2000 by 12.0 percent. Kentucky during that same time grew by 9.7 percent. The County, however, is projected to grow at a lesser rate than the state between 2000 and 2030. Metcalfe County's population is projected to increase 16.7 percent while the state's population is projected to increase 21.5 percent.

Median age of Metcalfe County's population in 2000 was slightly higher than that of the state. For the county, median age was 37.7 years compared to 35.9 years for the state. Educational attainment was somewhat lower for the county as compared to the state. For the county, 58.0 percent of persons 25 years of age and over had a high school diploma or higher; for the state, the percent of persons was 74.1 percent. Similarly, 6.6 percent of the county's residents ages 25 and over had a bachelor's degree or higher, while that percent for the state was 17.1 percent.

3.4.5 Local Economy

Metcalfe County had a slightly lower rate of unemployment in 2005 compared to the rest of the state. The County's rate was 5.7 percent while the state was at 6.3 percent. The U.S. as a whole was 5.1 percent. The county's rate of unemployment has remained relatively stable since 2001 (within 0.6 percent) while the state's rate has risen by nearly 1 percent. Table 1 below shows unemployment rates for the county, state, and country, between 2001 and 2005.

TABLE 1 – UNEMPLOYMENT RATES (PERCENT)

	Metcalfe County	Kentucky	U.S.
2001	5.2	5.2	4.7
2002	5.1	5.7	5.8
2003	5.4	6.2	6.0
2004	4.6	5.5	5.5
2005	5.7	6.1	5.1

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Employment by major industry in 2004 is shown in Table 2. Manufacturing at nearly 41 percent by far exceeds all other categories.

TABLE 2 – EMPLOYMENT BY MAJOR INDUSTRY

	Metcalfe County	
	Employment	Percent
All Industries	2,243*	100.0
Agriculture, Forestry, Fishing and Hunting	N/A	N/A
Mining	18	0.8
Construction	11	0.5
Manufacturing	908	40.5
Trade, Transportation, and Utilities	352	15.7
Information	20	0.9
Financial Activities	74	3.3
Services	121	5.4
Public Administration	78	3.5
Other	0	0.0

*Includes only those persons living in Metcalfe County.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Agricultural employment listed in Table 2 ("N/A" representing a reported value of zero employees) is based upon the U.S. Department of Labor, Bureau of Labor Statistics (BLS) reporting standards. BLS uses the North American Industry Classification System (NAICS) Code #11 for defining agriculture, forestry and hunting. From the NAICS website:

> The U.S. Census Bureau assigns one NAICS code to each establishment based on its primary activity (the activity that generates the most revenue for the establishment) to collect, tabulate, analyze, and disseminate statistical data describing the economy of the United States. Generally, the U.S. Census Bureau's NAICS classification codes are derived from information that the business establishment provided on administrative, survey, or census reports. (*e.g.* when a company applies for an Employer Identification Number (EIN), information about the type of activity in which that business is engaged is requested in order to assign a NAICS code).

However, U.S. census data is self-reporting. Further, BLS does not clearly identify if zero indicates non-disclosure or truly means zero – which could also account for the lack of numbers coming from any lumber mills. Thus, while it is known that farming and forestry (lumberyard) operations exist in the county, at present no data is available that compiles the exact numbers of those employed in these occupations.

The major industries for Edmonton are shown in Table 3. Three of these industries are located within the Industrial Park (Carhartt Inc., Sumimoto Electric (Wintec America), and Sumimoto Electric Wiring Systems) near the northeastern edge of the Study Area. Metcalfe County and Edmonton are also pursuing additional industrial activities by the development of the Proposed Industrial Park #2 south of Edmonton along KY 163.

TABLE 3 – MAJOR BUSINESS BY INDUSTRY – EDMONTON

Firm	Product(s)/Service(s)	No. of Employees	Year Established
Carhartt, Inc.	Men's work clothing	115	1989
Rondal Phelps Lumber Co., Inc.	Millwork, sawing, rough & hardwood lumber	20	1975
Sumitomo Electric Wintec America, Inc.	Magnet wire products	104	1989
Sumitomo Electric Wiring Systems, Inc.	ECU and fuse boxes	540	1988
Topps Safety Apparel, Inc.	Men's work clothes & uniforms; ladies' blouses & slacks (safety clothing)	72	1953

Source: Kentucky Cabinet for Economic Development

The Edmonton stockyard operates two days a week (Monday and Tuesday) and attracts farmers and livestock dealers from a wide area. The stockyard is an important resource supporting local and area farmers.

