ENVIRONMENTAL OVERVIEW

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

March 2005

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PROPOSED INTERSTATE 69 CORRIDOR
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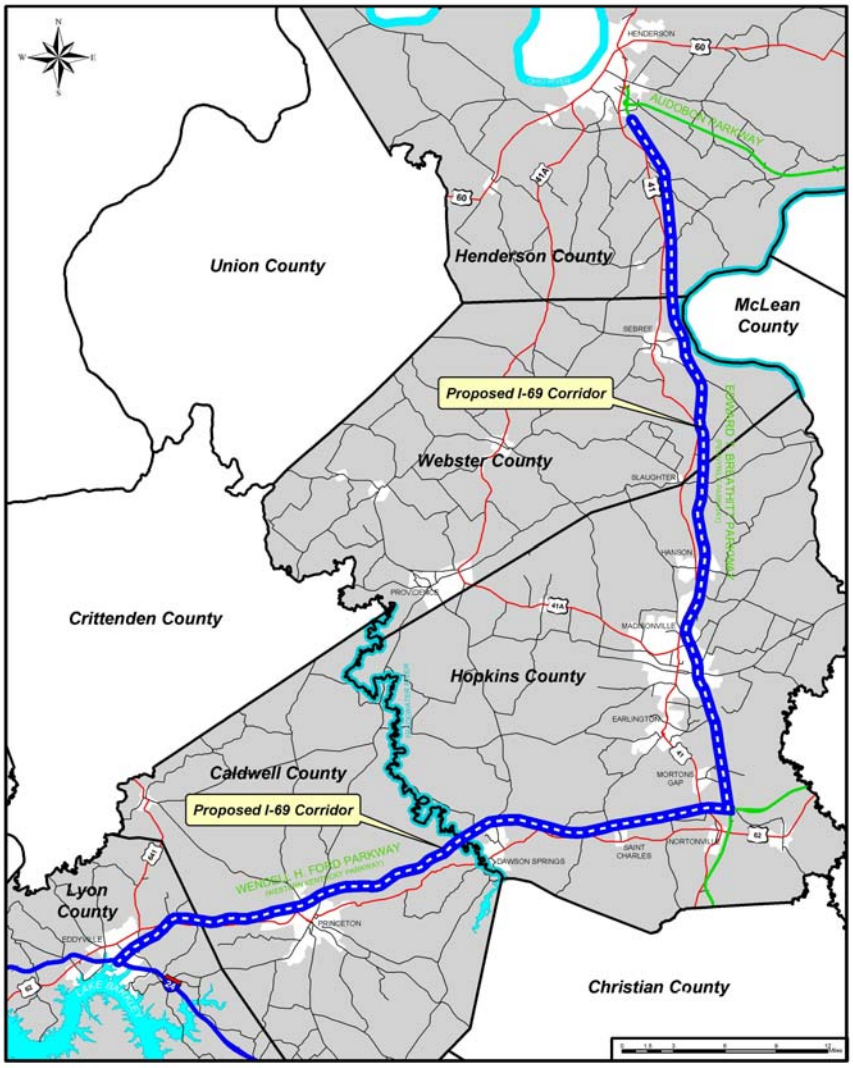
I. Project Description

This Environmental Overview was conducted for the Strategic Corridor Planning Study for I-69 between Eddyville and Henderson, Kentucky. The Overview presents a summary of the social, economic, and environmental features within the proposed I-69 corridor, based on record searches, literature reviews, field reconnaissance, and early coordination with appropriate federal and state resource agencies. The coordination response letters are included in **Appendix A**.

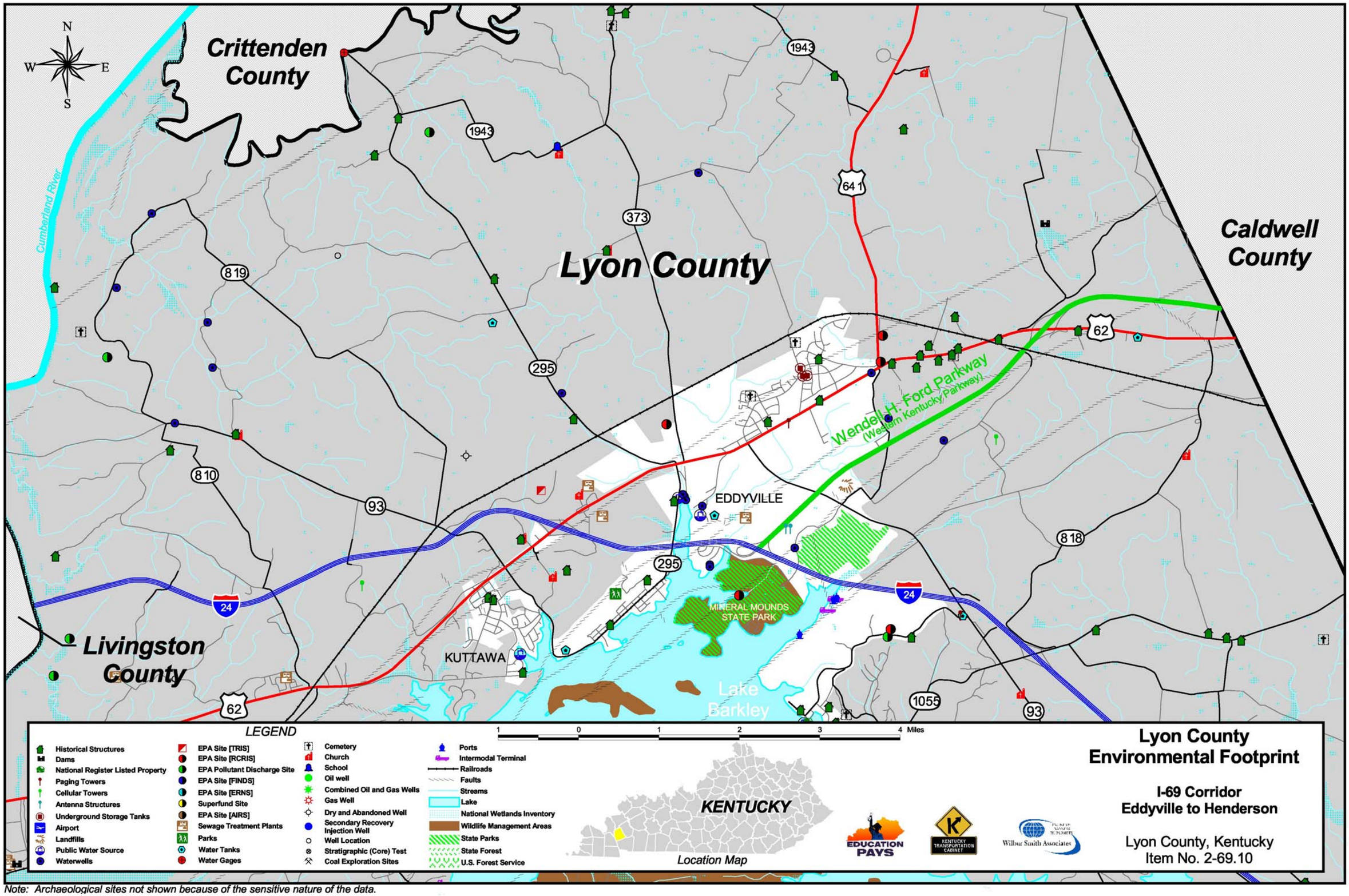
The project's termini (beginning and end points) are from I-24 in Eddyville north to KY 425 in Henderson, including the following segments:

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

The overview includes a summary of the environmental characteristics within a 1000-foot buffer on each side of the existing Parkway routes. Overview maps for each county in the study area are included as **Figures 1** through **5**.

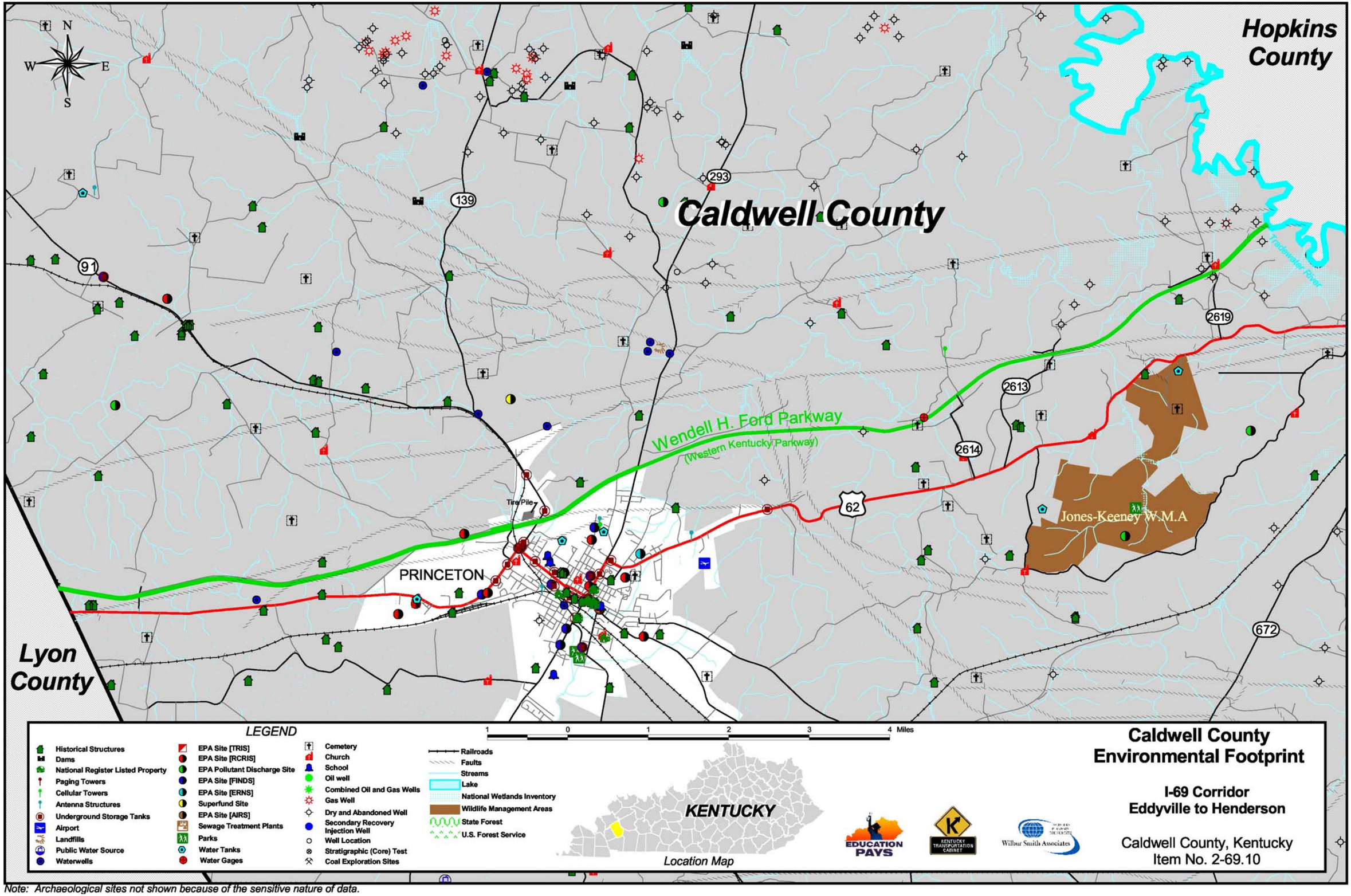


Study Area: I-69 Eddyville to Henderson



Note: Archaeological sites not shown because of the sensitive nature of the data.

Figure 1. Lyon County Environmental Footprint



Note: Archaeological sites not shown because of the sensitive nature of data.

Figure 2. Caldwell County Environmental Footprint

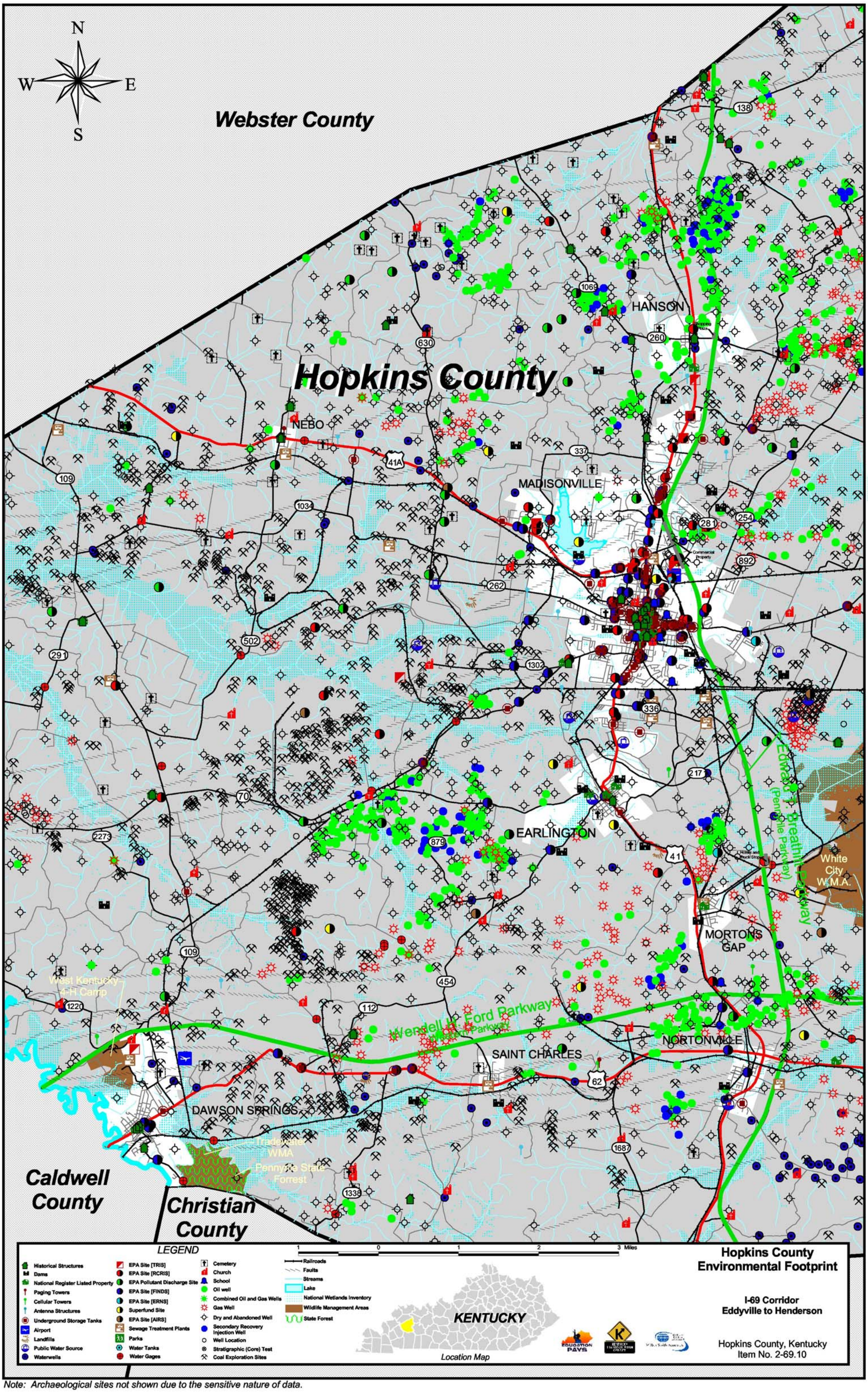


Figure 3. Hopkins County Environmental Footprint

Note: Archaeological sites not shown due to the sensitive nature of data.

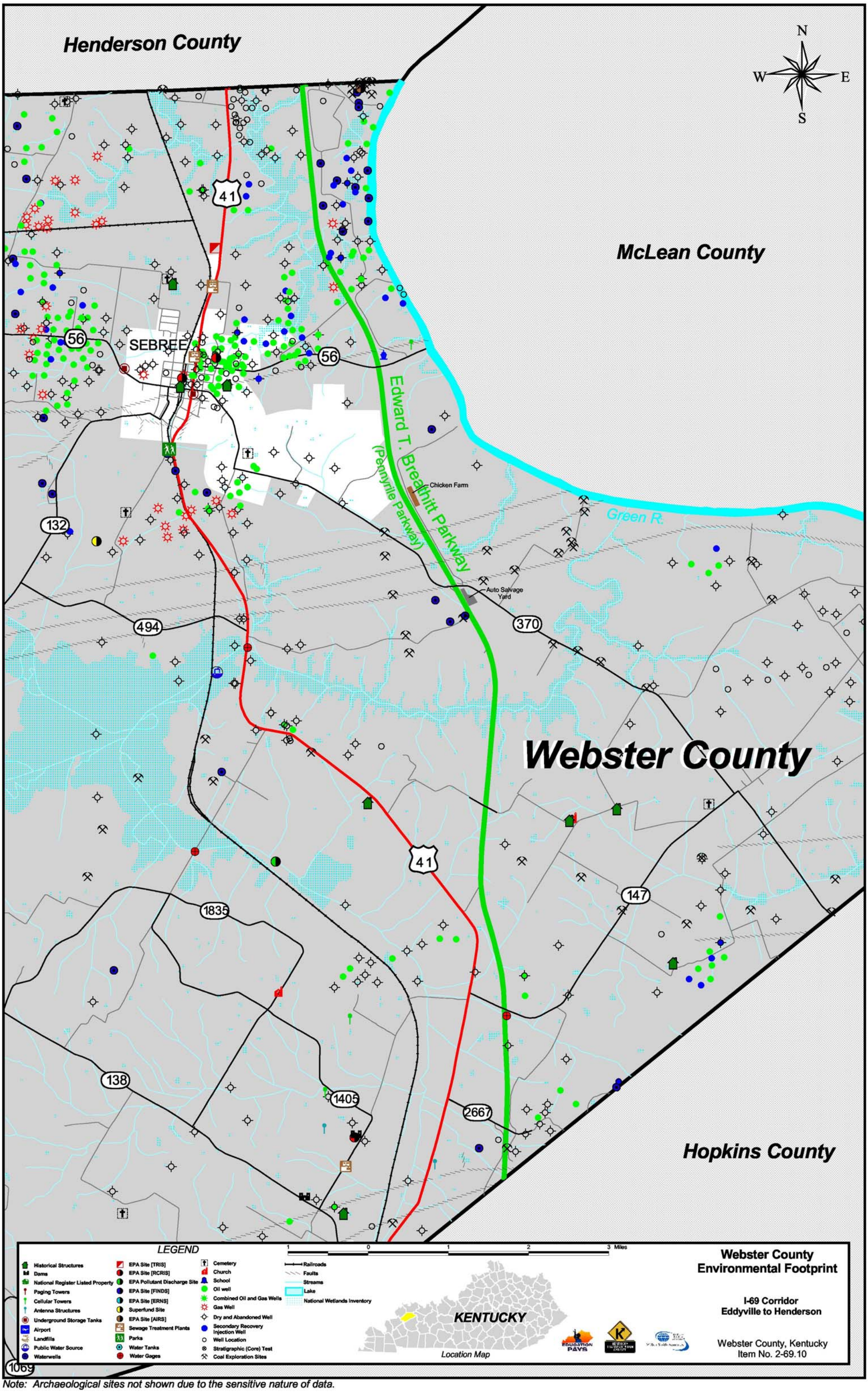


Figure 4. Webster County Environmental Footprint

Note: Archaeological sites not shown due to the sensitive nature of data.