Table 4 on the following page shows commuting patterns in 2000 for residents of Metcalfe County and for employees in the county. The number of persons residing in Metcalfe County and working in the county as compared to those commuting outside the county is fairly evenly divided. Of employees in the county, far greater percentages are from within the county as opposed to those commuting into Metcalfe County.

TABLE 4 – COMMUTING PATTERNS

Residents of Metcalfe County	**2000**	**Percent**
Working and Residing In County	2,206	53.9
Commuting Out of County	1,888	46.1
Total Residents	4,094	100.0
Employees in Metcalfe County		
Working and Residing In County	2,206	71.9
Commuting Into County	864	28.1
Total Employees	3,070*	100.0

*Includes those living in Metcalfe County plus those commuting into Metcalfe County.
Source: U.S. Department of Commerce, Bureau of the Census, Journey-To-Work & Migration Statistics Branch.

3.4.6 Communities and Community Facilities

Several community facilities are located within the Study Area. Most facilities are centered around or within the City of Edmonton. These facilities include parks, schools, churches, cemeteries, public and governmental services, and physician offices. Specifically, three schools are located within the Study Area. They include Metcalfe Elementary and Middle Schools along US 68/KY 80 and Metcalfe County High School along KY 1861. Three recreational parks are also located in the Study Area and are centered around Edmonton. The parks include Bowling Park along US 68/KY 80 near the western edge of the Study Area, Edmonton Memorial Park near the High School, and Pedigo Spring Park just north of the city center.

Pedigo Spring Park Sign

Bowling Park

Areas beyond the city have the expected occasional church and/or cemetery mixed in with the rural residential and agricultural uses. No other types of community facilities other than these churches or cemeteries were observed in areas beyond the city.

The field reconnaissance revealed that other than Edmonton, traditional communities are not evident throughout much of the Study Area. Other than homes within or near the city center, only one subdivision area was noted. This small subdivision, Bridgeview Heights, is located along KY 861 near the Edmonton Memorial Park. One mobile home community was noted to the south of the city along KY 163 and another was noted at the eastern edge of the city off KY 496. One apartment complex was located north of the city along Tree Top Drive. The rural residential nature of much of the Study Area indicates that the "communities" located therein likely consist of the homes located along the main roadways in the Study Area.

3.5 Underground Storage Tanks/Hazardous Materials

A site reconnaissance was conducted on December 20, 2006, by a qualified subject matter expert. The site reconnaissance was to identify underground storage tank (UST) and hazardous materials issues along the major roadways in the Study Area.

The UST and hazardous materials concerns for this project are typical, with active and potentially abandoned UST sites along all the major collectors. A database search was completed through Environmental Data Resources, Inc. (EDR) for the northern portion of the project, primarily the developed area around Edmonton and the Cumberland Parkway. A total of 19 records were identified in the database search for the area. These records were part of three federal databases and two Commonwealth of Kentucky databases as summarized below.

(RCRA LQG) Large Quantity Hazardous Waste Generators 1 Site
- Sumitomo Electric - 909 Industrial Dr.

(RCRA SQG) Small Quantity Hazardous Waste Generators 3 Sites
- Wendell Stephens Property - 904 W. Stockton St.
- Danny's Auto Service - 302 Stockton St.
- Sumitomo Electric - 687 Industrial Dr.

(FINDS) Facility Index System — 2 Sites
- Wendell Stephens Property - 904 W Stockton St.
- Metcalfe County High School - 208 Randolph St.

(SB-193) Kentucky Leaking UST — 1 Site
- Edmonton 66 - 501 Stockton St.

(UST) Kentucky UST Registration — 12 Sites
- Quick Shop Market No. 2 - 1010 W. Stockton St.
- Wendell Stephens Property - 904 W. Stockton St.
- Edmonton C B Fuel Center - 1421 W. Stockton St.
- Metcalfe County High School - 208 Randolph St.
- Phillips 66 - 501 Stockton St.
- Jr Food Store No 809 - 423 W. Stockton St.
- K & S Tax Service - 306 W. Stockton St.
- Expressway Food Mart - 400 N. Main St.
- Edmonton Central Office - Hamilton & Rogers Sts.
- Edmonton BP - 200 W. Stockton St.
- Dannys Auto Repair - 302 Stockton St.
- Georges Restaurant - Stockton & East Sts.

Marathon Station Along KY 80

BP Station Along US 68

The sites are shown on Exhibits 2 and 4, pages 3 and 5. As is evident from the listing above, the most concentrated numbers of registered USTs occur along West Stockton Street (US 68).

An additional 20 sites were identified as "orphan" sites that did not have sufficient geographic information to allow them to be plotted. Most of these sites were located along "HWY 163" or

"HWY 68 & 80". A review of the list indicates that most of the 20 orphan sites are located in the Study Area.

The developed area around Edmonton exhibits frequent convenience store gas stations, closed country stores, and automotive repair businesses. Some of these facilities have active and closed or abandoned USTs. The locations of the facilities identified in the field reconnaissance are shown on Exhibits 2 through 5 (pages 3 through 6).

Hazardous material and waste activities associated with industrial activities in the Study Area are generally limited to the industrial park near US 68 and the Nunn Parkway and the Kingsford charcoal manufacturing plant at KY 90. According to oil and gas well records, there are a substantial number of wells in Metcalfe County. A few active wells were observed near the intersection of Glasgow Street and KY 861.

Currently, solid waste from Metcalfe County is trucked to the Glasgow Regional Landfill in Barren County. This landfill accepts waste from the 14 surrounding counties. Most communities have a historic solid waste disposal site or landfill in relatively close proximity to the town. Three such landfills are noted near Edmonton (see Exhibits 2 and 4, pages 3 and 5). If a project is developed that impacts them, Phase I, and possibly Phase II, site assessments should be performed to ensure that the landfills do not contain hazardous materials.

Oil and gas wells should be expected to occur along any new route. Most of the oil and gas wells shown in the Kentucky Geological Survey records are not active or identifiable in the field. As indicated in the records, many of these wells are dry and abandoned and may be hidden below grade. Encountering improperly closed or abandoned wells during construction of a new facility in this area is certainly possible.

4.0 PUBLIC INVOLVEMENT

A public meeting was held at the Metcalfe County High School in Edmonton December 14, 2006, from 4:00 to 6:00 p.m., Central Standard Time. The meeting was announced by an article

dated December 10, 2006, in *The Light*, the Metcalfe County Sunday newspaper, as well as by variable message board on KY 80. Representatives from the Kentucky Transportation Cabinet, District 3, as well as project consultants attended to answer questions. Exhibits of the Study Area and potential environmental areas of concern were presented around the room. The meeting opened with a PowerPoint® presentation from the KYTC District 3 project manager. After the presentation, questions were taken, and attendees were free to view the exhibits and talk with the agency representatives and consultants present.

From comments received, the public favors spot improvements to KY 163 south of Edmonton and relief of truck traffic in downtown Edmonton. There are three locations along KY 163 that are of concern: a south-bound hill down to Rogers Creek and tributary with associated bridges, an S-curve south of Rogers Creek, and a steep downgrade to KY 90 at the Study Area's southern terminus. All the bridges along KY 163 are very narrow, and the consensus was that they all needed to be replaced.

In Edmonton, a single intersection on the courthouse square collects all traffic from KY 163, KY 80, and US 68. Nearly all multi-axle truck traffic comes from the north and east, thus must come through the center of town. Trucks come from lumber operations, the industrial park, a freight contractor, and the stockyard. The residents indicated that some type of bypass might relieve congestion and re-route truck traffic from the community. The residents were not unanimous whether this should be an eastern or a western bypass. It was also suggested that a new interchange could be constructed at US 68 near the industrial park, but another location was also suggested further east.

5.0 SUMMARY OF FINDINGS AND RECOMMENDATION

Overall, environmental concerns for the proposed project are typical for a rural community in karst terrain. No significant environmental concerns were noted.

5.1 Air Quality

Alternatives arising from the Planning Study are not anticipated to have a negative cumulative impact on air quality. The project will have a positive impact on air quality in central Edmonton if a bypass alternative is developed.