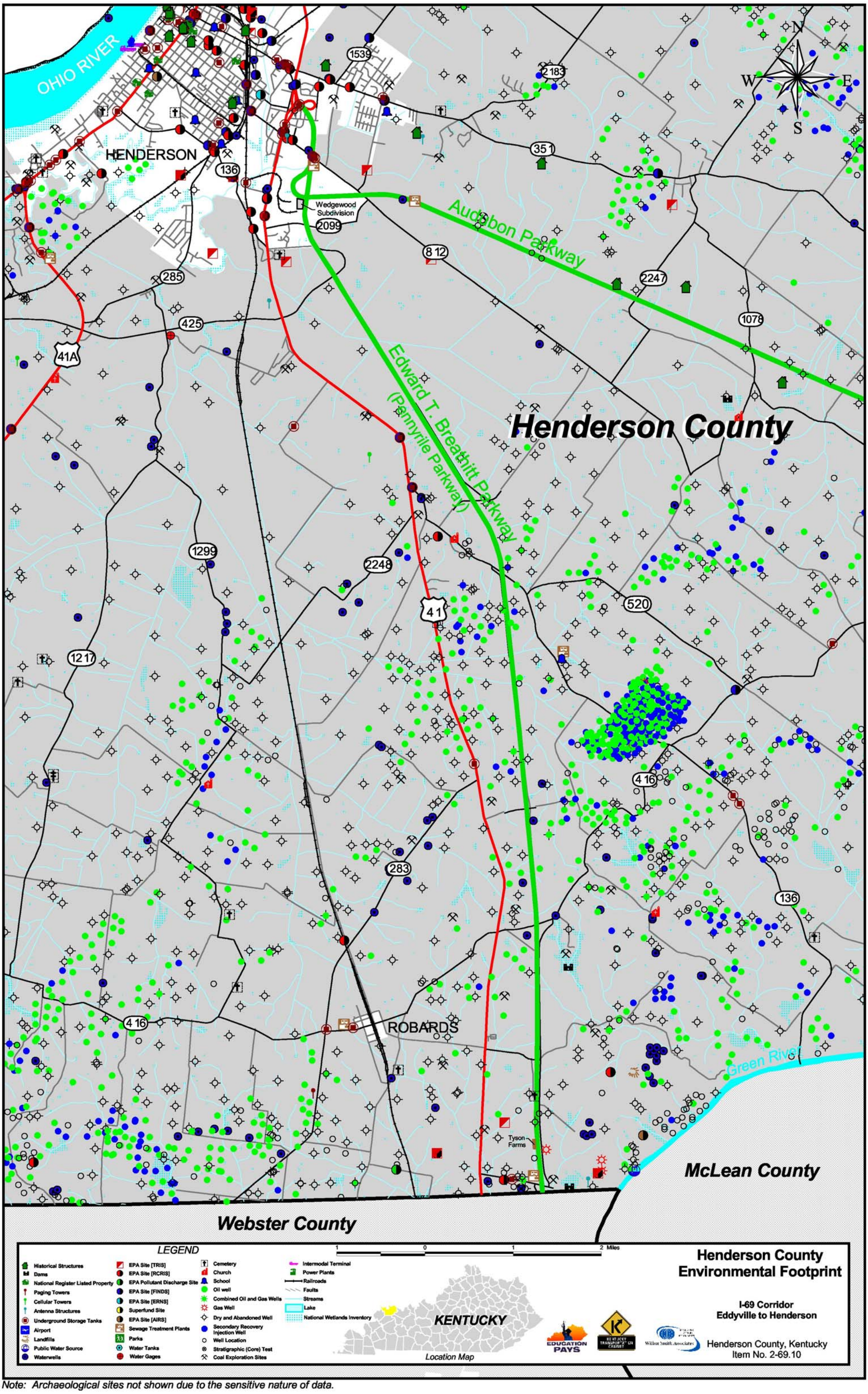


Figure 5. Henderson County Environmental Footprint

Note: Archaeological sites not shown due to the sensitive nature of data.

II. Terrestrial and Aquatic Ecosystems

A. Physiographic Region and Topography

According to McGrain and Currens (1978), Henderson, Webster, and Hopkins counties are within the Western Kentucky Coal Field physiographic region. This region is characterized by rolling to hilly terrain throughout the interior with sandstone cliffs and narrow, rocky valleys along the perimeter of the region.

The two remaining counties, Caldwell and Lyon, are found within the Mississippian Plateau region. This region, according to McGrain and Currens (1978) and McGrain (1983), has numerous knobs, extensive sinkhole plains, the Kentucky cave country, wooded escarpments, and sandstone capped plateaus.

Elevations along the I-69 corridor range from approximately 370 to 660 feet (ft) above mean sea level. The I-69 project is located within 12 of the United States Geological Survey (USGS) 7.5-minute quadrangles, including: Henderson, Robards, Sebree, Beech Grove, Hanson, Madisonville East, Nortonville, Saint Charles, Dawson Springs, Olney, Princeton West, and Eddyville.

Due to the gently rolling terrain, the topography should not have an excessive effect on erosion. The project is not expected to change the topography in the area other than the usual cuts, fills and grading done for similar projects.

B. Geology

The I-69 project corridor crosses a variety of geological formations. The northern end of the corridor, near Henderson, KY, is situated upon Ohio River alluvium and Loess glacial outwash of Pleistocene age. Alluvium and glacial outwash is typically sand and silt with some clay and gravel interbedded. These deposits range from 0 to 135 feet thick. Alluvium and Loess outwash is predominant along the corridor to the Robards exit. South of this point, the Lisman Formation, consisting of a mix of limestone, sandstone, shale, coal, and clay, dominates within the 2000-foot corridor.

In Webster County, alluvium and glacial outwash continue to dominate with the addition of Tradewater and Caseyville Formations near the Green River and a Sturgis Formation occurring in the southern portion of the county. These formations, all of Pennsylvanian age, contain a mixture of limestone, sandstone, siltstone, coal, and underclay with depths ranging from 700 to 1090 feet or more.

Upon entering Hopkins County, alluvium formations share dominance with the Henshaw and Lisman Formation, consisting of sandstone, siltstone, shale, and clay, with depths ranging from 0 to 920 feet. The geology shifts near Madisonville with the Lisman and Carbondale Formations becoming more prevalent. The Lisman Formation differs from the Henshaw and Lisman Formation with the addition of coal in place of clay within the strata. The Carbondale Formation consists primarily of coal and clay, with portions of land along the project area being currently or previously mined. These coal beds range from 10 to 75 feet thick. The Carbondale Formation continues south to the Breathitt/Ford Parkway interchange, where it underlies a majority of the project corridor to the county line. The final portion of the project area in Hopkins County consists of the Tradewater Formation. This unit is

composed of sandstone, siltstone, shale, limestone, underclay, and coal that ranges from 175 to 320 feet thick.

Caldwell County has a variety of geologic formations and the project corridor traverses many of these units. These formations include: Tradewater, Caseyville, Palestine Sandstone, Menard Limestone, Waltersburg Sandstone and Vienna Limestone, Tar Springs Sandstone, Glen Dean Limestone, Hardinsburg Sandstone, Golconda, Cypress Sandstone, Paint Creek Limestone, Renault and Ste. Genevieve Limestone, St. Louis Limestone, and Alluvium. All of these formations, except the Alluvium, are of Carboniferous age and range in depth from 0 to 500 feet.

The westernmost portion of the project corridor crosses into Lyon County. The majority of the corridor in this county is situated upon St. Louis and Salem Limestone. This rock is of Mississippian age and is approximately 350 to 375 feet thick. The remaining portion of the project near Eddyville crosses Warsaw Limestone and Fort Payne Formations. Both units consist of limestone and are of Mississippian age with the Warsaw Formation ranging in thickness from 180 to 240 feet while the Fort Payne Formation averages around 600 feet thick.

C. Groundwater

According to the Water Resource Development Commission of Kentucky, public water is provided to 85 to 95 percent of the population found in the five study area counties. In areas not supplied by public water, Henderson County has the highest use of private domestic wells (90%) while Hopkins County has the least reliance on individual water sources (50%). The remaining households rely on other means of obtaining water.

Locations for monitoring wells, domestic wells, public water supplies and springs are provided in the Kentucky Natural Resources and Environmental Protection Cabinet's map in **Appendix A.**

No wellhead protection areas are known within the project area. Eleven monitoring wells and twelve domestic wells are located within the 2000-foot corridor between Henderson and Eddyville, KY.

A review of the "Availability of Ground Water in Union and Henderson Counties, Kentucky" (Maxwell and Devaul, 1962) provided information about the groundwater along the project corridor in Henderson County. The majority of the project corridor contains drilled wells that yield enough water from a depth of less than 300 feet for a modern domestic supply (more than 500 gallons a day). The remaining portions of the project area near the northern end of the corridor contain wells that yield enough water from depths of less than 300 feet for a domestic supply with a bucket, bailer, or hand pump. Water in this area is hard and may contain objectionable amounts of sulfur and iron.

Groundwater availability in Webster and Hopkins counties consists primarily of wells that yield enough water from depths of less than 300 feet for a modern domestic supply. Small sections of the corridor near Nortonville have wells that fail to supply enough water for a domestic supply from less than 300 feet (less than 100 gpd). A small portion of the corridor northeast of Sebree contains wells where the yield is

unpredictable due to faulting in the area. The water is generally hard with some areas containing hydrogen sulfide (Maxwell and Devaul, 1962).

According to the "Availability of Groundwater in Caldwell, Christian, Crittenden, Livingston, Lyon, Todd, and Trigg Counties, Kentucky" (Lambert and Brown, 1963) most drilled wells along the project corridor will produce enough water for a domestic supply with a power pump (greater than 500 gpd). Portions of the corridor near the Lyon/Caldwell county line contain drilled wells in lowland areas that produce enough water for a domestic supply with a power pump. Most drilled wells in uplands are inadequate for a domestic supply with a power pump.

There are a number of blue-line streams within each county of the study area. The number of potential stream crossings in the study area is summarized by county in the following table:

County	Stream Type	
	Blue-line Perennial	Blue-line Intermittent
Henderson	5	24
Webster	5	18
Hopkins	13	73
Caldwell	5	31
Lyon	2	3

There are also a number of wetland areas within the study area for the proposed I-69 corridor. The number of wetland occurrences in the study area is listed by type in the following table:

Type of Wetland	Number of Occurrences
Ponded-Emergent	11
Ponded-Scrub/Shrub	11
Ponded-Forested	57
Riverine	7
Lacustrine (Lake)	2

D. Floodplains

The Federal Emergency Management Agency (FEMA) was consulted for information regarding 100-year floodplains. The I-69 corridor crosses special flood hazard areas inundated by 100-year floods within Henderson and Hopkins Counties. The project crosses the floodplains of Elam Ditch and East Fork of Canoe Creek in Henderson County. Floodplain crossings in Hopkins County include Otter Creek, Flat Creek, a tributary of Flat Creek, Pleasant Run, a tributary of Cany Creek, East Fork of Hurricane Creek, North Fork of Hurricane Creek, and the Tradewater River. No published floodplain information is available for the project corridor within Webster, Caldwell, and Lyon Counties. Additional 100-year floodplains may exist along streams in these unmapped counties.

As part of the I-69 project, all stream crossings should be structured in a manner as to not raise flood elevations. Impacts on floodplains are expected to be minimal since all of these streams currently have spanning structures in place. Some floodplain encroachment may occur, but efforts should be made to limit any fill areas. Exact impacts on floodplains will be determined during final design. This project is not anticipated to encourage new development in the floodplain.

Protection of floodplains and floodways is required by Executive Order 11988; Floodplain Management (May 24, 1977), U.S. Department of Transportation Order 5650.2: Floodplain Management and Protection, and Federal-Aid Policy Guide 23 (23 CFR 6580A). These regulations require KYTC to avoid or minimize highway encroachments within the 100-year floodplain, where practicable. Where encroachment along the project is unavoidable, KYTC must take appropriate measures to minimize impacts.

A "No-Rise" certification and coordination with FEMA will probably be required. As part of the No-Rise certification, modeling is undertaken to ensure that constructing across floodplains will have minimal impact on existing flood levels. Regulations limit the effect to a maximum of 1 foot. If the modeling determines that flood elevations will not change significantly, no further evaluation is needed and the encroachments are considered minimal.

E. Soils

A Soil Survey summary for Henderson, Webster, Hopkins, Caldwell, and Lyon Counties is included in **Appendix B**. Please refer to this table for a description of the soil units within each county crossed by the project corridor.

Roadway construction, agricultural activities and residential/commercial development have previously disturbed much of the project area. Construction of the proposed project will potentially result in loss of previously disturbed areas, as well as small agricultural areas composed of cropland and pastures.

Erodible soils are found in the project area and should be a consideration when an erosion control plan is developed. Impacts on soil and erosion of topsoil can decrease agricultural productivity. Use of heavy equipment to move soil and existing vegetation can disrupt natural drainage patterns. Use of heavy equipment can also

compact soil and decrease permeability. Areas of prime farmland, unique or statewide important soils should be considered prior to construction activities.

Specific amounts of disturbance will be determined in coordination with the Natural Resources Conservation Service and discussed in the Socioeconomic Baseline Study (i.e., during the development of the Land Evaluation Site Assessment (LESA) score).

F. Flora and Fauna

The project corridor includes areas disturbed by human occupation. The land uses are agricultural, residential, or forested. The agricultural areas are used for crop production and pastures. The residence areas consist of manicured lawns with introduced and native species. Flora and fauna that would be expected to occur in the project corridor are species adapted to the encroachment of man.

Information from the United States Fish and Wildlife Service (USFWS) indicates that the federally endangered Indiana bat, the gray bat and the bald eagle have the potential to occur in the vicinities within and near the I-69 project corridor. Foraging habitat exists for both bats.

As alternates are developed, the project team will conduct baseline studies to determine the potential impacts to plants, animals and their habitats. This process will ensure that impacts to threatened and endangered species are avoided. If they cannot be avoided, the team will work to minimize potential impacts to the species and their habitats. If threatened and/or endangered species could be located in the project area, biological assessments will be conducted prior to construction.

Field investigations and coordination efforts yielded the following information:

- Indiana Bat

  The project team reviewed USGS maps and databases to identify waterways, lakes (e.g. Lake Barkley, Kentucky Lake, Lake Beshear), parks (e.g. Pennyrile Forest, Land Between the Lakes), wildlife management areas (e.g. Tradewater, Jones Keeney), and other significant natural features and determined that areas suitable for sustaining Indiana bats exist throughout the project area.

  The Indiana bat formally attained endangered status March 11, 1967 (USFWS 2003). The historic range of the Indiana bat extended throughout the southeastern and central United States into New England. Causes of decline in the species populations are primarily the result of human disturbance and include activities such as commercialization and vandalism of caves, manmade changes to cave entrances, deforestation, and insecticide applications. Currently the Indiana bat is found throughout the eastern United States, as far west as Oklahoma and Iowa, north to Wisconsin, east to Vermont, and south to northwestern Florida (Slone and Wethington 2001).

  Two caves in Kentucky, Bat Cave in Carter County and Coach Cave in Edmonson County, have been designated as critical habitat for the Indiana bat (USFWS 2003). Coach Cave is located in an area near the project corridor.

Dense clusters of Indiana bats hibernate in limestone caves and abandoned mines with cool, stable temperatures. Female bats leave the hibernacula in April and migrate to summer habitat. Males typically migrate at a later time or spend the summer near the hibernacula. During summer months, maternal colonies roost under loose bark and in cavities of dead and live trees. Some male Indiana bats are found in caves during the summer (Harvey et al., 1999). Foraging occurs along streams in the floodplain and riparian forests as well as in upland forests and over farm ponds (Bat Conservation International 2001).

- Gray Bat

  The gray bat formally attained endangered status April 28, 1976 (USFWS 2003). Gray bat populations are primarily found in cave regions in Alabama, Arkansas Kentucky, Missouri and Tennessee. Smaller populations occur in areas of Florida, Georgia, Kansas, Indiana, Illinois, Oklahoma, Mississippi, Virginia and North Carolina. Population decline is attributed to human disturbance and vandalism of caves, improper cave gating, insecticide applications, and flooding of caves due to impoundment of waterways (USFWS 2003).

  Gray bats are year-round cave inhabitants. They migrate between summer and winter caves and will use transient caves along the way. Gray bats hibernate in caves with deep, vertical passages that serve as cold air traps. Females emerge from the hibernacula in late March and migrate to summer caves. Thousands of females form maternity colonies in these summer caves. The summer maternity caves generally contain large streams, and are located in proximity to rivers or lakes where the bats forage for insects. While females are rearing pups, the males and non-reproductive females form bachelor colonies in nearby caves (Slone and Wethington 2001, Barbour and Davis 1969, Bat Conservation International 2001).

- Bald Eagle

  The bald eagle formally attained threatened status on March 11, 1967 (USFWS 2003). The distribution of the bald eagle was historically throughout North America, from western Alaska east to the maritime Canadian provinces, south to the Florida Keys and Baja California (USFWS 2003). This large raptor (meat eating predator) is absent as a breeding species throughout much of its former range outside Alaska and Florida. The use of the pesticide DDT between 1940 and 1972 caused a decline the species' population. However, numbers have been increasing since the ban of DDT usage in 1972 and since subsequent efforts to protect bald eagles and their habitats have occurred. Since 1989, the number of successfully nesting eagles at Land Between the Lakes in Kentucky has been increasing (Slone and Wethington 2001).

  Bald eagles wintering in Kentucky migrate from the Great Lakes Region, arriving in October to begin December courtship. Eggs laid in late February hatch after 35 days (Slone and Wethington 2001). Nesting habitat includes a nest tree, perch and roost sites (USFWS 2003). Nest sites are constructed in trees that are larger and taller than surrounding trees, and the trees are located within several hundred yards of large rivers, lakes, or reservoirs. The nests are large and

average 7 to 8 feet in diameter and up to 12 feet deep (Slone and Wethington 2001). Shorelines with large trees provide daytime perches from which the eagles forage feed or defend nesting territories. Roost sites are used at nights for resting and are usually the tallest, dominant trees in the forest (USFWS 2003).

A summary of the project team's field investigations and coordination efforts yielded the following information related to threatened and endangered species within the study area counties:

	Known Occurrences of Threatened and Endangered Species	
	US Fish and Wildlife and KY Fish and Wildlife Threatened and Endangered Species	**KSNPC State Threatened and Endangered Species**
Mammals	Indiana Bat	Masked Shrew
	Gray Bat	
Birds	Bald Eagle	Great Egret
		Great Blue Heron
		Fish Crow
Reptiles/Amphibians		Copperbelly Water Snake
		Eastern Ribbon Snake
		Green Treefrog
		Bird-Voiced Treefrog
Mussels		Texas Lilliput
Insects	American Burying Beetle	American Burying Beetle
Trees/Plants	Price's Potato Bean	Red Buckeye
		Appalachian Bugbane
		Small Flower Baby-Blue-Eyes
		Buckley's Goldenrod
Special Communities		Acidic Mesophytic Forest

Source: US Fish and Wildlife Service, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission

III. Socioeconomic/Environmental Justice

A review of U.S. Census information, economic data, and a windshield survey helped examine socioeconomic and environmental justice concerns. This section also includes information related to land use, relocations, environmental justice and farmland.

A. Population Characteristics

Following is a brief overview of population characteristics for each of the five counties:

- Lyon County has 215.7 sq. miles in land area and a population density of 37.5 per square mile. In the last three decades of the 1900s, its population grew by 45.3%. On the 2000 census form, 99.5% of the population reported only one race, with 6.7% of these reporting African-American. The population of this county is 0.7% Hispanic (of any race). The average household size is 2.26 persons compared to an average family size of 2.70 persons.

  In 2003, public administration was the largest of 20 major sectors. It had an average wage per job of $28,636. Per capita income grew by 20.6% between 1992 and 2002 (adjusted for inflation).

Lyon County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	8,078	Covered Employment	2,007
Growth (%) since 1990	22.0%	Avg wage per job	$20,287
Households (2000)	2,898	Manufacturing - % all jobs in County	D
Labor Force (persons) (2003)	3,320	Avg wage per job	D
Unemployment Rate (2003)	8.4%	Transportation & Warehousing - % all jobs in County	0.8%
Per Capita Personal Income (2002)	$20,095	Avg wage per job	$34,383
Median Household Income (2000)	$31,694	Health Care, Social Assist. - % all jobs in County	12.1%
Poverty Rate (2000)	12.7%	Avg wage per job	$18,206
H.S. Diploma or More - % of Adults 25+ (2000)	68.0	Finance and Insurance - % all jobs in County	0.9%
Bachelor's Deg. or More - % of Adults 25+ (2000)	10.1	Avg wage per job	$25,928

Note: Covered Employment and Wage data for 2003 are preliminary. D = Data were not available.