5.2 Aquatic and Terrestrial

Impacts to aquatic resources are likely for any proposed alternative. Bypass alternatives will cross South Fork Little Barren River or Rogers Creek. Improvements to bridges across Black Rock Creek, Rogers Creek and its tributary may create temporary stream (and possibly wetland) impacts and may require U.S. Army Corps of Engineers Section 404 and Kentucky Division of Water Section 401 permits. South Fork Little Barren River below the stockyard represents an attractive site for stream restoration and wetland impact mitigation. Springs and wells are plentiful in the corridor and should be identified upon selection of proposed alternatives. If any of the wetlands are impacted by a proposed roadway project, they should be delineated.

The Study Area lies within an active karst area. The Kentucky Transportation Cabinet, Division of Environmental Analysis has issued a Policy Paper (Design Memorandum No. 12-05, July 27, 2005), which states that best management practices (BMPs) for karst and significant resource areas must be followed. A copy of this Policy Paper is attached as Appendix B. These BMPs are intended to improve long-term water quality and to protect endangered species such as Indiana and gray bats.

5.3 Threatened and Endangered Species

Roosting and foraging habitat for the Indiana and gray bat is present along and near the Study Area. To comply with Section 7 of the Endangered Species Act for Indiana bat, potential impacts to Indiana bat or its habitat may be addressed in one of three ways: (i) a biological assessment may be conducted, (ii) tree cutting may be restricted to the period between Oct. 15 and March 31, or (iii) KYTC may pay for the acquisition of any summer maternity habitat (roost trees) under its Programmatic Biological Opinion Agreement with USFWS. Roosting habitat for gray

bat and hibernating habitat for Indiana bat may be present due to the extensive karst features in the county. Upon development of alternatives, closer examination of the area will determine if any caves or sinkholes are present that meet the species' requirement for roosting and/or hibernating.

5.4 Socioeconomic

Edmonton contains three parks: Bowling Park, Edmonton Memorial Park, and Pedigo Spring Park. Impact to any of these parks would invoke Section 4(f) under the Department of Transportation Act of 1966 (re-codified in 1983) (49 USC 1653(f)). A Section 4(f) property may be a publicly owned park, wildlife management area, historic structure, historic district, or archaeological site. Approval of a transportation project that requires use of a Section 4(f) property is contingent upon the conditions that (i) there is no prudent or feasible alternative to using that land and (ii) all possible measures have been taken to minimize harm to that property as a result of the project. "Use" of a Section 4(f) property occurs (i) when land from a Section 4(f) site is permanently incorporated into a transportation facility, (ii) when there is an temporary occupancy of land that is adverse in terms of the statute's preservationist purposes, or (iii) when the proximity impact of the transportation project on the Section 4(f) site, without acquisition of land, substantially impairs the activities, features, or attributes of an adjacent Section 4(f) protected resource (constructive use). (Section 4(f) Policy Paper, FHWA, March 1, 2005).

In 2005, Section 4(f) was amended in Section 138 of Title 23 and Section 303 of Title 49, United States Code. The amendment provides for a simplification of the process and approval of projects that have only *de minimis* impacts on lands impacted by Section 4(f). *De minimis* impacts are defined as those impacts that do not adversely affect the activities, features and attributes that quality the resource for protection under Section 4(f). Agencies with jurisdiction over the property as well as the public will be informed and given the opportunity to review and comment on the effects of the proposed project. A favorable *de minimus* ruling would preclude an alternatives analysis and would complete the Section 4(f) evaluation process in a shorter time

period. For the present project, if minimal acreage is acquired from any of the parks, a *de minimis* ruling may be possible.

An agricultural district of 473 acres is located along KY 163 south of Edmonton at Black Rock Creek. Impacts to the agricultural district should be minimized if possible. Agricultural districts are created because they are intended to preserve Kentucky's farmlands and protect to a certain degree against annexation. If land enrolled in an agricultural district is condemned by a state agency, the agency must mitigate the impact on the conversion of that land to non-farm (*e.g.*, highway right-of-way) uses. The form of mitigation is not specified, and historically has been the same as for any other land acquisition in accordance with the Kentucky Transportation Cabinet's Division of Right-of-Way and Utilities' policies and procedures. Additionally, if an agency wishes to acquire land that is enrolled in an agricultural district, the property owner may request a public hearing by the local soil and water conservation district board of supervisors prior to such acquisition. This right of public hearing does not apply to utilities as defined by KRS 278.080(3) and if they have obtained a certificate of convenience and necessity as required by KRS 278.020(1).

5.5 Underground Storage Tanks/Hazardous Materials

Encountering UST facilities can be expected along any of the existing right-of-ways. An evaluation of each facility's status should be completed if approached or taken by an alternative. Phase I and Phase II site assessments, if appropriate, should be conducted prior to right-of-way acquisition.

Oil and gas wells should be expected to occur along any new route. Encountering improperly closed or abandoned wells during construction of a new facility in this area is possible. Identification of all wells should be undertaken upon selection of possible alternatives.

Upon development of any alignment, the disturbance limits of the three old waste sites should be examined to determine if any historical landfills are within the footprint of any proposed

roadway. If an alternative is developed that impacts them, Phase I and possibly Phase II site assessments should be performed to ensure that they do not contain hazardous materials.

6.0 REFERENCES

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APPENDICES

APPENDIX A – AGENCY SPECIES LISTS

U.S. Fish & Wildlife Service
Kentucky Ecological Services Field Office

U.S. Fish & Wildlife Service
3761 Georgetown Rd.
Frankfort, KY 40601
Phone: 502-695-0468
Fax: 502-695-1024

Endangered, Threatened, & Candidate Species in _____METCALFE_____ County, KY

Group	Species	Common name	Legal* Status	Known** Potential	Special Comments
Mammals	*Myotis grisescens*	gray bat	E	K	
	Myotis sodalis	Indiana bat	E	P	
Plants	*Helianthus eggertii*	Eggert's sunflower	T	K	delisted 9/19/05

NOTES:

* Key to notations: E = Endangered, T = Threatened, C = Candidate, CH = Critical Habitat

**Key to notations: K = Known occurrence record within the county, P = Potential for the species to occur within the county based upon historic range, proximity to known occurrence records, biological, and physiographic characteristics.

METCALFE COUNTY REPORT
OF
ENDANGERED, THREATENED, AND SPECIAL CONCERN
PLANTS, ANIMALS, AND NATURAL COMMUNITIES
OF
KENTUCKY

KENTUCKY STATE NATURE
PRESERVES COMMISSION
801 SCHENKEL LANE
FRANKFORT, KY 40601
(502) 573-2886 (phone)
(502) 573-2355 (fax)

www.naturepreserves.ky.gov

Data Current as of February 2006

Kentucky State Nature Preserves Commission
Key for County List Report

Within a county, elements are arranged first by taxonomic complexity (plants first, natural communities last), and second by scientific name. A key to status, ranks, and count data fields follows.

STATUS

KSNPC: Kentucky State Nature Preserves Commission status:

N or blank = none E = endangered T = threatened S = special concern H = historic X = extirpated

USESA: U.S. Fish and Wildlife Service status:

blank = none C = candidate LT = listed as threatened LE = listed as endangered
SOMC = Species of Management Concern

RANKS

GRANK: Estimate of element abundance on a global scale:

G1 = Critically imperiled
G2 = Imperiled
G3 = Vulnerable
G4 = Apparently secure
G5 = Secure
GH = Historic, possibly extinct
GX = Presumed extinct
GU = Unrankable
G#? = Inexact rank (e.g. G2?)
G#Q = Questionable taxonomy
G#T# = Infraspecific taxa (Subspecies and variety abundances are coded with a 'T' suffix; the 'G' portion of the rank then refers to the entire species)
GNR = Unranked
GNA = Not applicable

SRANK: Estimate of element abundance in Kentucky:

S1 = Critically imperiled
S2 = Imperiled
S3 = Vulnerable
S4 = Apparently secure
S5 = Secure
SH = Historic, possibly extirpated
SX = Presumed extirpated
SU = Unrankable
S#? = Inexact rank (e.g. G2?)
S#Q = Questionable taxonomy
S#T# = Infraspecific taxa
SNR = Unranked
SNA = Not applicable

Migratory species may have separate ranks for different population segments (e.g. S1B, S2N, S4M):
S#B = Rank of breeding population
S#N = Rank of non-breeding population
S#M = Rank of transient population

COUNT DATA FIELDS

OF OCCURRENCES: Number of occurrences of a particular element from a county. Column headings are as follows:

E - currently reported from the county
H - reported from the county but not seen for at least 20 years
F - reported from county & cannot be relocated but for which further inventory is needed
X - known to be extirpated from the county
U - reported from a county but cannot be mapped to a quadrangle or exact location.