- Caldwell County has 347.0 sq. miles in land area and a population density of 37.0 per square mile. In the last three decades of the 1900s, its population declined by 0.9%. On the 2000 census form, 99.4% of the population reported only one race, with 4.8% of these reporting African-American. The population of this county is 0.6% Hispanic (of any race). The average household size is 2.36 persons compared to an average family size of 2.85 persons.

  In 2003, manufacturing was the largest of 20 major sectors. It had an average wage per job of $32,707. Per capita income grew by 15.6% between 1992 and 2002 (adjusted for inflation). Following is a table illustrating various socioeconomic data for Caldwell County:

Caldwell County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	12,824	Covered Employment	4,019
Growth (%) since 1990	-3.1%	Avg wage per job	$24,800
Households (2000)	5,431	Manufacturing - % all jobs in County	23.9%
Labor Force (persons) (2003)	6,523	Avg wage per job	$32,707
Unemployment Rate (2003)	5.5%	Transportation & Warehousing - % all jobs in County	2.2%
Per Capita Personal Income (2002)	$22,578	Avg wage per job	$27,745
Median Household Income (2000)	$28,686	Health Care, Social Assist. - % all jobs in County	D
Poverty Rate (2000)	15.9%	Avg wage per job	D
H.S. Diploma or More - % of Adults 25+ (2000)	73.1	Finance and Insurance - % all jobs in County	3.5%
Bachelor's Deg. or More - % of Adults 25+ (2000)	10.0	Avg wage per job	$31,028

Note: Covered Employment and Wage data for 2003 are preliminary. D = Data were not available.

- Hopkins County has 550.6 sq. miles in land area and a population density of 85.1 per square mile. In the last three decades of the 1900s, its population grew by 21.9%. On the 2000 census form, 99.1% of the population reported only one race, with 6.2% of these reporting African-American. The population of this county is 0.9% Hispanic (of any race). The average household size is 2.43 persons compared to an average family size of 2.91 persons.

  In 2003, health care and social assistance was the largest of 20 major sectors. It had an average wage per job of $32,116. Per capita income grew by 6.3% between 1992 and 2002 (adjusted for inflation).

Hopkins County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	46,839	Covered Employment	17,464
Growth (%) since 1990	1.5%	Avg wage per job	$27,908
Households (2000)	18,820	Manufacturing - % all jobs in County	17.1%
Labor Force (persons) (2003)	19,329	Avg wage per job	$35,682
Unemployment Rate (2003)	7.7%	Transportation & Warehousing - % all jobs in County	1.8%
Per Capita Personal Income (2002)	$23,039	Avg wage per job	$31,893
Median Household Income (2000)	$30,868	Health Care, Social Assist. - % all jobs in County	18.6%
Poverty Rate (2000)	16.5%	Avg wage per job	$32,116
H.S. Diploma or More - % of Adults 25+ (2000)	71.3	Finance and Insurance - % all jobs in County	2.5%
Bachelor's Deg. or More - % of Adults 25+ (2000)	10.6	Avg wage per job	$35,759

Note: Covered Employment and Wage data for 2003 are preliminary.

- **Webster County** has 334.8 sq. miles in land area and a population density of 42.0 per square mile. In the last three decades of the 1900s, its population grew by 6.3%. On the 2000 census form, 99.3% of the population reported only one race, with 4.7% of these reporting African-American. The population of this county is 1.9% Hispanic (of any race). The average household size is 2.49 persons compared to an average family size of 2.94 persons.

  In 2003, manufacturing was the largest of 20 major sectors. It had an average wage per job of $25,420. Per capita income grew by 21.7% between 1992 and 2002 (adjusted for inflation).

Webster County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	14,051	Covered Employment	3,536
Growth (%) since 1990	0.7%	Avg wage per job	$29,908
Households (2000)	5,560	Manufacturing - % all jobs in County	18.9%
Labor Force (persons) (2003)	5,574	Avg wage per job	$25,420
Unemployment Rate (2003)	8.3%	Transportation & Warehousing - % all jobs in County	5.3%
Per Capita Personal Income (2002)	$25,417	Avg wage per job	$30,700
Median Household Income (2000)	$31,529	Health Care, Social Assist. - % all jobs in County	6.4%
Poverty Rate (2000)	15.4%	Avg wage per job	$21,268
H.S. Diploma or More - % of Adults 25+ (2000)	70.9	Finance and Insurance - % all jobs in County	3.1%
Bachelor's Deg. or More - % of Adults 25+ (2000)	7.1	Avg wage per job	$33,020

Note: Covered Employment and Wage data for 2003 are preliminary.

- **Henderson County** has 440.1 sq. miles in land area and a population density of 102.5 per square mile. In the last three decades of the 1900s, its population grew by 24.4%. On the 2000 census form, 99.1% of the population reported only one race, with 7.1% of these reporting African-American. The population of this county is 1.0% Hispanic (of any race). The average household size is 2.43 persons compared to an average family size of 2.93 persons.

  In 2003, manufacturing was the largest of 20 major sectors. It had an average wage per job of $36,956. Per capita income grew by 12.6% between 1992 and 2002 (adjusted for inflation).

Henderson County Socioeconomic Data			
People & Income Overview (By Place of Residence)	**Value**	**Industry Overview (2003)** (By Place of Work)	**Value**
Population (2003)	45,129	Covered Employment	21,342
Growth (%) since 1990	4.8%	Avg wage per job	$31,666
Households (2000)	18,095	Manufacturing - % all jobs in County	31.2%
Labor Force (persons) (2003)	24,221	Avg wage per job	$36,956
Unemployment Rate (2003)	5.8%	Transportation & Warehousing - % all jobs in County	1.4%
Per Capita Personal Income (2002)	$25,356	Avg wage per job	$32,710
Median Household Income (2000)	$35,892	Health Care, Social Assist. - % all jobs in County	D
Poverty Rate (2000)	12.3%	Avg wage per job	D
H.S. Diploma or More - % of Adults 25+ (2000)	78.3	Finance and Insurance - % all jobs in County	2.3%
Bachelor's Deg. or More - % of Adults 25+ (2000)	13.8	Avg wage per job	$33,501

Note: Covered Employment and Wage data for 2003 are preliminary. D = Data were not available.

B. Land Use

Outside of the various city limits, land throughout the study area is primarily agricultural and scattered residential. Some scattered highway commercial and general commercial activity is located along existing roadways and parkway interchanges. Additional land use in these lightly populated areas includes very limited light industrial land use. Most of the commercial, residential, and government services are located in the county seats within each of the five counties.

C. Relocations

High numbers of relocations do not appear to be necessary for this project. Since a large portion of the project will likely include improvements and widening of the existing parkways, very little commercial or residential relocation will be required in the study area. Most would be anticipated to occur at interchanges where some highway commercial development and light residential land use has been identified.

Most relocations are anticipated to occur on any new sections of roadway and in areas within or near city limits within the five counties. The design team should attempt to avoid as many relocations as possible including non-profit organizations, cemeteries, and other socially sensitive resources. City limits for each of the populated areas throughout the project corridor are shown in white on **Figures 1-5**.

D. Environmental Justice

U.S. Census 2000 data was consulted to help identify potential Environmental Justice concerns. In each of the five counties, minority populations are concentrated within or near the city limits or county seats. It does not appear that any disproportionate impacts to minority populations would occur from the development of the project corridor, based on information gathered through public meetings, windshield surveys, census data, and the few anticipated relocations.

The census tracts were also reviewed within each of the five counties for low income populations. As with the minority populations, residents living at or below the poverty level are concentrated primarily within the city limits of the county seats. One area, Dawson Springs, reported 25.5 percent of its residents at or below the poverty level. This area is located south of the proposed project corridor. No environmental justice impacts are associated with this area. Following is a table that compares countywide poverty level percentages with the state percentage. Except for Henderson County, the study area counties have poverty rates which are higher than the statewide average of 12.7%.

Residents at or below Poverty Level (2000)	
United States	11.7%
Kentucky	12.7%
Caldwell County	14.5%
Henderson County	11.9%
Hopkins County	14.7%
Lyon County	13.8%
Webster County	13.6%

The poverty level percentages were reported on the U.S. Census Bureau's webpage, and the determinations for poverty levels were based upon the U.S. Health and Human Services Poverty Guidelines. The table below compares sizes of family units and the corresponding threshold levels for poverty income. U.S. Census tracts were reviewed for each county.

2004 U. S. Health and Human Services Poverty Guidelines	
Size of Family Unit	**Income Level ($)**
1	9,310
2	12,490
3	15,670
4	18,850
5	22,030
6	25,210
7	28,390
8	31,570
For each additional person, add	3,180

In accordance with the Federal-Aid Highway Act of 1970 and Executive Order 12898 on Environmental Justice, every consideration will be given in the planning and development of this project to consider environmental impacts which might disproportionately or adversely impact minority or low income groups. As mentioned previously in this section, the project alternates are not anticipated to cause adverse effects on minority or low-income populations, and no neighborhoods or communities appear to be adversely impacted.

Reviews of figures for all census tracts for each of the five counties were conducted, and it was determined that most of the residents in each of the counties living at or below the poverty level were located within and/or near city limits where government services are located. Some outlying communities also showed higher percentages of poverty levels. This may indicate social clusters in the unincorporated communities and smaller towns, but none appeared to be within the proposed project corridor.

A mobile home park is located in Madisonville along the Breathitt Parkway near the northern Madisonville interchange. Windshield surveys, conversations with local officials, and reviews of census tracts indicate that the residents in this park do not appear to be low income. In addition, homes located along the Breathitt Parkway do not appear to be low income.

Along the corridor, it appears that no environmental justice issues exist. As the project develops and baseline studies are conducted, the project team will conduct field visits, review census tract data and work with local officials to ensure that environmental justice concerns are avoided. If these concerns cannot be avoided, every effort will be made to minimize impacts and to ensure that the relocated households are provided with decent, safe and sanitary housing with minimal disruptions to communities.

E. Farmland and Agricultural Activities

Some agricultural activities occur in each of the project's five counties, including corn, burley tobacco, hay, and cattle. Following are brief synopses of agricultural activities for each county:

- Lyon County reported 304 farms in the 2002 Census of Agriculture. This number was up 8 percent from the 282 farms reported in 1997. The land in farms for Lyon County increased by 9 percent within the same timeframe from 51,579 acres to 56,411 acres. The average size farm in Lyon County increased 2 percent from 183 acres in 1997 to 186 acres in 2002. Lyon County is 16th statewide in sheep and lambs, 32nd for hogs and pigs, 38th in soybeans and 39th in corn for grain.
- Caldwell County reported 673 farms in the 2002 Census of Agriculture. This number was down 4 percent from the 700 farms reported in 1997. The land in farms for Caldwell County decreased by 7 percent within the same timeframe from 157,980 acres to 147,207 acres. The average size farm in Caldwell County decreased 3 percent from 226 acres in 1997 to 219 acres in 2002. Caldwell County ranked 16th statewide in wheat and grain production, 17th for hogs and pigs, 19th in forage products, and 20th in grains, oilseeds, dry beans and dry peas.
- Hopkins County reported 678 farms in the 2002 Census of Agriculture. This number was up 8 percent from the 630 farms reported in 1997. The land in farms for Hopkins County increased by 8 percent within the same timeframe from 152,302 acres to 164,163 acres. The average size farm in Hopkins County remained unchanged at 242 acres in 1997 and 2002. Hopkins County ranked 1st

statewide in production of popcorn and in sorghum for grain, 6th for hogs and pigs, and 7th in broilers and other meat-type chickens.

- Webster County reported 595 farms in the 2002 Census of Agriculture. This number was up 14 percent from the 525 farms reported in 1997. The land in farms for Webster County increased by 8 percent within the same timeframe from 147,402 acres to 159,496 acres. The average size farm in Webster County decreased 5 percent from 281 acres in 1997 to 268 acres in 2002. Webster County ranked 2nd statewide in broilers and other meat-type chickens, 3rd in production of sorghum for grain, 9th in soybeans, and 10th in corn for grain.
- Henderson County reported 525 farms in the 2002 Census of Agriculture. This number was down 13 percent from the 600 farms reported in 1997. The land in farms for Henderson County decreased by 7 percent within the same timeframe from 207,453 acres to 192,264 acres. The average size farm in Henderson County increased 6 percent from 346 acres in 1997 to 366 acres in 2002. Increases in average farm sizes have been attributed to the loss of smaller farms. Henderson County ranked 2nd statewide in soybean production, 2nd in sorghum for grain production, and 6th in corn for grain production.

Agriculture is still an important economic force in this region of Kentucky. Some cropland, pasture and hayfields are located in the project area and small amounts (in comparison with overall acres in farmland for each county) may be acquired by the project. Once the project alignment has been established, an analysis of the project's impacts to prime and statewide important farmlands for each of the five project counties can be undertaken (i.e., Land Evaluation Site Assessment (LESA)). Some prime, unique, or of statewide importance farmland may be acquired.

It is anticipated that any farmland impacts will be minor in comparison to the total amount of active and available farmland in each county. No adverse effects upon farm operations or agricultural activities are anticipated. The project team should take care to minimize disruption of agricultural activities in the design and construction of this roadway.

F. Public Opinion

Discussions with local government representatives and interested parties at the public meetings for the I-69 project also provided useful information. Local government representatives and members of the general public supported the proposed project. The proposed project was seen as a way to improve safety and provide economic benefits. Temporary impacts such as increased dust and noise will occur as a result of the project's construction phase. Traffic will be maintained throughout the construction process. Any inconveniences will be short term and minor. Long-term benefits include improved safety and travel conditions and an anticipated reduction in emergency response times.

IV. Cultural and Historic Resources

Recorded historic and archaeological sites within a 2000-foot buffer along the Parkways were reviewed as part of this study. A full historic baseline study is recommended early in project development to review cultural landscapes and other historic sites in the study area.

A. Historic Structures

There are no historic structures listed within the study area of three counties: Lyon, Webster and Henderson Counties. Historic structures within the study area of Caldwell and Hopkins Counties are listed in the following sections.

A total of five (5) historic sites are found within the I-69 study area in Caldwell County and all are located outside the corporate limits of Princeton. All five (5) sites have been assessed as *survey sites*. These include:

- The *Bayless Cantrell Farm* is located off US 62W near the Lyon/Caldwell county line. This site is a one-story (1) dwelling with a construction date ranging from 1900-1924. This structure is currently in use.
- The *Jordan Log House* is located adjacent to the *Bayless Cantrell Farm*, along US 62W near the Lyon/Caldwell county line. This site is a one-and-a-half (1.5) story structure log home with a construction date ranging from 1850-1874. This structure is currently vacant.
- The *Martin-Etheridge Farm* is located about one (1) mile west of the corporate limits of Princeton near the junction of US 62W and Gromes intersection. This structure is a one-and-a-half (1.5) story dwelling with a construction date ranging from 1900-1924. This site is currently in use.
- The *Bath House* is located adjacent to Rabbit Lake, along Lakeview Drive in Crowtown. This structure is a two-story (2) dwelling with a construction date ranging from 1900-1924. This site is currently being used as an agriculture building.
- The *Wilkie Log House* is located near the Caldwell/Hopkins county line, adjacent to White School Road and north of US 62E. This site is a one-story (1) structure which is currently vacant. The construction date of this home ranges from 1850-1874.

There is only one (1) historic site found within the I-69 study area in Hopkins County.

- This site does not own an official name, but is a historic house located along KY 1033, south of KY 138. The structure is a one-story (1) dwelling with vernacular style construction and has a build date ranging from 1875-1899. This site is currently vacant and is listed as a *survey site*.

B. Archaeological Sites

With the exception of Caldwell County, there are archaeological sites recorded within the study area for each of the other four counties. Further studies of the corridor are likely to identify additional archaeological sites; however, it can be assumed that the existing right-of-way for the Parkways has already been disturbed and will not likely yield additional sites or features. The identified archaeological sites are listed in the following sections.

In Lyon County, there are seven (7) archaeological sites listed within the project area. None of these sites presently meet National Register criteria or have not had their National Register status assessed; however, further baseline studies of the corridor are likely to identify sites that may be considered to be eligible or potentially eligible. The Lyon County sites include the following:

- Sites 15L431, 15LY56, 15LY60, 15LY61, 15LY62 and 15LY69 are located near Eddyville in Lyon County. These sites are all classified as an *"open habitation without mounds"* and an *indeterminate prehistoric* cultural period.
- Site 15LY69 is located east of Eddyville, just north of the Ford Parkway. This site is also classified as an *"open habitation without mounds"* and has an *indeterminate prehistoric* cultural period.

In Hopkins County, there are fourteen (14) archaeological sites found within the I-69 study area. None of these sites presently meet National Register criteria or have not had their National Register status assessed; however, further baseline studies of the corridor are likely to identify sites that may be considered to be eligible or potentially eligible. The Hopkins County sites include the following:

- Sites 15HK73, 15HK74, and 15HK50 are located along the Ford Parkway. These sites are all classified as an *"open habitation without mounds".* Site 15HK74 has been identified as having come from a *middle woodland/late prehistoric* cultural period. Sites 15HK73 and 15HK50 have not had their cultural period determined.
- The remaining eleven (11) sites are located along the Breathitt Parkway. These sites include: 15HK102, 15HK126, 15HK127, 15HK128, 15HK129, 15HK130, 15HK178, 15HK125, 15HK122, 15HK123, and 15HK124. Only site 15HK102 is a "stand alone" site. The remaining sites are somewhat grouped together and located near Hanson. Collectively, these sites are identified as historic Euro-American or have an indeterminate prehistoric background.

In Webster County, there are six (6) archaeological sites listed within the project area. None of these sites presently meet National Register criteria or have not had their National Register status assessed; however, further baseline studies of the corridor are likely to identify sites that may be considered to be eligible or potentially eligible.

- Sites 15WE94 and 15WE95 are located along the Breathitt Parkway in southern Webster County. These sites are both classified as an *"historic farm/residence"* and have a cultural period ranging from 1851-1950.

- Sites 15WE19, 15WE20, 15WE31, and 15WE32 are located in northern Webster County, north of Sebree. These sites are collectively classified as either *"open habitation without mounds"* or *"isolated finds"*. They all have been classified as having an *indeterminate prehistoric* cultural period.

In Henderson County, there are three (3) archaeological sites listed within the project area. None of these sites presently meet National Register criteria or have not had their National Register status assessed; however, further baseline studies of the corridor are likely to identify sites that may be considered to be eligible or potentially eligible.

- Site 15HE784 is located along the Breathitt Parkway in southern Henderson County. This site has been determined as an *"historic farm/residence"* and has a cultural period ranging from 1851-1950.
- Sites 15HE450 and 15HE451 are located in northern Henderson County, south of Henderson. These sites are collectively classified as an *"open habitation without mounds"* and have been classified as having an *indeterminate prehistoric* cultural period.

V. Hazardous Materials/Underground Storage Tanks

A search of Federal and State records, in addition to a preliminary screening/windshield survey of the project area, was performed to identify hazardous materials and underground storage tank sites that could potentially be affected by the project. The records search identified several sites on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) of potential Superfund sites but they appear far enough from the proposed corridor that they could be avoided.

Records indicate that oil and gas wells are in or near the project corridor, particularly in Henderson and Hopkins Counties. If wells are affected, a Phase II site investigation should be necessary to determine if any contamination from leaks or releases has occurred during well operation. The old wells should be closed and the wells may have to be relocated. In addition, numerous dry and abandoned wells are in or near the project corridor. If the dry and abandoned wells have been closed properly, they should not be an issue.

Abandoned landfills in Caldwell (i.e., Criders and Rogers Landfill near Princeton), Hopkins (i.e., near Slaughters and Charleston), and Webster (i.e., near Sebree) Counties are near the project corridor and efforts should be made to try and avoid these abandoned landfills. Remediation costs and monitoring for acquiring parts of a landfill could be expensive.