The data from which the county report is generated is continually updated. The date on which the report was created is in the report footer. Contact KSNPC for a current copy of the report.

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed, and new species of plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

KSNPC appreciates the submission of any endangered species data for Kentucky from field observations. For information on data reporting or other data services provided by KSNPC, please contact the Data Manager at:

Kentucky State Nature Preserves Commission
801 Schenkel Lane
Frankfort, KY 40601
phone: (502) 573-2886
fax: (502) 573-2355
email: naturepreserves@ky.gov
internet: www.naturepreserves.ky.gov

County	Taxonomic Group	Scientific name	Common name	Statuses	Ranks	# of Occurrences				
Habitat						E	H	F	X	U
Metcalfe	Vascular Plants	*Helianthus eggertii*	Eggert's Sunflower	T /	G3 / S2	1	0	0	0	0
Open oak hickory forest on the highland rim in KY; rocky hills and barrens and roadside remnants of this habitat.										
Metcalfe	Vascular Plants	*Ludwigia hirtella*	Hairy Ludwigia	E /	G5 / S1	0	1	0	0	0
Pine barrens, savannas, and sandy soil or peaty swamps.										
Metcalfe	Vascular Plants	*Potamogeton pulcher*	Spotted Pondweed	T /	G5 / S1S2	2	0	0	0	0
Peaty or muddy acid waters or shores, ponds (especially sinkhole), slow streams, and swamps.										
Metcalfe	Vascular Plants	*Ulmus serotina*	September Elm	S /	G4 / S3	2	0	0	0	0
UPLAND TO BOTTOMLAND LIMESTONE WOODS, ALLUVIAL TERRACES.										
Metcalfe	Freshwater Mussels	*Simpsonaias ambigua*	Salamander Mussel	T / SOMC	G3 / S2S3	1	0	0	0	0
OFTEN FOUND BURIED IN SUBSTRATE SUCH AS SOFT MUD AND/OR GRAVEL, AND/OR UNDER FLAT STONES IN SHALLOW WATER IN SMALL STREAMS WHERE THE CURRENT MAY BE SWIFT (BAKER 1928, BUCHANAN 1980, GOODRICH AND VAN DER SCHALIE 1944).										
Metcalfe	Freshwater Mussels	*Villosa lienosa*	Little Spectaclecase	S /	G5 / S3S4	5	0	0	0	0
INHABITS SMALL TO MEDIUM-SIZED RIVERS, USUALLY IN SHALLOW WATER ON A SAND/MUD/DETRITUS BOTTOM (PARMALEE 1967, GORDON AND LAYZER 1989).										
Metcalfe	Crustaceans	*Barbicambarus cornutus*	Bottlebrush Crayfish	S /	G3G4 / S2	1	0	0	0	0
LIVES UNDER OR NEAR LARGE, FLAT COBBLES OR BOULDERS IN STREAMS.										
Metcalfe	Insects	*Allocapnia cunninghami*	A Capniid Stonefly	T /	G1 / S1S2	1	0	0	0	0
SPRING-FED STREAMS IN KARST HABITATS.										
Metcalfe	Insects	*Erora laeta*	Early Hairstreak	T /	G3G4 / S1	0	0	0	1	0
DECIDUOUS OR MIXED WOODS -- OFTEN ALONG DIRT ROADS OR OPEN RIDGETOPS (OPLER AND MALIKUL 1992).										
Metcalfe	Fishes	*Etheostoma maculatum*	Spotted Darter	T / SOMC	G2 / S2	2	0	0	0	0
INHABITS MEDIUM TO LARGE STREAMS WHERE IT OCCURS AMONG COARSE GRAVEL, COBBLE AND BOULDERS IN SWIFT RIFFLES AND SHOALS (KUEHNE AND BARBOUR 1983, PAGE 1983, ZORACH AND RANEY 1967, STILES 1972, BURR AND WARREN 1986, KESSLER 1992).										
Metcalfe	Fishes	*Phenacobius uranops*	Stargazing Minnow	S /	G4 / S2S3	0	2	0	0	0
INHABITS MEDIUM-SIZE STREAMS TO SMALL RIVERS WITH HIGH GRADIENT, PERMANENT FLOW, CLEAR WATER, AND PEBBLE AND GRAVEL SUBSTRATES (BURR AND WARREN 1986).										
Metcalfe	Fishes	*Thoburnia atripinnis*	Blackfin Sucker	S / SOMC	G2 / S2	1	0	0	0	0
SMALL STREAMS WITH CLEAR WATER, ALTERNATING POOLS AND RIFFLES. ASSOCIATED WITH SLAB ROCK AND GRAVEL BOTTOMS, UNDERCUT BANKS, AND MODERATE CURRENT (BAILEY 1959, ETNIER AND STARNES 1993, TIMMONS ET AL. 1983, BURR AND WARREN 1986).										
Metcalfe	Breeding Birds	*Ammodramus henslowii*	Henslow's Sparrow	S / SOMC	G4 / S3B	1	0	0	0	0
OPEN FIELDS & MEADOWS W/ GRASS INTERSPERSED W/ WEEDS OR SHRUBBY VEG., ESPEC. IN DAMP OR LOW-LYING AREAS, ADJACENT TO SALT MARSH IN SOME AREAS. IN MIGRATION & WINTER ALSO IN GRASSY AREAS ADJACENT TO PINE WOODS OR SECOND-GROWTH WOODS.										
Metcalfe	Mammals	*Myotis grisescens*	Gray Myotis	T / LE	G3 / S2	1	0	0	0	0
Gray bats use primarily caves throughout the year, although they move from one cave to another seasonally. Males and young of the year use different caves in summer than females.										
Metcalfe	Communities	*Shrub swamp*		/	GNR / S2S3	3	0	0	0	0