Record searches and the windshield survey identified underground storage tank sites at service stations (both open and closed facilities). The majority of these sites occur at the existing interchange areas. Depending on whether the existing interchanges and ramps are modified, several of these underground storage tank sites could be affected. Gasoline, oil, diesel, or other materials related to automobiles and trucks could be potential hazards from releases or spills.

Also, several aboveground storage tanks (ASTs) were noted throughout the corridor. Farm or residential use appears to be the purpose of these ASTs. Any ASTs encountered during the right-of-way acquisition phase should be accounted for during normal right-of-way acquisition procedures and should be decommissioned in accordance with state requirements. None of the ASTs appear to be a significant environmental hazard for the project.

Several sewage treatment plants appear in the vicinity of the project corridor but it appears that the project could avoid these sites. Several small auto salvage/junkyards are located along the Breathitt Parkway. These facilities contain automobiles and trucks waiting to be dismantled, tire piles, and parts. The yards are earthen and the soil may contain gasoline, oil, antifreeze, and transmission fluid, which leaked from automobiles or trucks.

In the project area, numerous coal exploration sites as well as reclaimed mine sites could be affected, particularly near the intersection of the Breathitt Parkway and Ford Parkway in Hopkins County. KYTC may encounter acid-bearing materials (e.g., coal and black shale). The project could cut coal or shale seams or encroach on mine fill areas or silt ponds. Problems may occur when water (e.g., from rain or snow) reacts with the sulfur in the coal, creating sulfuric acid. Runoff from an exposed coal seam can

be acidic. In addition, heavy metals can leach from the coal. This runoff can contaminate surface water and groundwater, and damage vegetation and aquatic life. Erosion control will be an important issue in these areas. If appropriate, excavated acid-bearing materials may have to be placed in fill areas in such a manner (e.g., buffered using limestone) as to prevent acid drainage.

A Phase I hazardous materials and underground storage tank site assessment should be conducted during any future National Environmental Policy Act (NEPA) phases of the project to confirm findings and determine potential impacts.

VI. Air Quality

The Evansville (Indiana) – Owensboro-Henderson (Kentucky) Air Quality Control Region includes Henderson and Webster Counties. The Paducah (Kentucky) – Cairo (Illinois) Air Quality Control Region includes Caldwell, Hopkins and Lyon Counties. All counties crossed by the corridors are considered in attainment for all transportation-related pollutants (carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NOx), and particulates). The project is in air quality regions where the State Implementation Plan (SIP) does not contain transportation measures. Therefore, the Amended Final Conformity Guidelines issued by the Environmental Protection Agency (EPA) do not apply to the study area. Air quality concerns routinely exist for most types of highway improvements.

For the I-69 corridor, air quality issues are of particular concern relative to where the corridors fall in close proximity to sensitive land uses, such as population centers (Eddyville, Princeton, Madisonville, and Henderson), natural areas (Lake Barkley), and recreational facilities. Sensitive areas exist in larger numbers near the populated towns and county seats. A project specific air quality analysis will be required in upcoming phases to verify potential air quality impacts.

Based on windshield surveys of the project corridor and inspections, no air quality sensitive land uses or susceptible sites were observed. With the location of the corridor being in an attainment area and traffic volumes predicted to be low, it is anticipated that concentrations of carbon monoxide will remain below both the one-hour (35 ppm) and eight-hour (9 ppm) standards regardless of which alternate is selected for the project.

VII. Traffic Noise

The existing roadways and parkways carry normal volumes of traffic and the existing receptors are already accustomed to some level of traffic noise. Depending on the alignment developed, noise levels may increase for some receptors as the roadway is moved closer but may decrease for other receptors as the roadway moves away from them.

The study area includes a number of sensitive receptors including residential areas, mobile home parks, churches, hospitals, and cemeteries. The increase in noise within the project corridor may be greater than 10 dBA Leq (which is determined to be a significant increase by the Kentucky Transportation Cabinet) for receptors within the project corridor. This may occur in various areas where roadway or interchanges are located near sensitive receptors.

The potential also exists for individual receptors to approach or exceed regulatory thresholds (e.g., 67 dBA Leq for residential receptors and 72dBA Leq for commercial receptors). If any regulatory thresholds are exceeded abatement considerations (e.g. noise barriers) would be considered as appropriate following the KYTC Noise Abatement Policy. A project specific traffic noise impact analysis will be required on upcoming phases to verify potential traffic noise impacts.

VIII. Pedestrian and Bicycle Facilities

Under 23 U.S.C. § 109(n), KYTC considers the need to provide bicycle facilities and pedestrian walkways for the project corridor. Being a limited access highway, the project anticipates no special provisions for bicycle facilities and pedestrian walkways.

IX. Visual Impacts

The aesthetic quality of a community is composed of visual resources such as those physical features that make up the landscape, including land, water, vegetation, and man-made features (e.g., buildings, roadways, and structures). Visual impacts affect communities from two perspectives: 1) the view from the road, and 2) the view of the road.

The project corridor is a mixture of rural, residential, and commercial areas. The project counties do not have comprehensive plans, transportation plans, or development regulations that contain guidelines or recommendations to limit the visual impacts of development. Since the project corridor is an existing route, it is expected to have minimal visual effects on the adjacent areas. Right-of-way expansions are expected to be minimal, except in the area of interchanges where ramp lengths and approaches may be expanded.

To minimize visual impacts, efforts should be made to only clear vegetation necessary for construction, proper sight distances, and horizontal clearance requirements. Re-vegetation with native flora will minimize the visual impacts of project construction.

X. Section 4(f) Involvement

Under Section 4(f) of the Department of Transportation Act of 1966, a federally funded highway project can be approved only after a determination is made that no prudent and feasible alternative exists to using property from Section 4(f) resources. Section 4(f) resources include historic properties listed or eligible for listing on the National Register of Historic Places. Archaeological sites only qualify as Section 4(f) resources when it is determined that a site requires preservation in place and is listed or eligible for listing on the National Register.

Recreation areas or wildlife and waterfowl refuges are also considered Section 4(f) resources. Recreation areas (e.g., Lake Barkley), parks (e.g., Pennyrile Forest, Land Between the Lakes), wildlife management areas (e.g., White City Wildlife Management Area) occur in the project area. In addition, the project corridor crosses over the Pennyrile Trail, a 75-mile loop that connects three wildlife management areas including the White City Wildlife Management Area and a state forest.

A federal-aid project can be approved only after a determination is made whether prudent and feasible alternatives exist to using property from historic sites, recreation areas, or wildlife and waterfowl refuges. If any Section 4(f) resources would be affected, a Section 4(f) evaluation and coordination with the Federal Highway Administration would be necessary.

XI. Section 6(f) Involvement

Section 6(f) resources include outdoor recreational land and water areas and facilities that were established with assistance from grants-in-aid from the Land and Water Conservation Fund (LWCF). The National Park Service and the Kentucky Department for Local Government administer these funds to local jurisdictions. Counties and cities in the project area have received funds for parks, swimming pools, boat ramps, and tennis courts, as shown in the following table:

County	Number of Section 6(f) Resources per County
Caldwell	6
Henderson	15
Hopkins	13
Lyon	7
Webster	9

Properties acquired or developed with LWCF assistance are prohibited by Section 6(f) of the Land and Water Conservation Fund Act from conversion to other than public outdoor recreation use without approval of the National Park Service. This approval can only occur after all practical alternatives have been considered. When LWCF facilities are impacted through either partial or total acquisitions, the property acquired must be replaced with property that is of equal, or greater, fair market value, and the land must be used for similar purposes.

While several recreational facilities within the project counties have received LWCF monies, it does not appear that any Section 6(f) resources have the potential to be affected within the study area.

XII. Construction

Construction impacts from this project are expected to be minimal and of short-term duration. Traffic will be maintained at all times. A maintenance-of-traffic plan will be prepared during the design phase.

Construction activities will cause some erosion because areas cleared of trees and vegetation are prone to erosion during storm events. KYTC should implement the erosion and sedimentation controls specified in Kentucky Department of Highways Standards and Specifications (KDHSS), Sections 212 and 213, develop erosion control plans during the final design, and implement best management practices during design and construction. In time, re-vegetation will stabilize the construction sites and impacts will diminish. Planting native species of vegetation within construction and right-of-way limits will stabilize highway shoulders; prevent drop-offs, rills, and gullies; beautify the roadside; and prevent sedimentation of culverts and nearby streams. Use of native species also reduces the spread of invasive species (e.g., noxious weeds).

Construction waste will be managed in accordance with KDHSS Section 204 and other applicable state regulations. Debris generated during removal of structures and obstructions will be managed in accordance with KDHSS Section 203 and other applicable state regulations.

Standard noise reducing measures will be implemented during the construction phase to prevent construction noise from becoming a public nuisance or detriment. It is standard policy on Kentucky construction projects to require the contractor to use equipment and procedures to restrict construction noise in the vicinity of sensitive receptors such as schools, hospitals, and churches.

Road construction activities have the potential to generate fugitive dust. Fugitive dust consists of particulate matter that becomes airborne directly or indirectly as a result of human activity. Road construction can generate fugitive dust from earth-moving equipment (e.g., bulldozers, graders) and trucks loading and unloading or transporting earthen materials. Wind can cause fugitive dust in areas cleared of vegetation during construction. To minimize fugitive dust generation, KYTC will follow KHDSS Section 107.01.4. During construction, KYTC or its contractor will apply water or other approved materials (chemical dust suppressants), as appropriate, to control dust.

Blasting for roadway excavation or for utility relocation has the potential to affect subsurface flow. No groundwater recharge areas are evident in the project area. Municipal water is supplied to the majority of the people in the area. All blasting operations will be done in accordance with Section 107.11 of the KDHSS and other applicable federal and state regulations.

XIII. Comments and Coordination

The United States Fish and Wildlife Service (USFWS), Kentucky Department of Fish and Wildlife Resources (KDFWR), and Kentucky State Nature Preserves Commission (KSNPC) were contacted for information on protected federal and state listed species that may be affected by the project. Information was also requested from KSNPC and Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC) concerning critical habitat areas and monitored natural areas.

The KNREPC Division of Water (DOW) was contacted for water quality impacts, groundwater information, wellhead protection locations, and well and spring locations. The United States Army Corps of Engineers (USACE) and DOW provided information on permits. The Kentucky Geological Survey (KGS) provided the topographic maps and the National Wetlands Inventory (NWI) maps for the project area quadrangles. The Federal Emergency Management Agency (FEMA) provided the Flood Insurance Rate Maps for the project corridor.

XIV. References

Converse, Jr., H. T. and Cox, Jr, F. R. Soil Survey of Henderson County, Kentucky. United States Department of Agriculture. Washington, D.C., 1967.

Department of the Interior Fish and Wildlife Service. National Wetlands Inventory Maps of the Beech Grove, Dawson Springs, Eddyville, Hanson, Henderson, Madisonville East, Nortonville, Olney, Princeton West, Robards, Saint Charles, and Sebree, KY Quadrangles. Atlanta, GA; 1992.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Beech Grove, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1968.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Dawson Springs, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1968.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Eddyville, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1973.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Hanson, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1969.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Henderson, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1993.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Madisonville East, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1978.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Nortonville, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1963.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Olney, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1967.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Princeton West, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1967.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Robards, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1969.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Saint Charles, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1963.

Department of the Interior, U.S. Geological Survey. 7.5 Minute Series (Topographic) Map of Sebree, KY Quadrangle. U.S. Geological Survey, Reston, VA; 1969.

Fairer, G. M. Geologic Quadrangle Maps of the United States; Geologic Map of the Robards Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1973.

Fairer, G. M., Norris, R. L., and Johnson, Jr., W. D. Geologic Quadrangle Maps of the United States; Geologic Map of the Beech Grove Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1975.

Federal Emergency Management Agency. Flood Insurance Rate Map, Henderson County, KY; 6 February 1991.

Federal Emergency Management Agency. Flood Insurance Rate Map, Hopkins County, KY; 19 August 1991.

Fehr, J. P., Jacobs, E. H., and Converse, Jr., H. T. Soil Survey of Hopkins County, Kentucky. United States Department of Agriculture. Washington, D.C., 1977.

Franklin, G. J. Geologic Quadrangle Maps of the United States; Geologic Map of the Hanson Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1965.

Hansen, D. E. Geologic Quadrangle Maps of the United States; Geologic Map of the Sebree Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1975.

Humphrey, M. E., Hayes, R. A., and Love, P. M. Soil Survey of Caldwell County, Kentucky. United States Department of Agriculture. Washington, D.C., 1966.

Humphrey, M. E. Soil Survey of Lyon and Trigg Counties, Kentucky. United States Department of Agriculture. Washington, D.C., 1981.

Jacobs, E. H. Soil Survey of Union and Webster Counties, Kentucky. United States Department of Agriculture. Washington, D.C., 1981.

Johnson, Jr., W. D. Geologic Quadrangle Maps of the United States; Geologic Map of the Henderson Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1973.

Kehn, T. M. Geologic Quadrangle Maps of the United States; Geologic Map of the Madisonville East Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1963.

Kehn, T. M. Geologic Quadrangle Maps of the United States; Geologic Map of the Dawson Springs Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1966.

Lambert, T. W. and Brown, R. F. Availability of Ground Water in Caldwell, Christian, Crittenden, Livingston, Lyon, Todd, and Trigg Counties, Kentucky. U.S. Geological Survey, Washington, D.C.; 1963.

Maxwell, B. W. and Devaul, R. W. Availability of Ground Water in Union and Henderson Counties, Kentucky. U.S. Geological Survey, Washington, D.C.; 1962.

Maxwell, B. W. and Devaul, R. W. Availability of Ground Water in Hopkins and Webster Counties, Kentucky. U.S. Geological Survey, Washington, D.C.; 1962.

McGrain, P.; Currens, J. C. Series X, Topography of Kentucky, USGS. University of Kentucky, Lexington; 1978.

Palmer, J. E. Geologic Quadrangle Maps of the United States; Geologic Map of the Saint Charles Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1967.

Palmer, J. E. Geologic Quadrangle Maps of the United States; Geologic Map of the Nortonville Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1968.

Rogers, W. B. Geologic Quadrangle Maps of the United States; Geologic Map of the Eddyville Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1963.

Sample, R. D. Geologic Quadrangle Maps of the United States; Geologic Map of the Princeton West Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1965.

Trace, R. D. and Kehn, T. M. Geologic Quadrangle Maps of the United States; Geologic Map of the Olney Quadrangle. U.S. Geologic Survey, Washington, D.C.; 1968.

U.S. Census Bureau Website (American Factfinder)

Kentucky State Data Center Website

KYTC website

APPENDIX A

RESOURCE AGENCY RESPONSE LETTERS

- Kentucky State Nature Preserves Commission
- Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water, Water Quality Branch
- Kentucky Department of Fish and Wildlife Resources
- United States Department of the Interior, Fish and Wildlife Service
- Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water, Groundwater Branch
- Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water, Groundwater Branch, Wellhead Protection Program
- United States Department of Agriculture, Natural Resources Conservation Service – Hopkins County
- United States Department of Agriculture, Natural Resources Conservation Service – Henderson County
- United States Department of Agriculture, Natural Resources Conservation Service – Webster County
- United States Department of Agriculture, Natural Resources Conservation Service – Caldwell County
- United States Department of Agriculture, Natural Resources Conservation Service – Lyon County

DONALD S. DOTT, JR.
DIRECTOR

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
KENTUCKY STATE NATURE PRESERVES COMMISSION
801 SCHENKEL LANE
FRANKFORT, KENTUCKY 40601-1403
(502) 573-2886 VOICE
(502) 573-2355 FAX

March 11, 2002

Michael Kenawell
T.H.E. Engineers
131 Prosperous Place Suite 15
Lexington, KY 40509

Data Request **02-143**

Dear Mr. Kenawell:

This letter is in response to your data request of February 19, 2002 for the Interstate 69, Lyon, Caldwell, Hopkins, Webster, and Henderson Counties, Kentucky project. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants and animals or exemplary natural communities monitored by the Kentucky State Nature Preserves Commission occur up to five miles from the project area as shown on the map provided. Based on our most current information, we have determined that twenty occurrences of the plants or animals and one occurence of the exemplary natural communities that are monitored by KSNPC are reported as occurring within one mile of the corridor. In addition, seventy-nine occurrences of the plants or animals and two occurrences of the exemplary natural communities that are monitored by KSNPC are reported as occurring within greater-than-one to five miles of the corridor. Please see the attached reports for each specified distance for detailed information about each occurrence. These species and communities should be considered in your evaluation of the area.

In addition to the species listed on the reports, you should be aware that there are occurrences of *Myotis grisescens* (Gray myotis, federally listed endangered, KSNPC endangered) in adjacent Hopkins, Caldwell, Livingston, Crittenden, Christian, Trigg and Muhlenberg Counties. Also, Myotis *sodalis* (Indiana myotis, federally listed endangered, KSNPC endangered) is recorded from adjacent Henderson, Daviess, Union, Caldwell, Livingston, Christian and Trigg Counties. A thorough survey for these species should be conducted by a qualified biologist. The survey should include a search for potential roost and winter sites, and a mistnetting census at numerous points within the proposed

corridor, particularly in preferred summer habitat. Summer foraging habitats include upland forests, bottomland forests, and riparian corridors. Suitable roost and winter sites include sandstone and limestone caves, rockhouses, clifflines, and abandoned mines. In order to avoid impacts to bats, bottomland forests and riparian corridors, particularly near caves, should not be disturbed.

You should be aware that Henderson, Webster, Hopkins, and Caldwell Counties lie within that portion of Kentucky designated as habitat for the Copperbelly water snake (*Nerodia erythrogaster neglecta*, KSNPC Special Concern). There are several occurrences of this species noted within close proximity to the project area. This region is subject to conditions outlined in the Copperbelly Water Snake Conservation Agreement and is being overseen in Kentucky by the Department of Fish and Wildlife Resources in cooperation with the U.S. Fish and Wildlife Service. The project sponsor should contact Mr. Roy Grimes, Wildlife Division, KDFWR to coordinate measures that will assess potential impacts to the Copperbelly water snake and opportunities for mitigative measures to improve habitat for the snake.

The presence of two *Haliaeetus leucocephalus* (Bald eagle, federally listed threatened, KSNPC endangered) occurrences near your project area should be noted. Please see the attached report of occurrences within two to five miles of the project area for more information.

I would like to take this opportunity to remind you of the terms of the data request license, which you agreed upon in order to submit your request. The license agreement states "Data and data products received from the Kentucky State Nature Preserves Commission, including any portion thereof, may not be reproduced in any form or by any means without the express written authorization of the Kentucky State Nature Preserves Commission." The exact location of plants, animals, and natural communities, if released by the Kentucky State Nature Preserves Commission, may not be released in any document or correspondence. These products are provided on a temporary basis for the express project (described above) of the requester, and may not be redistributed, resold or copied without the written permission of the Kentucky State Nature Preserves Commission's Data Manager (801 Schenkel Lane, Frankfort, KY, 40601. Phone: (502) 573-2886).

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed, and new plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being consid-

ered, nor should they be substituted for on-site surveys required for environmental assessments.

We would greatly appreciate receiving any pertinent information obtained as a result of on-site surveys.

If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Sara Hines

Sara Hines
Data Manager

Enclosures: Data Reports and Interpretation Key(s)
Endangered, Threatened, and Special Concern Plants and Animals of Kentucky

Copy: C. Tom Bennett, Commissioner, KDFWR

Rare Species
recorded within one mile of the I-69 Lyon, Caldwell, Hopkins, Webster Henderson Co. project.

Kentucky State Nature Preserves Commission
Data Request No. 02-143

EOCODE	SNAME	SCOMNAME	GRANK	SRANK	SPROT	USESA	IDENT	LASTOBS	PREC	EORANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
***Vascular Plants																	
PDHPC01060*002*KY	AESCULUS PAVIA	RED BUCKEYE	G5	S2S3	T			1972-05-23	M	H	Lyon	EDDYVILLE, KY.	370453N	880459W	LAKE BARKLEY,T	[redacted]	WOODS AND THICKETS.
PDRAN07060*007*KY	CIMICIFUGA RUBIFOLIA	APPALACHIAN BUGBANE	G3	S2	T			1997-08-14	M	A	Caldwell	OLNEY, KY.	370856N	874527W	FLYNN FORK BASIN	[redacted]	MESOPHYTIC FOREST ON N FACING (?) SLOPES, RIVER BLUFFS AND RAVINES.
PDRAN07060*005*KY	CIMICIFUGA RUBIFOLIA	APPALACHIAN BUGBANE	G3	S2	T		Y	2001-08-15	S	D	Lyon	EDDYVILLE, KY.	370451N	880502W	LAKE BARKLEY,T	[redacted]	MESOPHYTIC FOREST ON N FACING (?) SLOPES, RIVER BLUFFS AND RAVINES.
PDHYD0B010*003*KY	NEMOPHILA APHYLLA	SMALL-FLOWER BABY-BLUE-EYES	G5	S2?	T		Y	1998-04-03	S	A	Henderson	EVANSVILLE SOUTH, IND.-KY.	375327N	873252W	OHIO RIVER,T,D OF GREEN-WABASH	[redacted]	MESIC WOODS ON LOESS SOILS.
PDAST8P070*003*KY	SOLIDAGO BUCKLEYI	BUCKLEY'S GOLDENROD	G4	S2S3	S			1978-10-02	M	H	Caldwell	OLNEY, KY.	370829N	874751W	FLYNN FORK BASIN	[redacted]	WOODS AND BLUFFS.
***Bivalves																	
IMBIV43080*001*KY	TOXOLASMA TEXASIENSIS	TEXAS LILLIPUT	G4	S1	E		Y	1989-08-01	S	D	Hopkins; Caldwell	DAWSON SPRINGS, KY.	371045N	874350W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	LOW GRADIENT STREAMS OR SLOUGHS WITH SOFT BOTTOMS (I.E., MUD OR SMALL SAND OR GRAVEL) AND ALSO RESERVOIRS (PARMALEE 1967, CUMMINGS AND MAYER 1992).
***Insects																	

Provided to T.H.E. Engineers, Michael Kenawell

Rare Species
recorded within one mile of the I-69 Lyon, Caldwell, Hopkins, Webster Henderson Co. project.

Kentucky State Nature Preserves Commission
Data Request No. 02-143

EOCODE	SNAME	SCOMNAME	GRANK	SRANK	SPROT	USESA	IDENT	LASTOBS	PREC	EORANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
IICOL42010*001*KY	NICROPHORUS AMERICANUS	AMERICAN BURYING BEETLE	G1	SH	H	LE	Y	1921-05-15	G	H	Henderson	HENDERSON, KY.-IND.			CANOE CREEK BASIN;OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	CARRION AVAILABILITY IN A GIVEN AREA IS SUSPECTED TO BE MORE IMPORTANT THAN VEGETATIONAL STRUCTURES AND SOIL TYPES (RAITHEL 1991). HOWEVER, THESE INTERACT TO INFLUENCE THE POTENTIAL PREY BASE AVAILABLE FOR THE BEETLE.
***Amphibians																	
AAABC02030*024*KY	HYLA AVIVOCA	BIRD-VOICED TREEFROG	G5	S2S3	T		Y	2001-06-20	S	D	Hopkins	SAINT CHARLES, KY.	371040N	873543W	CANY CREEK BASIN	[redacted]	IN KENTUCKY, THE SPECIES APPEARS TO BE RESTRICTED TO FLOODPLAIN WETLANDS, ESPECIALLY THOSE DOMINATED BY BALD CYPRESS, WATER TUPELO, GREEN ASH, AND BUTTONBUSH.
AAABC02030*017*KY	HYLA AVIVOCA	BIRD-VOICED TREEFROG	G5	S2S3	T		Y	2001-06-20	S	C	Caldwell; Hopkins	DAWSON SPRINGS, KY.	371013N	874326W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	IN KENTUCKY, THE SPECIES APPEARS TO BE RESTRICTED TO FLOODPLAIN WETLANDS, ESPECIALLY THOSE DOMINATED BY BALD CYPRESS, WATER TUPELO, GREEN ASH, AND BUTTONBUSH.
AAABC02060*027*KY	HYLA CINEREA	GREEN TREEFROG	G5	S3	S		Y	1995-05-17	S	B	Henderson	EVANSVILLE SOUTH, IND.-KY.	375335N	873237W	OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	FLOODPLAIN WETLANDS, PARTICULARLY THOSE DOMINATED BY BUTTONBUSH AND HERBACEOUS EMERGENT VEGETATION.
***Reptiles																	
ARADB22023*069*KY	NERODIA ERYTHROGASTER NEGLECTA	COPPERBELLY WATER SNAKE	G5T2 T3	S3	S		Y	2000-05-02	S	C	Hopkins	DAWSON SPRINGS, KY.	371056N	874206W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	FLOODPLAIN SLOUGHS, SWAMPS, HARDWOOD FOREST AND ADJACENT UPLANDS. SEEMS TO DO WELL IN KDFWR MOIST SOILS MANAGEMENT UNITS ON SLOUGHS WMA, HENDERSON CO. SEEMS TO AVOID WETLANDS IMPACTED BY ACID MINE DRAINAGE (FIDE H. BRYAN).

Provided to T.H.E. Engineers, Michael Kenawell

Rare Species
recorded within one mile of the I-69 Lyon, Caldwell, Hopkins, Webster Henderson Co. project.

Kentucky State Nature Preserves Commission
Data Request No. 02-143

EOCODE	SNAME	SCOMNAME	GRANK	SRANK	SPROT	USESA	IDENT	LASTOBS	PREC	EORANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
ARADB22023*043*KY	NERODIA ERYTHROGASTER NEGLECTA	COPPERBELLY WATER SNAKE	G5T2 T3	S3	S		Y	1986-	S	C	Webster	BEECH GROVE, KY.	373356N	872842W	GREEN RIVER,M,D OF POND-PANTHER	[redacted]	FLOODPLAIN SLOUGHS, SWAMPS, HARDWOOD FOREST AND ADJACENT UPLANDS. SEEMS TO DO WELL IN KDFWR MOIST SOILS MANAGEMENT UNITS ON SLOUGHS WMA, HENDERSON CO. SEEMS TO AVOID WETLANDS IMPACTED BY ACID MINE DRAINAGE (FIDE H. BRYAN).
ARADB22023*063*KY	NERODIA ERYTHROGASTER NEGLECTA	COPPERBELLY WATER SNAKE	G5T2 T3	S3	S		Y	2000-04-28	S	C	Henderson	EVANSVILLE SOUTH, IND.-KY.	375313N	873306W	OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	FLOODPLAIN SLOUGHS, SWAMPS, HARDWOOD FOREST AND ADJACENT UPLANDS. SEEMS TO DO WELL IN KDFWR MOIST SOILS MANAGEMENT UNITS ON SLOUGHS WMA, HENDERSON CO. SEEMS TO AVOID WETLANDS IMPACTED BY ACID MINE DRAINAGE (FIDE H. BRYAN).
ARADB22023*058*KY	NERODIA ERYTHROGASTER NEGLECTA	COPPERBELLY WATER SNAKE	G5T2 T3	S3	S		Y	H998-04-23	M	C	Caldwell; Hopkins	DAWSON SPRINGS, KY.	371013N	874326W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	FLOODPLAIN SLOUGHS, SWAMPS, HARDWOOD FOREST AND ADJACENT UPLANDS. SEEMS TO DO WELL IN KDFWR MOIST SOILS MANAGEMENT UNITS ON SLOUGHS WMA, HENDERSON CO. SEEMS TO AVOID WETLANDS IMPACTED BY ACID MINE DRAINAGE (FIDE H. BRYAN).
ARADB36123*023*KY	THAMNOPHIS SAURITUS SAURITUS	EASTERN RIBBON SNAKE	G5T5	S3	S		Y	1998-05-04	S	C	Caldwell; Hopkins	DAWSON SPRINGS, KY.	371013N	874326W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	VARIETY OF SEMI-OPEN HABITATS, GENERALLY IN WEEDY OR BRUSHY GROWTH ALONG THE MARGINS OF SLOUGHS, MARSHES AND OTHER AQUATIC HABITATS.
***Birds																	
ABNGA04040*010*KY	ARDEA ALBA	GREAT EGRET	G5	S1B	E		Y	2000-05-09	S	D	Henderson	EVANSVILLE SOUTH, IND.-KY.	375335N	873237W	OHIO RIVER,T,D OF GREEN-WABASH	[redacted]	MARSHES, SWAMPY WOODS, TIDAL ESTUARIES, LAGOONS, MANGROVES, ALONG STREAM, LAKES, AND PONDS.

Provided to T.H.E. Engineers, Michael Kenawell

Rare Species
recorded within one mile of the I-69 Lyon, Caldwell, Hopkins, Webster Henderson Co. project.

Kentucky State Nature Preserves Commission
Data Request No. 02-143

EOCODE	SNAME	SCOMNAME	GRANK	SRANK	SPROT	USESA	IDENT	LASTOBS	PREC	EORANK	COUNTY	7.5 MINUTE QUADRANGLE	LAT	LONG	EPA WATERBODY	DIRECTIONS	HABITAT
ABNGA04010*035*KY	ARDEA HERODIAS	GREAT BLUE HERON	G5	S3B,S4N	S		Y	1999-06-05	S	C	Caldwell	DAWSON SPRINGS, KY.	371013N	874326W	TRADEWATER RIVER,M,D OF BUFFALO CR-FLYNN FK	[redacted]	FRESHWATER AND BRACKISH MARSHES, ALONG LAKES, RIVERS, BAYS, LAGOONS, OCEAN BEACHES, MANGROVES, FIELDS, AND MEADOWS.
ABNGA04010*053*KY	ARDEA HERODIAS	GREAT BLUE HERON	G5	S3B,S4N	S		Y	1999-05-26	S	C	Henderson	EVANSVILLE SOUTH, IND.-KY.	375335N	873237W	OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	FRESHWATER AND BRACKISH MARSHES, ALONG LAKES, RIVERS, BAYS, LAGOONS, OCEAN BEACHES, MANGROVES, FIELDS, AND MEADOWS.
ABPAV10080*012*KY	CORVUS OSSIFRAGUS	FISH CROW	G5	S3B	S		Y	1988-06-16	Q	E	Henderson	EVANSVILLE SOUTH, IND.-KY.			OHIO RIVER FROM GREEN RIVER TO WABASH RIVER	[redacted]	BEACHES, BAYS, LAGOONS, INLETS, SWAMPS, NEAR MARSHES, AND, LESS FREQUENTLY, DECIDUOUS OR CONIFEROUS WOODLAND, IN INLAND SITUATIONS PRIMARILY IN BALDCYPRESS SWAMPS AND ALONG MAJOR WATERCOURSES. ALSO GARBAGE DUMPS.
***Mammals																	
AMABA01010*007*KY	SOREX CINEREUS	MASKED SHREW	G5	S3	S		Y	1976-11-28	M	H	Henderson	EVANSVILLE SOUTH, IND.-KY.	375335N	873321W	OHIO RIVER,M,D OF GREEN-WABASH	[redacted]	MOIST FORESTS AND MEADOWS. RICH WOODS.
***Terrestrial Communities																	
CTFOR00110*002*KY	ACIDIC MESOPHYTIC FOREST			S5	N		Y	1980-10-10	S	H	Caldwell	OLNEY, KY.	370850N	874530W	FLYNN FORK BASIN	[redacted]	

21 Records Processed.

Provided to T.H.E. Engineers, Michael Kenawell

JAMES E. BICKFORD
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

February 18, 2002

Mr. Michael E. Kenawell
THE Engineers Inc.
131 Prosperous Place, Suite 15
Lexington, Kentucky 40509

RE: Interstate 69 Environmental Scoping Study
Lyon, Caldwell, Hopkins, Webster and Henderson counties

Dear Mr. Kenawell:

The Water Quality Branch has reviewed your request for information. There are no Wild Rivers, Outstanding Resource Waters or Exceptional Waters in the project area. The National Wetland Inventory maps indicate some wetlands within the project area. These areas may need to be investigated.

If you have any questions or need further information, please contact me by phone (502/564-3410 x433) or e-mail (Mike.Mills@mail.state.ky.us).

Sincerely,

Michael R. Mills

Michael R. Mills, Supervisor
Ecological Support Section
Water Quality Branch

C: file

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF FISH AND WILDLIFE RESOURCES
C. THOMAS BENNETT, COMMISSIONER

February 19, 2002

Michael E. Kenawell
Biologist
T.H. E. Engineers, Inc.
131 Prosperous Place
Lexington, KY 40509

Re: Threatened/Endangered species review; Environmental Scoping Study, Interstate 69, Lyon, Caldwell, Hopkins, Webster, and Henderson Counties, Kentucky

Dear Mr. Kenawell:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for the above-referenced information. The Kentucky Fish and Wildlife Information System indicates that no federally threatened or endangered (T&E) fish and wildlife are known to occur in the Evansville, Henderson, Robards, Sebree, Beech Grove, Hanson, Nortonville, Saint Charles, Dawson Springs, Olney, Princeton West, and Eddyville 7.5 minute USGS quadrangle(s). The bald eagle **is known to occur** in the Madisonville 7.5 minute USGS quadrangle (please see attached sheets). Please be aware that our database system is a dynamic one that only represents our current knowledge of the various species distributions.

The proposed area for the project may include wetland areas. KDFWR recommends that you look at the appropriate US Department of the Interior National Wetlands Inventory Map to determine where the proposed project may impact these wetlands. The appropriate US Army Corps of Engineers office and the Kentucky Division of Water should be contacted before any construction takes place in jurisdictional wetlands. Additionally, KDFWR will recommend at least 2:1 mitigation for any permanent loss or degradation of wetland acreage. Any planning should include measures designed to reduce or eliminate impacts to these areas. If impacts cannot be avoided, mitigation should be properly designed and proposed to offset these losses.

I hope this information will be helpful to you. Should you require additional information, please contact me at (502) 564-7109, ext. 367.

Sincerely,

Marla T. Barbour
Fisheries Biologist III

cc: Environmental Section File

Federally Threatened & Endangered Species Reported from MADISONVILLE W. Quadrangle

Common Name	Scientific Name	Status Code	Reference
bald eagle	Haliaeetus leucocephalus (Linnaeus, 1766)	223,101,121,601,102	Reference

KFWIS HOME

Federally Threatened & Endangered Species Reported from MADISONVILLE E. Quadrangle

Common Name	Scientific Name	Status Code	Reference
bald eagle	Haliaeetus leucocephalus (Linnaeus, 1766)	223,101,121,601,102	Reference

KFWIS HOME

United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

March 20, 2002

Michael E. Kenawell
T.H.E. Engineers, Inc.
131 Prosperous Place, Suite 15
Lexington, Kentucky 40509

Dear Mr. Kenawell:

Thank you for your letter and enclosures of February 15, 2002, concerning the proposed reconstruction of portions of the Pennyrile Parkway and Western Kentucky Parkway in Henderson, Webster, Hopkins, Caldwell, and Lyon Counties, Kentucky. The reconstructed stretch of highway would be renamed Interstate 69. Fish and Wildlife Service personnel have reviewed the information submitted and offer the following comments.

According to our records, the following threatened and endangered species are known to occur in the affected counties, and may occur in the project impact area:

Indiana bat - Myotis sodalis
Gray bat - Myotis grisescens
American burying beetle - Nicrophorus americanus
Bald eagle - Haliaeetus leucocephalus
Price's potato-bean - Apios priceana

You should assess potential impacts and determine if the proposed project may affect these species. A finding of "may affect" could require initiation of formal consultation. We would appreciate a copy of any survey report on these species done for this project, as well as your determination of effect.

The copperbelly water snake (Nerodia erythrogaster neglecta) was proposed for listing as threatened under the Endangered Species Act. However, listing of the copperbelly water snake has been at least temporarily avoided in Kentucky through the implementation of a Copperbelly Water Snake Conservation Plan. The Plan involves maintenance of existing wetlands and adjacent wooded

floodplains and uplands. Further, the plan calls for restoration of wetlands and wooded corridors that link these important habitats. With cooperation between various development and natural resource interests, future listing of the copperbelly water snake as threatened will hopefully be precluded. Even though the copperbelly water snake is no longer proposed for federal listing, it is known to occur in the vicinity of the proposed project and we would appreciate your cooperation in implementing conservation measures that benefit this rare snake.

Thank you for the opportunity to comment on this proposal. Please contact Timothy Merritt (telephone 931/528-6481, ext. 211) of my staff if you have questions regarding the information provided in this letter.

Sincerely,

Douglas B Barclay

for Lee A. Barclay, Ph.D.
Field Supervisor

JAMES E. BICKFORD
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

April 18, 2002

Michael E. Kenawell
Biologist
T.H.E. Engineers, Inc.
131 Prosperous Place, Suite 15
Lexington, KY 40509

Dear Mr. Kenawell:

Subject: Lyon, Caldwell, Hopkins, Webster, and Henderson counties. KY
Interstate 69
Item Number: N/A
Environmental Scoping Study

The above study area is located on a variety of hydrogeologic settings. The northern portion, within the Western Coalfield Provence crosses alluvial terrain and sandstone & shale terrain. Karst hydrology is found in the southwestern portion of the project. In the vicinity of Princeton, I have circled sinkholes and sinking streams and illustrated the minor amount of dye-trace data known for the area. A few water wells are located in this karst area. A thorough survey for karst springs and domestic water wells along the project should be made.

Sincerely,

Joseph A. Ray, P.G.
Groundwater Hydrologist III
Groundwater Branch
Division of Water

Michael,

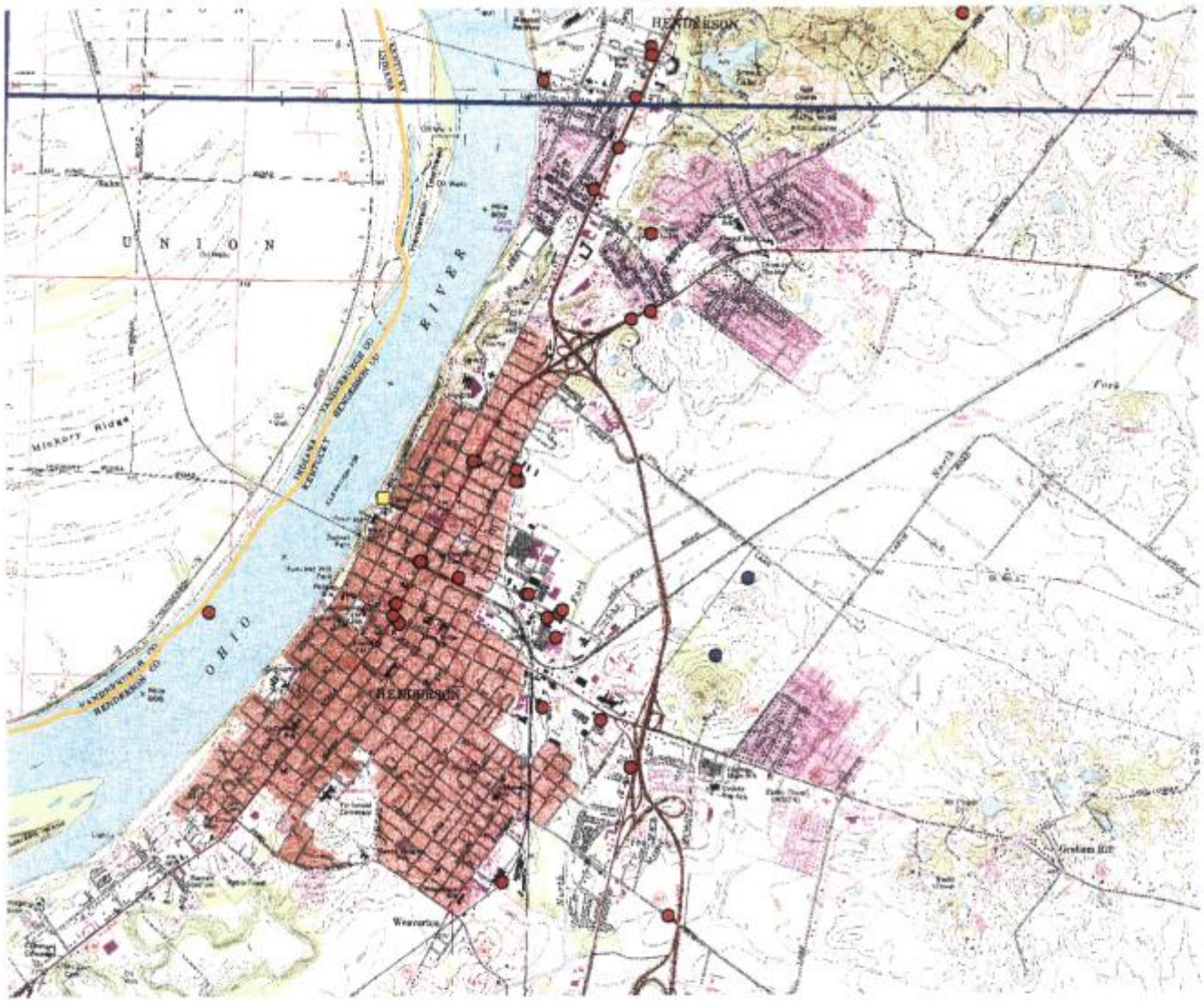
Sorry it took so long to get the information back to you. I have sent a legend that shows the different wells, springs, and public water supplies. The public water supplies are not differentiated as to ground or surface water but you can tell that if there is not a surface water body around the site it is probably a groundwater system.