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Species Information
KDFWR Maps
WMA Maps
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KFWIS FTP Site
Links

Species Information

Federal Threatened and Endangered Species observations for selected counties

Linked life history provided courtesy of NatureServe Explorer.
US Status Definitions Kentucky Status Definitions

List Federal Threatened and Endangered Species observations in 1 selected county.
Selected county is: METCALFE.
1 species is listed.

Page 1 of 1

Scientific Name	Common Name	Class	County	US Status	KY Status	Reference
MYOTIS GRISESCENS	GRAY MYOTIS	MAMMALIA	METCALFE	LE	T	Reference

Last Updated - 03/27/03

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APPENDIX B – KYTC DESIGN MEMORANDUM NO. 12-05, JULY 27, 2005

DESIGN MEMORANDUM NO. 12-05

TO: Chief District Engineers
Design Engineers
Active Consultants

FROM: David E. Kratt, Acting Director DeK
Division of Highway Design

DATE: July 27, 2005

SUBJECT: Policy on Best Management Practice (BMP)
to be used for Karst and Significant Resource Areas

The following BMP shall be used during the construction and the maintenance/operations of all roads listed on the National Highway System located in Karst areas and on all roadways which may impact a significant resource as determined by the DEA.

1. **Use grass swales for ditches. These swales shall be constructed as shown on the attached detail with a flat bottom cross-section of 2 ft. minimum. The width of the bottom of the swale will be determined by the Design Engineer based on the expected peak flow and the slope so that resulting shear stress will allow as much grass or grass and geo-tech liner as possible.**

2. **Use interceptor ditches to prevent large volumes of off site water from adding to the volume of run-off being carried by the swales.**

3. **Use detention/containment basins to temporarily impound the run-off from the swales before it is discharged from the right-of-way. These basins shall have a minimum volume of 10,000 gallons upstream from each final discharge point. This volume may be attained by constructing basins in series if necessary. The discharge point of each basin shall be constructed as a Silt Trap Type B (see attachment). Detention Basins shall be designed to maximize the flow length between the entrance and exit.**

4. **All swales shall be seeded with the mixture shown on the detail at the rate of 5 lbs. per 1000 sq. ft.**

5. **When and if these swales and/or basins are cleaned out, they shall be restored.**