If you need any additional information just let me know.

Thanks

Bruce McKinney
Wellhead Protection Program

Legend



- domestic well
- monitoring well
- Public Water Supply
- Spring

N
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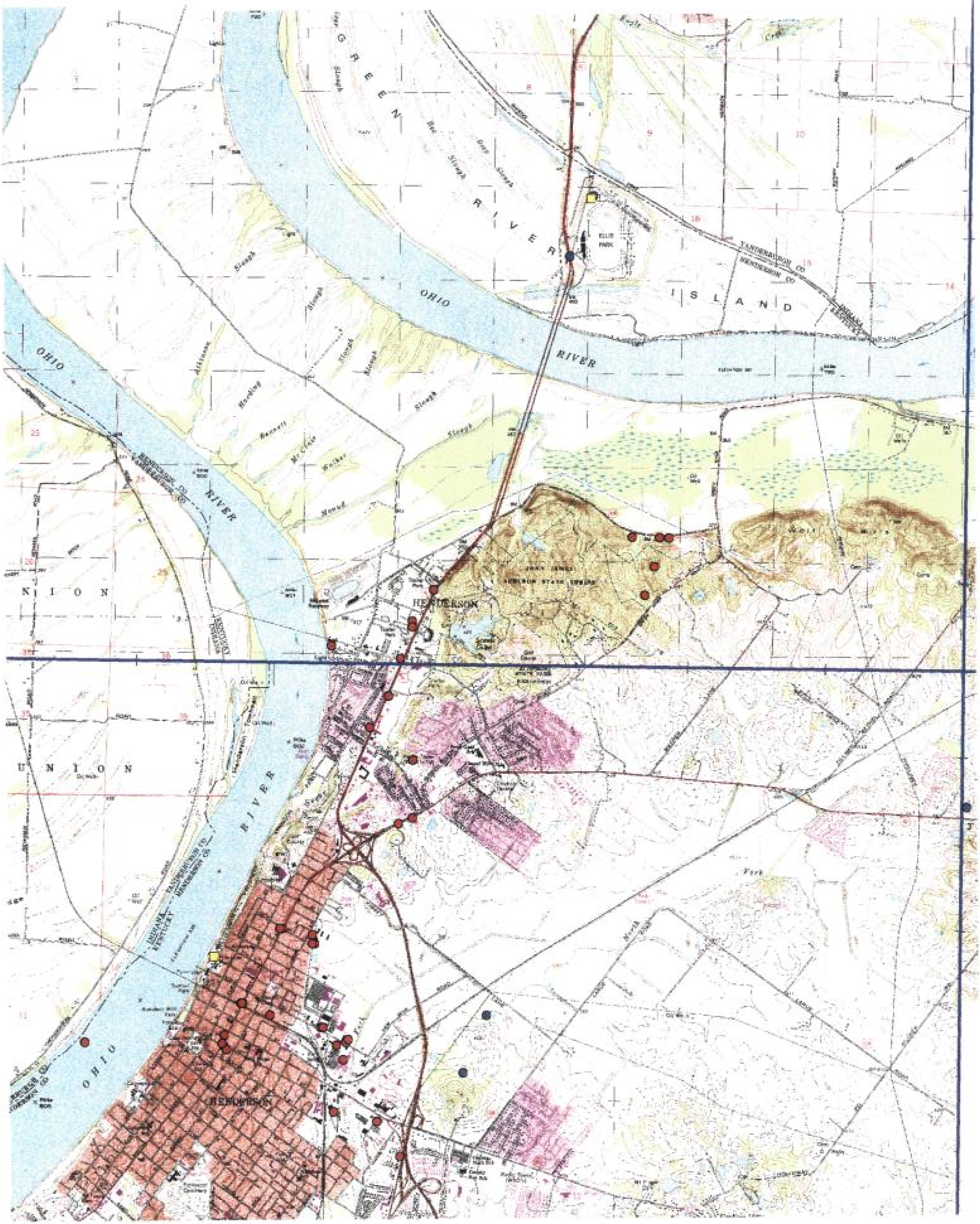
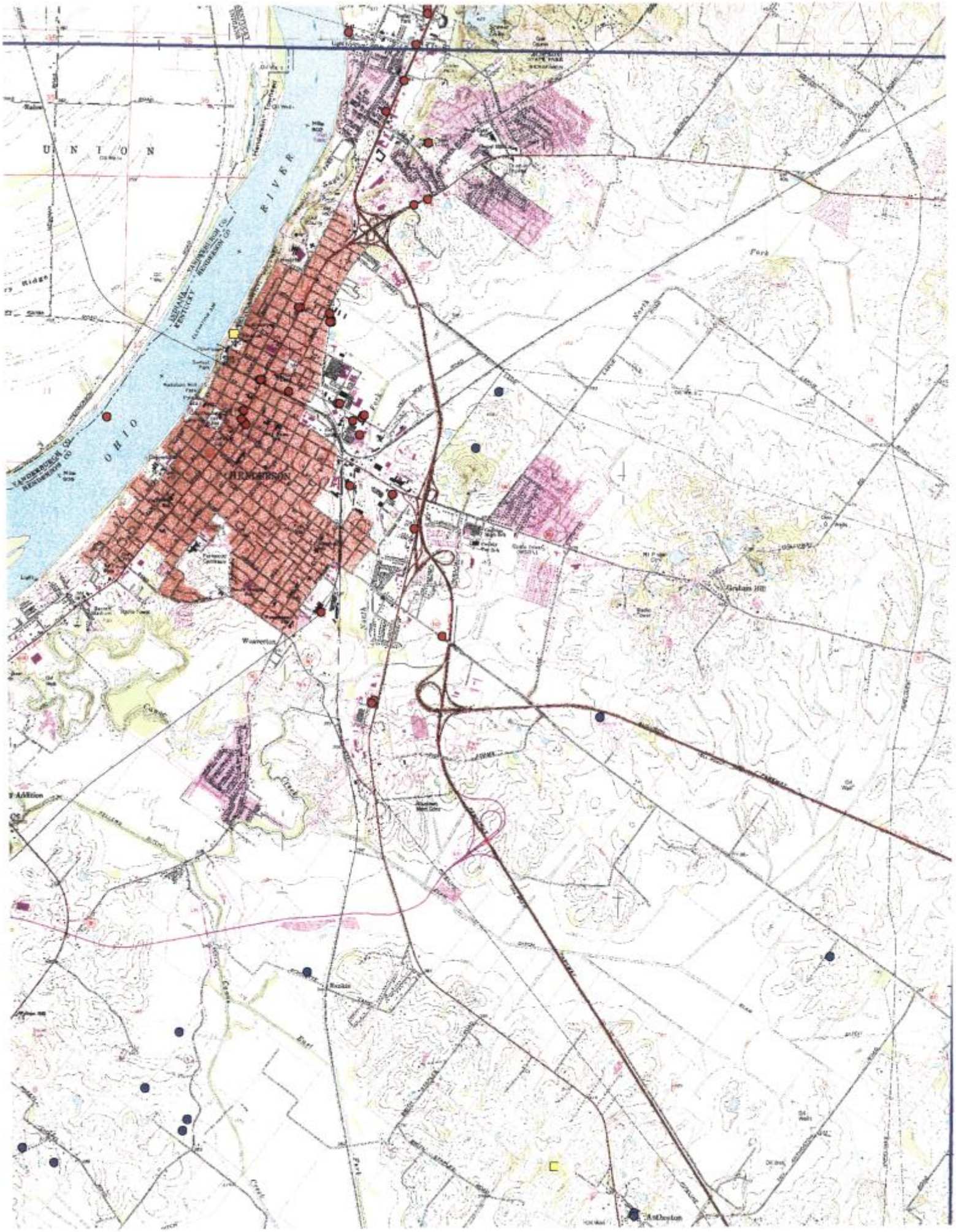
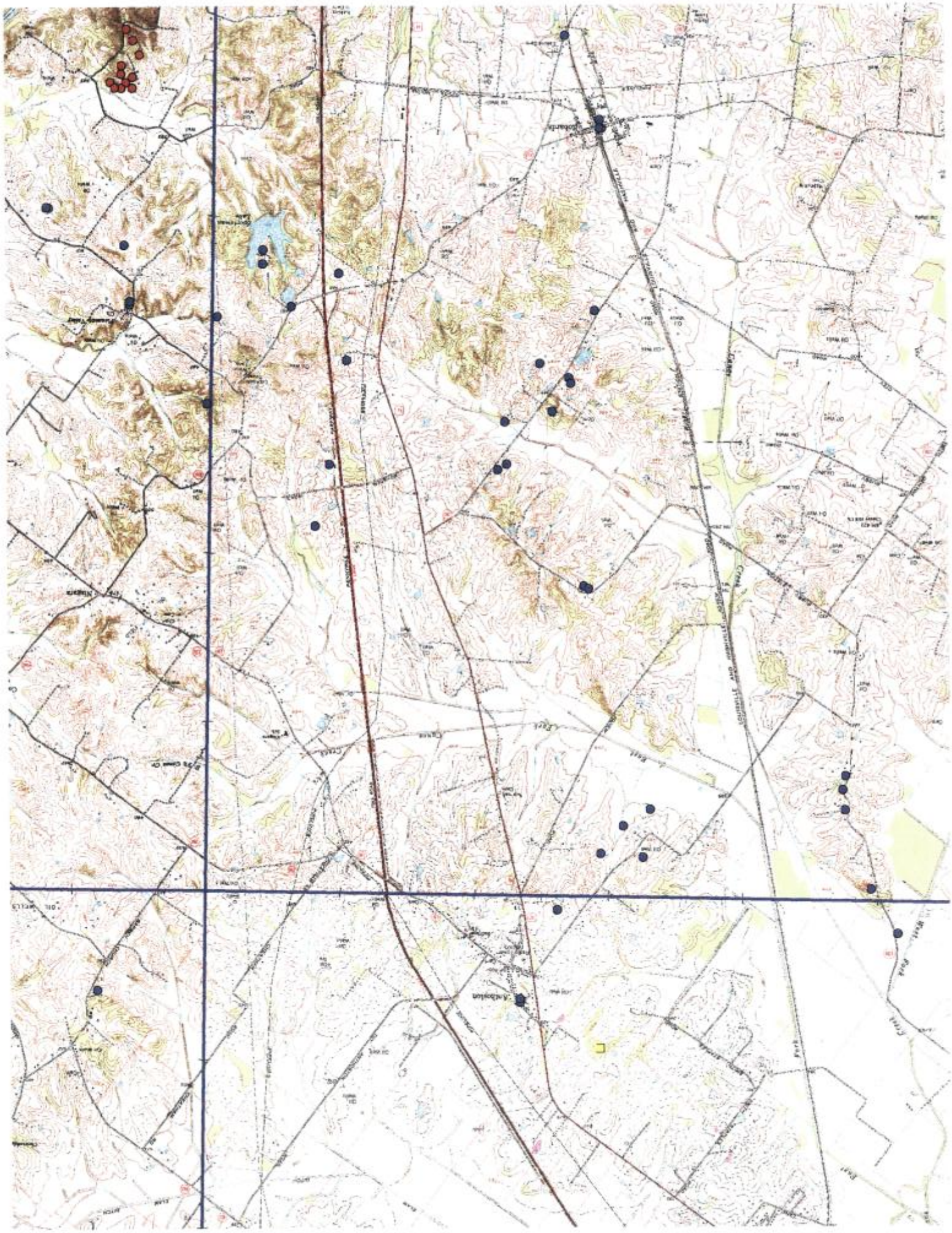
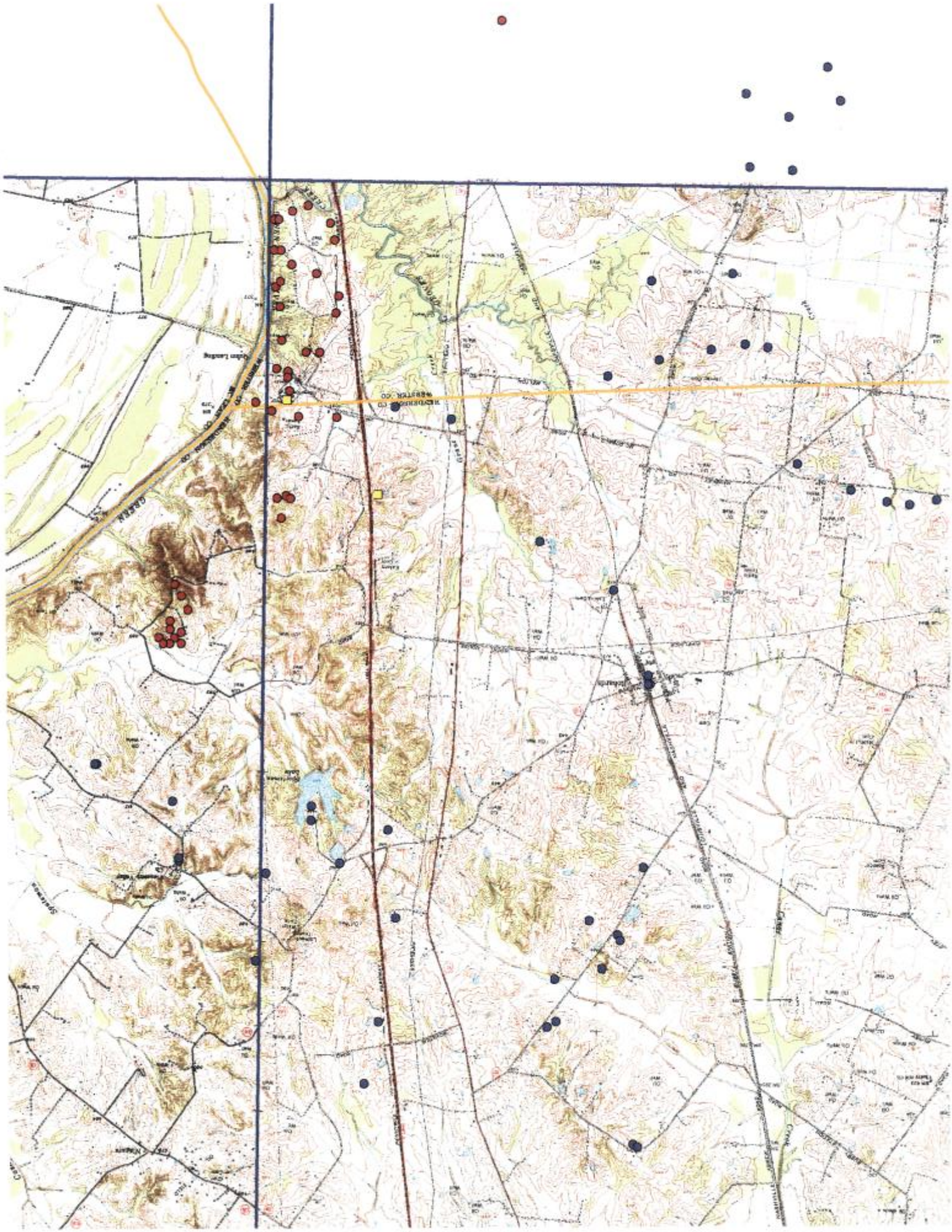
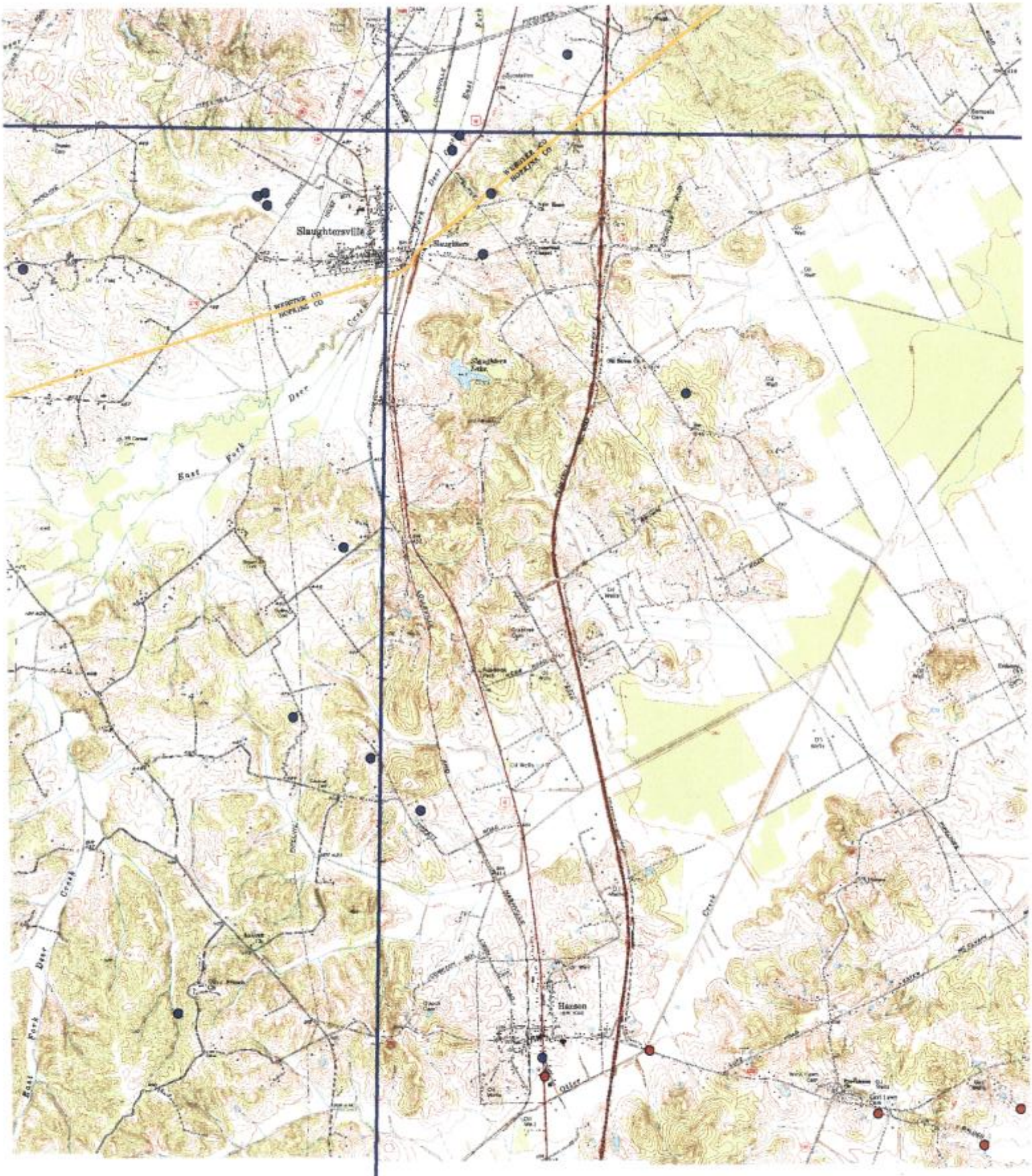
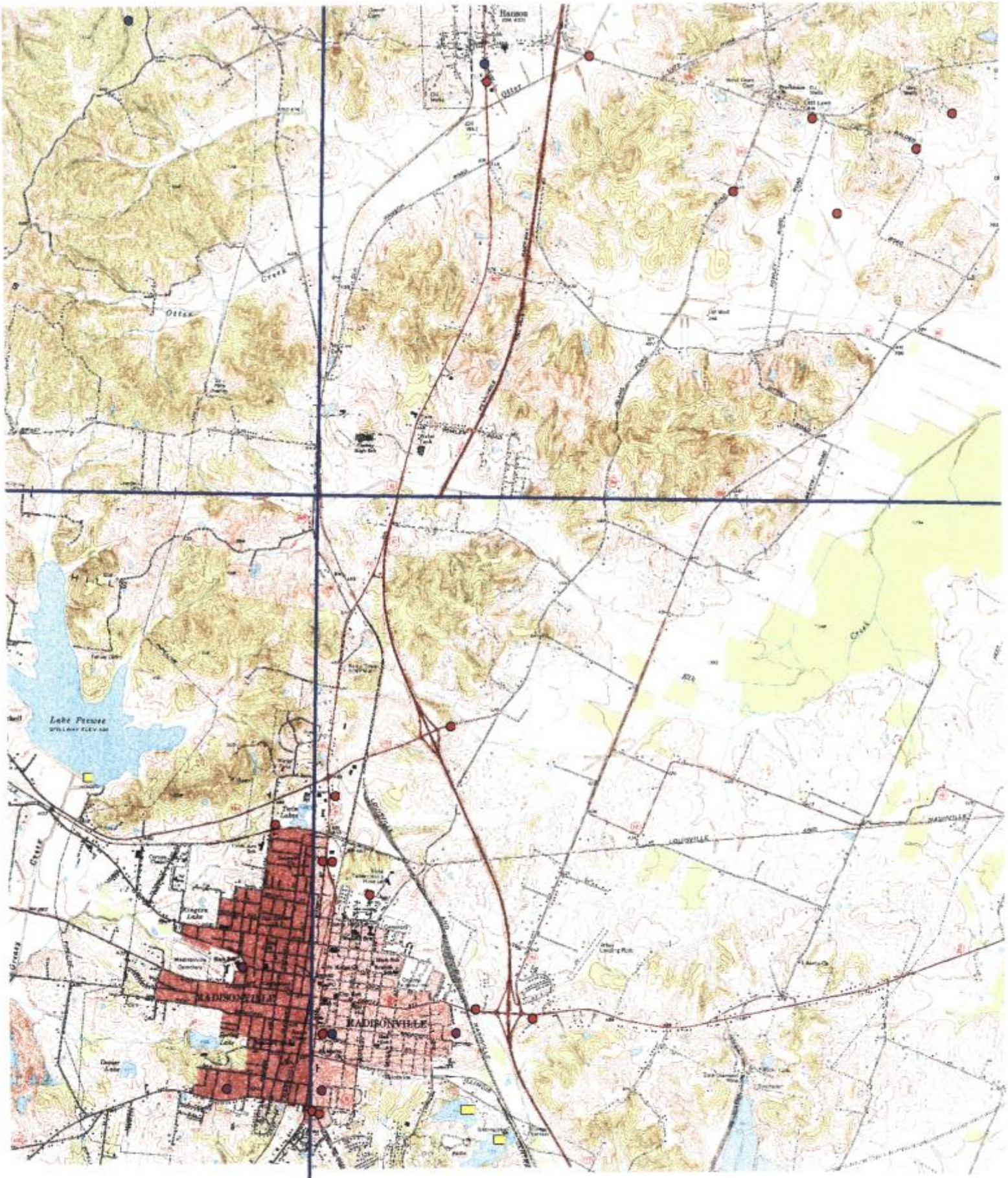