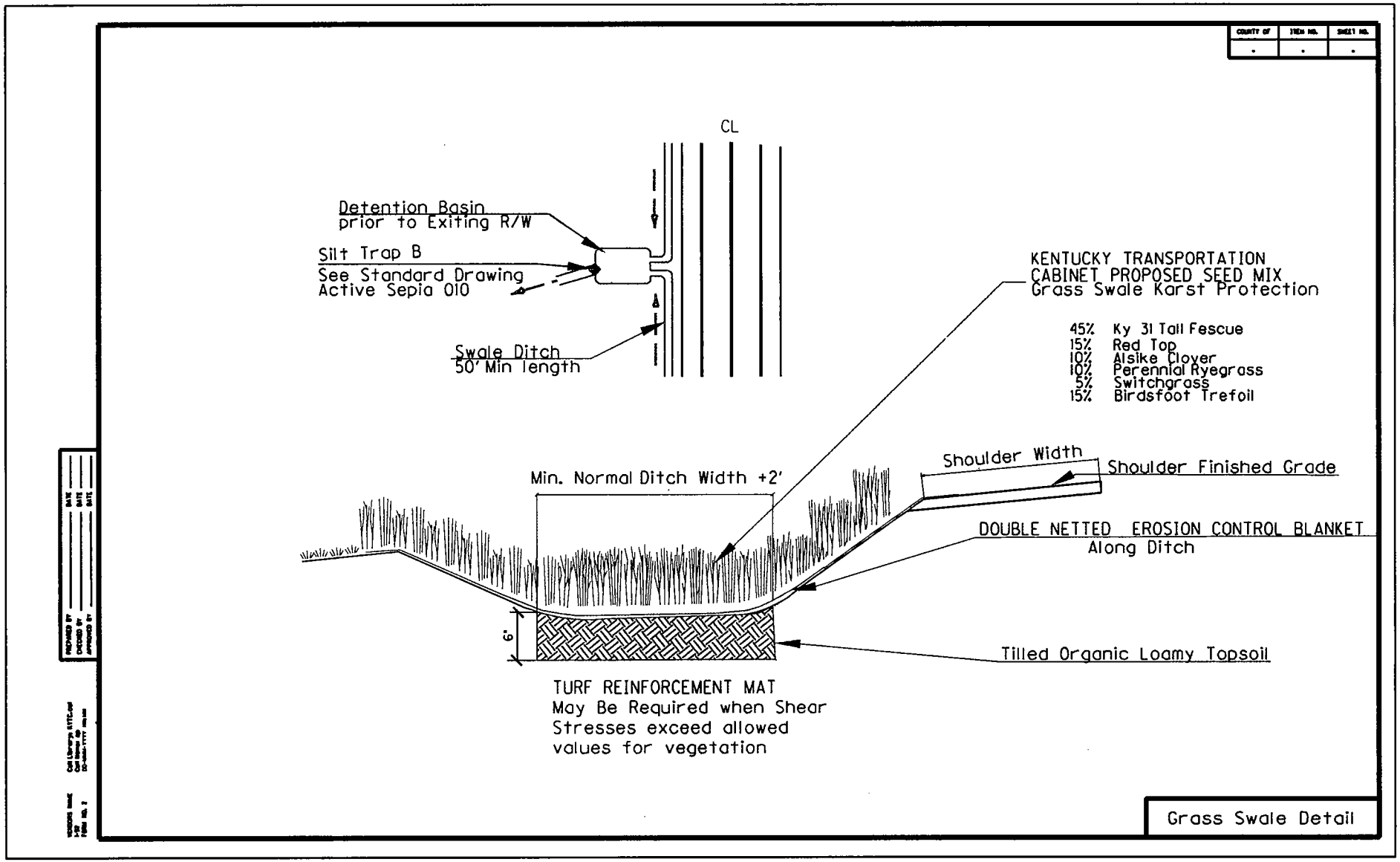
This policy is effective for the Design Projects for I-65 and I-66 which are currently being designed and for all other qualifying projects where Right-of-Way plans have not been completed. The Project Team may decide to implement this policy on projects that do not meet the above criteria.

As this is a new policy, details and techniques will need to be further refined as we gain experience with the procedures enumerated above. Please contact Mr. Danny Jasper of the Division of Highway Design with your comments, suggestions or questions.

Maps of the National Highway System are located on the Division of Planning's website at http://transportation.ky.gov/planning/maps/NHS/nhs_kysz_2005.pdf. The Area of Karst Occurrence in Kentucky is located on the Kentucky Geological Survey's website at http://kgsweb.uky.edu/olops/pub/kgs/mc33_12.pdf. A detail of a Grass Swale is attached.

DEK:RDM:WDM:DJ:JAD

Attachment



...\DetentionDamVegSwaleDetail.dgn 7/8/2005 11:37:51 AM

2514 Regency Road, Suite 104
Lexington, Kentucky 40503

Ph: 859-977-2000
Fax: 859-977-2001

www.thirdrockconsultants.com