GREEN RIVER
ISLAND
OHIO RIVER
OHIO RIVER
OHIO RIVER
ELLIS PARK
VANDERBURGH CO
HENDERSON CO
HENDERSON
HENDERSON
UNION
UNION
INDIANA
KENTUCKY


U N I O N
RIVER
OHIO
HENDERSON
Graham Hill






Slaughtersville
Hanson
Deer
East Fork
Creek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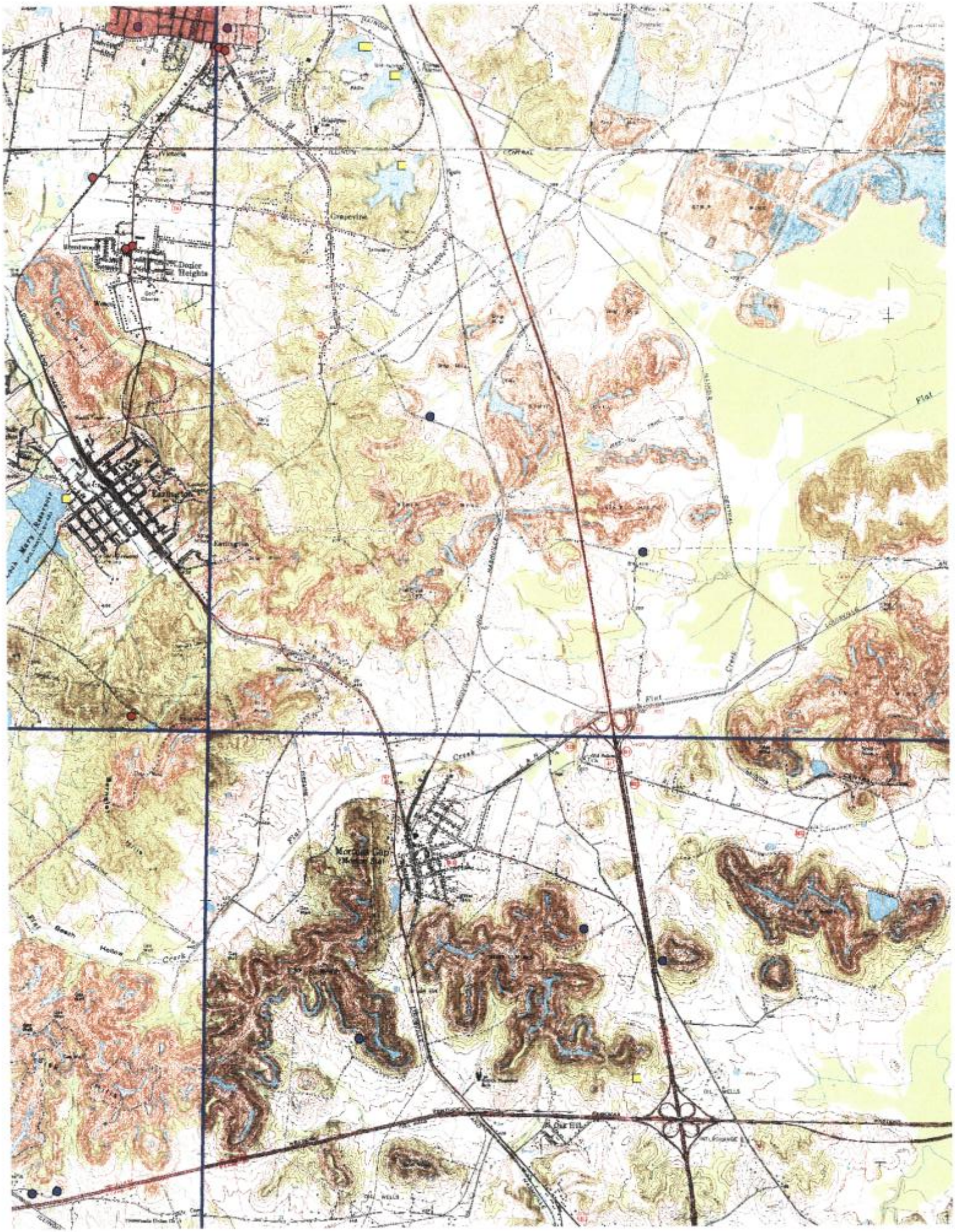
Lake Pewee
MADISONVILLE
MADISONVILLE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Creek
Morgan Gap
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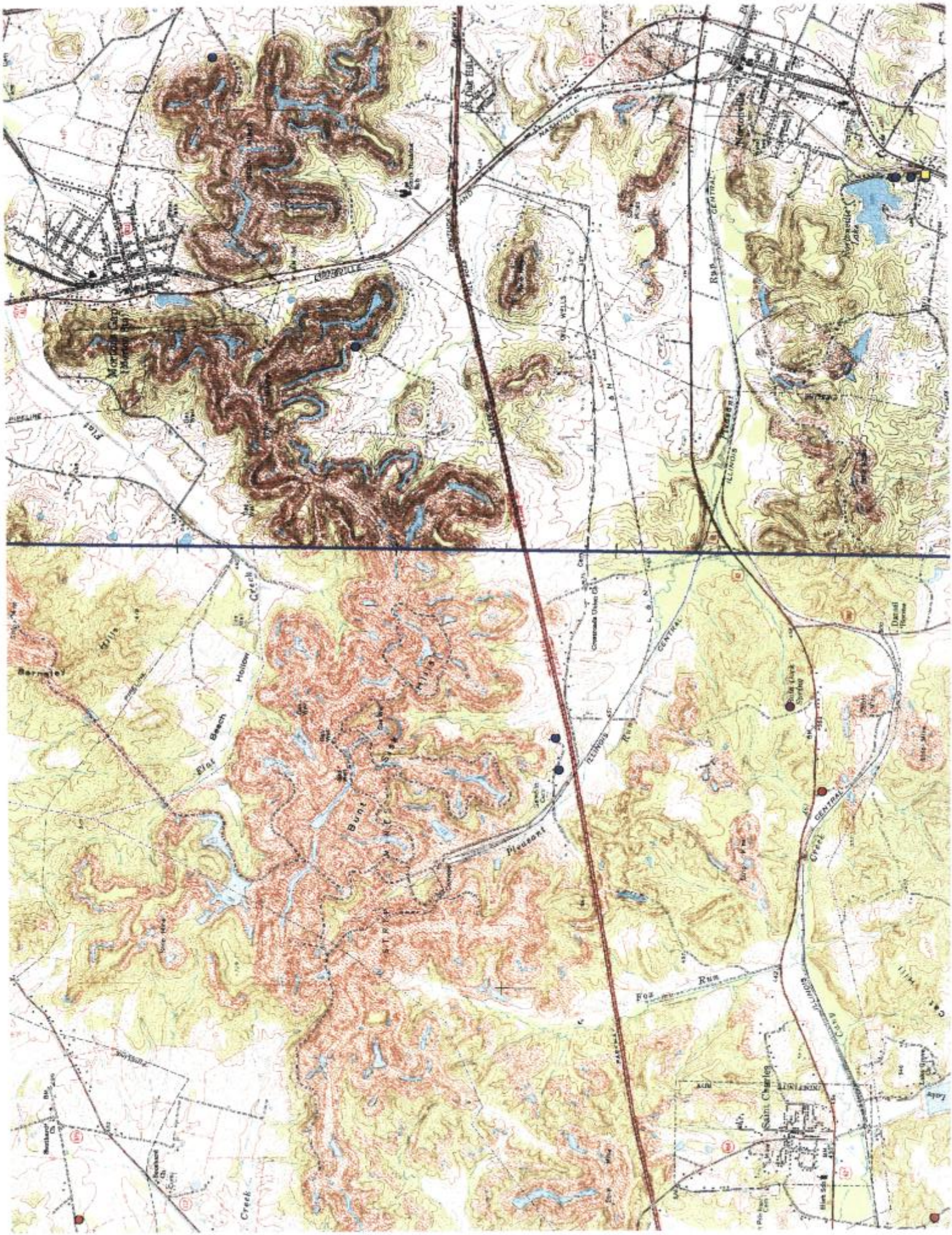
Beech
Hollow
Creek
OIL WELLS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Pleasant
Fox Run
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Nantonville
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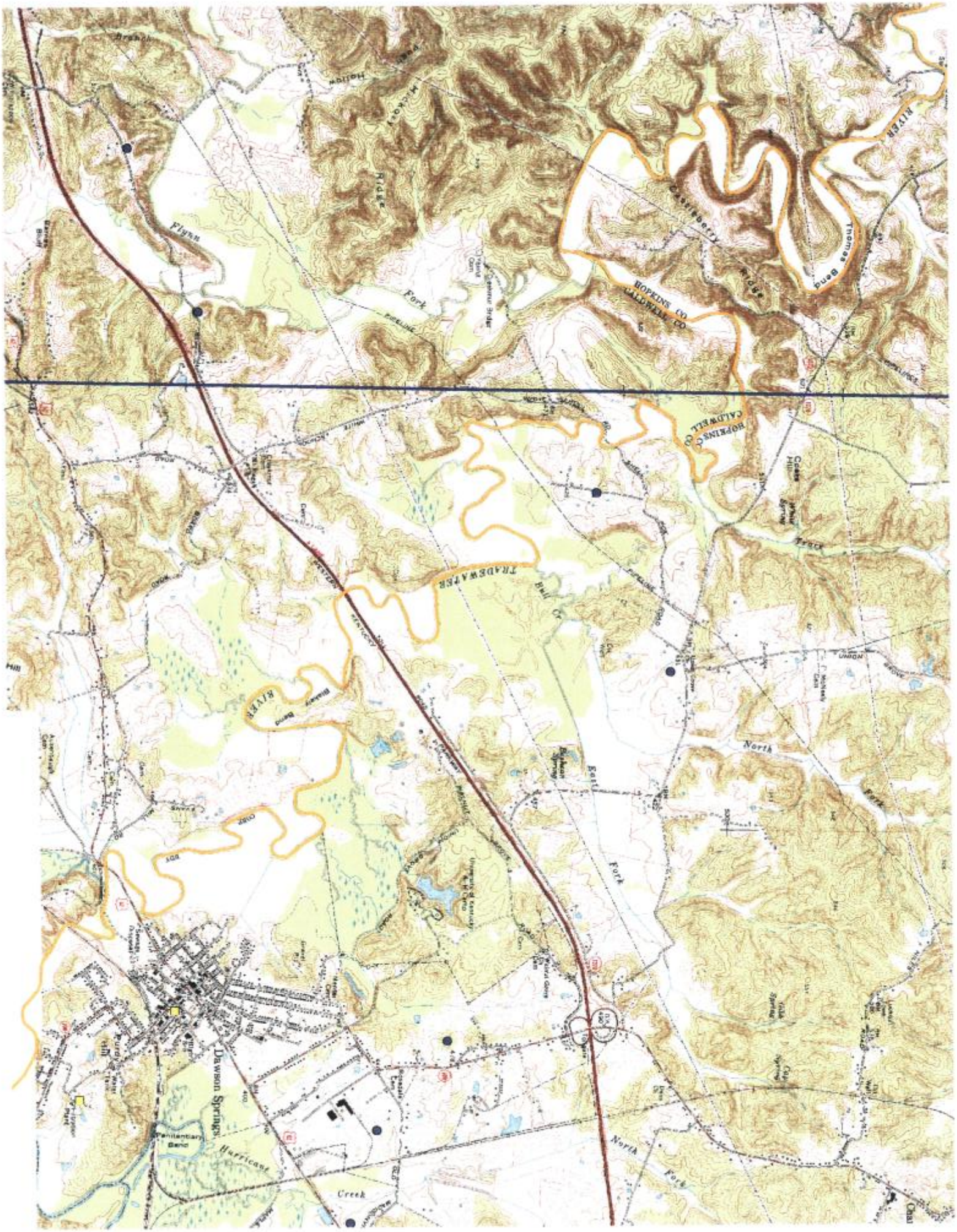
Gas Wells
Cemetery
Church
Creek
Run
Hollow
Ridge
Lake
Illinois Central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Pipeline
Blackberry
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Thomas
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Hopkins Co
Caldwell Co
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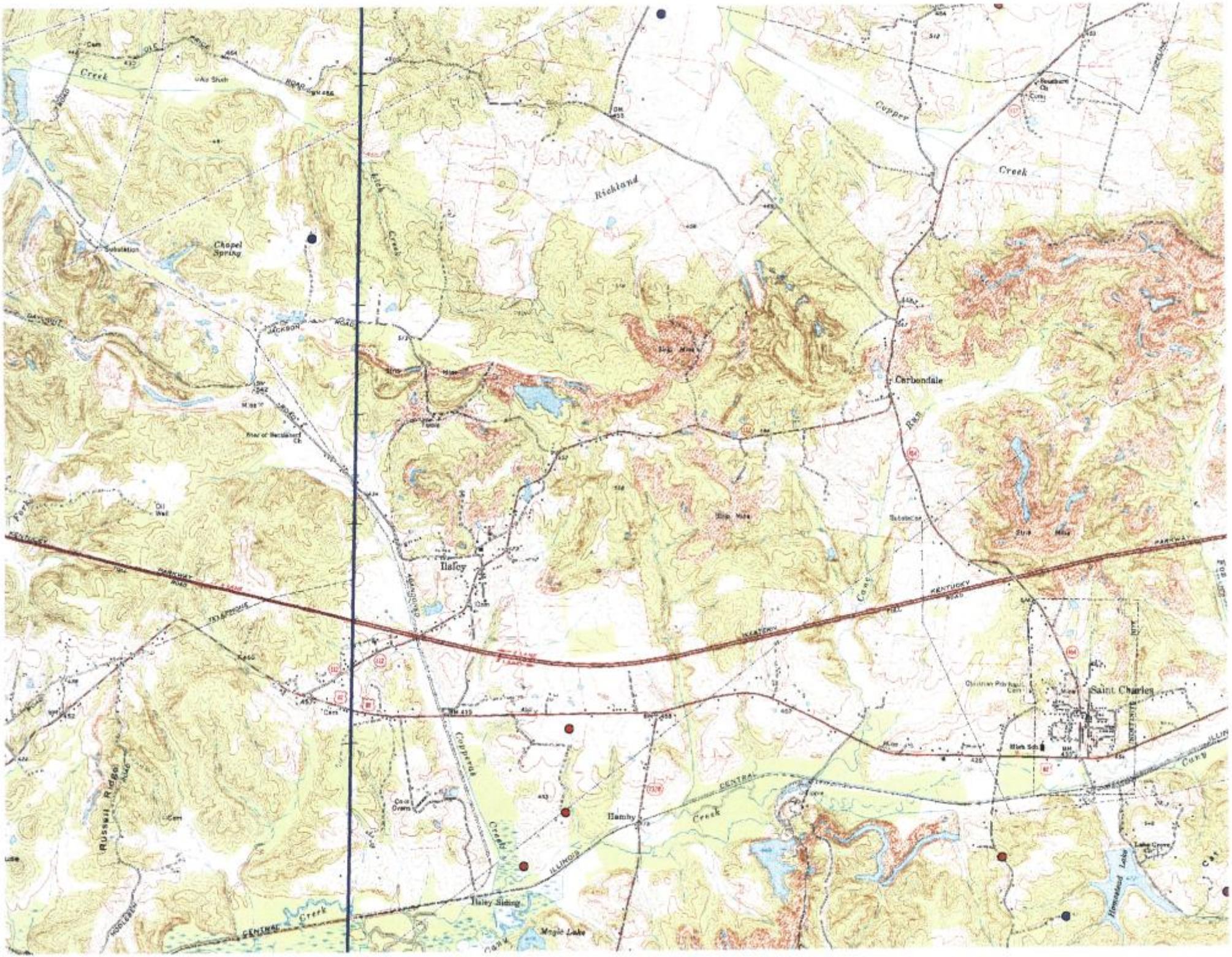
Creek
North
Fork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Saint Charles
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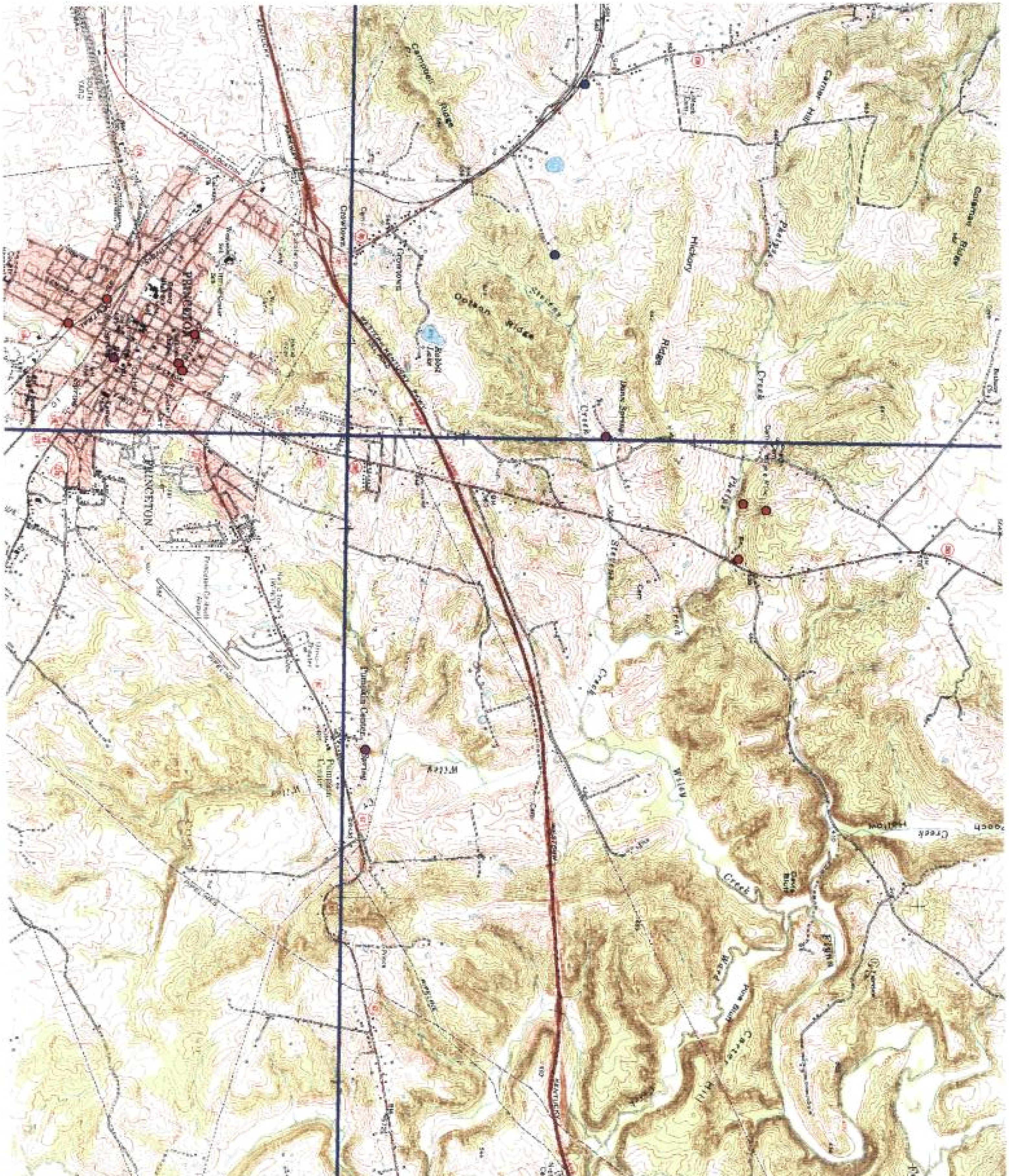
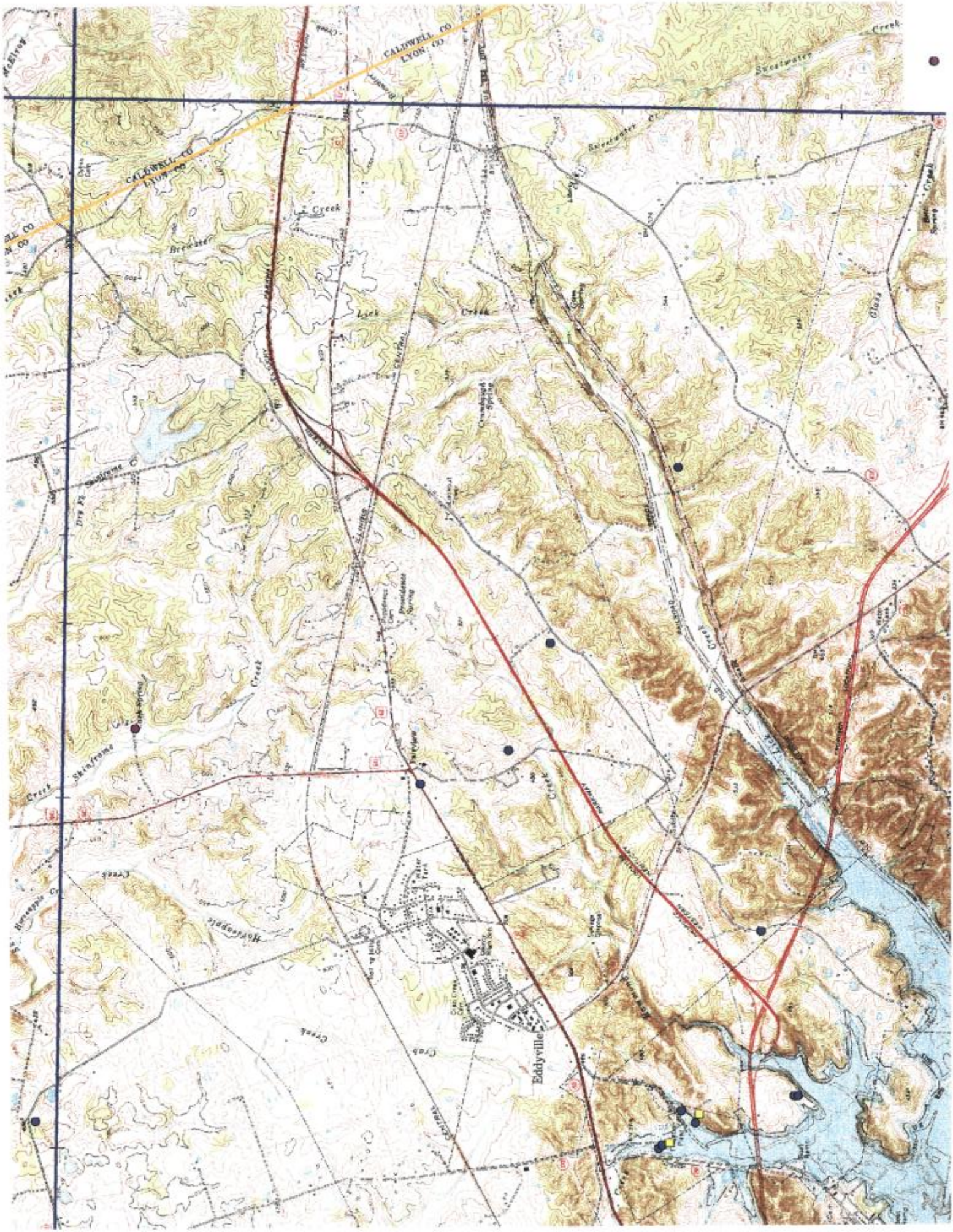
Magic Lake
Russell Ridge
Road
Creek
Lake




CALDWELL CO
LYON CO
Eddyville

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
1105 National Mine Drive
Madisonville, Ky. 42431
270-821-4464 - Telephone
270-821-6942 - Fax

March 28, 2002

Michael E. Kenawell
131 Prosperous Place, Suite 15
Lexington, Ky. 40509

Dear Mr. Kenawell,

Per your request, I have enclosed a soil survey for Hopkins County, as well as listings of hydric and inclusion soils, highly erodible soils and prime farmland soils for Hopkins County. If you need any further assistance, please feel free to contact this office.

Sincerely,

Tommy L. Pattie FOR

Robert N. Bush Jr.
District Conservationist

UNITED STATES DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

706-B N. GREEN STREET
HENDERSON, KY 42420
(270)827-5157

April 9, 2002

Mr. Michael Kenawell, Biologist
T.H.E. T-E Engineers, Inc.
131 Prosperous Place
Suite 15
Lexington, KY 40509

Mr. Kenawell,

Enclosed is the information you requested on the soils in Henderson County. Soils sheets 6, 15, 24, 32, 40, 41, 49, 56 and 61 will cover the area in question. The parkways do not show up on these maps.

If you have any questions as to the abbreviations on the list, please let me know.

Sincerely,

Rodney Bozarth
District Conservationist

Enclosure

United States Department of Agriculture

NRCS Natural Resources Conservation Service

Box 158
990 US 41-A South
Dixon, KY 42409
270-639-5763 fax-270-639-9177

March 7, 2002

Michael E. Kenawell – Biologist
T.H.E Engineering, Inc.
131 Prosperous Place
Suite 15
Lexington, KY 40509

Subject: Soil Information for Interstate 69 in Webster County

I am responding to your letter dated February 15, 2002 requesting soil information in which your engineering firm is conducting an environmental scoping study on the reconstructed stretch of Pennyrile and Western Kentucky Parkways that will be named Interstate 69 that is located in Webster County.

I have enclosed a copy of the Webster-Union County Soil Survey and the individual soil survey sheets number 25, 33, 34, 43 and 8 of the concern area in Webster County. I have also enclosed a list of Prime Farmland soils, Hydric soils, HEL-Highly Erodible Land soils, and NHEL (Non-Highly Erodible Land Soils).

If you need further information please feel free to contact me at the above address.

Sincerely,

Michael J. Andrews
District Conservationist

United States
Department of
Agriculture

Natural Resources
Conservation
Service

503 Parkway Drive
Princeton, KY 42445
Phone: (270) 365-5533

February 20, 2002

Michael E. Kenawell
131 Prosperous Place
Suite 15
Lexington, KY 40509

Dear Mr. Kenawell:

This letter is in response to your request for soils information relative to the construction of I-69. Enclosed are a soil survey for Caldwell County along with lists for prime farmland soils, hydric soils, and highly erodible soils.

If further information is needed, please give us a call at (270) 365-5533 Ext. 3.

Sincerely,

George Ballard
District Conservationist

USDA NRCS
Natural Resources Conservation Service

Baccus Building
Commerce St., P.O. BOX 160
Eddyviille, KY 42038
(270)388-7653

February 21, 2002

T.H.E. Engineers, Inc.
131 Prosperous Place, Suite 15
Lexington, KY 40509

Dear Mr. Kenawell:

In response to you letter concerning proposed I-69 I have enclosed a copy of the Lyon County soil survey, the Lyon hydric soils list including hydric inclusions, the Lyon highly erodible soils list and a prime farmland list.

If you need more information, please advise.

Sincerely,

Sue Stone

SUE STONE
Resource Conservationist

APPENDIX B
SOIL SURVEY SUMMARY

Soil Survey Summary by County

Henderson County	
Soil Unit	**Description**
Calloway silt loam (0-2%)	-somewhat poorly drained, strongly acidic soil found on flat ridgetops in the loess uplands and on terraces
Collins silt loam (0-3%)	-moderately well drained silty soil on bottom lands along primary drains
Dekoven silt loam	-dark-colored, very poorly drained soil that formed in sediment derived from alkaline loess is found on wide bottoms
Dekoven and Wakeland silt loams	-very poorly drained, wet soils found on broad, flat bottoms
Falaya silt loam (0-4%)	-poorly drained soil formed in sediment derived from acid loess
Grenada silt loam (0-2%)	-moderately well drained soil with a fragipan that developed in loess that are found on broad uplands
Grenada silt loam (2-6%)	-moderately well drained soil with a fragipan found on broad uplands
Grenada silt loam (2-6%), eroded	-moderately well drained soil with a fragipan with some original surface layer washed away
Grenada silt loam (6-12%), severely eroded	-moderately well drained soil with a fragipan found on sloping areas in central part of county, much of surface layer removed
Gullied land (6-20%)	-miscellaneous land type consisting of small severely eroded areas of the uplands
Henshaw silt loam (0-4%)	-somewhat poorly drained soil on wide, level terraces near major streams
Loring silt loam (2-6%)	-well drained/moderately well drained soil with a fragipan found on broad ridgetops and side slopes of loess uplands
Loring silt loam (2-6%), eroded	-well drained/moderately well drained soil with a fragipan found on broad ridgetops and side slopes of loess uplands, partially eroded surface layer
Loring silt loam (6-12%), eroded	-well drained/moderately well drained soil with a fragipan found on broad ridgetops and side slopes of loess uplands, partially eroded surface layer
Loring silt loam (12-20%), eroded	-well drained/moderately well drained, strongly sloping soil with a fragipan found on loess hills, partially eroded surface layer

Loring silty clay loam (6-12%), severely eroded	-well drained/moderately well drained soil with a fragipan found on long, narrow ridgetops of loess uplands, most of surface layer has been removed by erosion
Loring silty clay loam (12-20%), severely eroded	- well drained/moderately well drained soil with a fragipan found on long, narrow ridgetops of loess uplands, most of surface layer has been removed by erosion
Markland silt loam (2-6%)	-well drained/moderately well drained soil found along the edge of the floodplain of Green and Ohio River, infrequent flooding
Memphis silt loam (2-6%)	-deep, well drained, silty soil of the loess uplands
Memphis silt loam (2-6%), eroded	-deep, well drained, silty soil of the loess uplands, partially eroded surface layer
Memphis silt loam (6-12%), eroded	-deep, well drained, silty soil of the loess uplands, found on ridgetops and bluffs, partially eroded surface layer
Memphis silty clay loam (6-12%), severely eroded	-deep, well drained, silty soil of the loess uplands, most of surface layer is eroded away
Sharkey silty clay (0-1%)	-very poorly drained soils formed by fine-textured sediment deposited by slack water of Ohio R. tributaries, subject to flooding, found along level bottoms near Canoe Creek
Sharkey silty clay loam, overwash	-very poorly drained, wet soils found along broad, level areas along tributaries of the Ohio River
Uniontown silt loam (2-6%)	-deep, gently sloping, well drained to moderately well drained soil on terraces along the flood plain of major streams
Uniontown silt loam (2-6%), eroded	-deep, gently sloping, well drained to moderately well drained soil on terraces along the flood plain of major streams, partially eroded surface layer
Wakeland silt loam (0-3%)	-somewhat poorly drained soils derived from natural loess found on wide floodplains
Waverly silt loam	-poorly drained soil formed of loess sediment found on bottom lands
Wellston silt loam (12-20%), eroded	-sloping to strongly sloping, well drained acidic soils found on sandstone and shale uplands, partially eroded surface layer
Wellston silty clay loam (12-20%), severely eroded	-sloping to strongly sloping, well drained acidic soils found on sandstone and shale uplands, most of the surface layer is eroded away

Zanesville silt loam (6-12%), severely eroded	-well drained and moderately well drained soil found on uplands, has a fragipan, most of the surface soil eroded away
Zanesville silt loam (12-20%), eroded	-well drained and moderately well drained soil found on uplands, has a fragipan, partially eroded surface layer
Zanesville silt loam (12-20%), severely eroded	-well drained and moderately well drained soil found on uplands, has a fragipan, most of the surface layer is eroded away

Webster County	
Soil Unit	**Description**
Belknap silt loam, (0-2%)	-deep, somewhat poorly drained, nearly level soil is on floodplains along small streams, subject to occasional flooding
Calloway silt loam, (0-2%)	-deep, somewhat poorly drained, nearly level soil is on broad upland divides and old stream terraces
Collins silt loam, (0-2%)	-deep, moderately well drained, nearly level soil is in valleys along small streams, subject to occasional flooding
Grenada silt loam, (2-6%)	-deep, moderately well drained, gently sloping soil is found on broad uplands
Karnak silt loam, overwash, (0-2%)	-deep, poorly drained, nearly level soil is found on floodplains, subject to occasional flooding during high water events
Karnak silty clay, (0-2%)	-deep, poorly drained, nearly level soil formed by clayey, slack-water deposits is found on floodplains, subject to rare flooding
Loring silt loam, (2-6%)	-deep, moderately well drained, gently sloping soil is found on uplands, fragipan is present
Markland silty clay loam, (6-12%)	-deep, moderately well drained to well drained, sloping soil is on short side slopes of stream terraces, subject to occasional flooding
Markland-Collins complex	-consists of small areas of Markland an Collins soils; deep, well drained Markland soil on sides of dissected areas; deep, well drained Collins soils on nearly level floodplains, subject to occasional flooding
McGary silt loam, (0-3%)	-deep, somewhat poorly drained, nearly level soil is on stream terraces, formed in clayey alluvium deposited in slack water
Memphis silt loam, (2-6%)	-deep, well drained, gently sloping soil found on uplands

Memphis silt loam, (6-12%)	-deep, well drained, gently sloping soil found on uplands, well dissected by shallow drainageways and small streams
Otwell silt loam, (2-6%)	-deep, moderately well drained, gently sloping soil if found
Steinsburg-Frondorf complex, (20-50%)	-soils are moderately deep and well drained found on upland hillsides dissected by intermittent drainageways, severe hazard of erosion
Wellston silt loam, (6-12%)	-deep, well drained, sloping soil found on uplands, erosion control measures needed during construction
Wellston silt loam, (12-20%)	-deep, well drained, moderately steep soil found on side slopes of uplands with slopes commonly dissected by drainageways
Wellston silty clay loam, (12-20%), severely eroded	-deep, well drained, moderately steep soil found on uplands, original surface layer has been removed by erosion
Zanesville silt loam, (6-12)	-deep, moderately well drained to well drained, sloping soil found on side slopes of uplands, fragipan present, slopes dissected by drainageways
Zanesville silty clay loam, (6-12%), severely eroded	-deep, moderately well drained to well drained, sloping soil found on hillsides of uplands, fragipan present, original surface layer removed by erosion

Hopkins County	
Soil Unit	**Descriptions**
Belknap silt loam, (0-2%)	-deep, somewhat poorly drained, nearly level soil found near streams and in narrow valleys, subject to occasional flooding
Bonnie silt loam, (0-2%)	-deep, poorly drained, nearly level soil in broad, low-lying valleys along streams that carry acid mine waste, subject to occasional flooding
Calloway silt loam, (0-2%)	-somewhat poorly drained, nearly level soil found on broad ridgetops and on old stream terraces, fragipan present
Collins silt loam, (0-2%)	-deep, moderately well drained, nearly level soil found along streams and in narrow valleys,
Frondorf-Lenberg silt loams, (12-30%)	-moderately deep, well drained, steep soil found on hillsides on uplands, highly dissected by drainageways

Grenada silt loam, (2-6%)	-moderately well drained, gently sloping soil found on broad, smooth uplands and on long, winding terraces, fragipan present
Grenada silt loam, (2-6%), severely eroded	-moderately well drained, gently sloping soil found on broad, smooth uplands and on long winding terraces, fragipan present, most of original surface layer lost to erosion
Loring silt loam, (2-6%)	-moderately well drained, gently sloping to sloping soil found on narrow ridgetops and side slopes on uplands, fragipan present
Loring silt loam, (6-12%)	-moderately well drained, gently sloping to sloping soil found on narrow ridgetops and side slopes on uplands, fragipan present, dissected by drainageways in areas
Mine dump	-waste material from coal mines, mostly coal dust and black, slatelike fragments
Sadler silt loam, (2-6%)	-moderately well drained, gently sloping soil found broad ridgetops on uplands, fragipan present,
Steff silt loam, (0-2%)	-deep, moderately well drained, nearly level soil found along streams and in narrow valleys, subject to occasional flooding
Steinsburg-Ramsey loams, (20-30%)	-moderately deep, well drained, steep soil found on uplands on hillsides dissected by intermittent drainageways
Stendal silt loam, (0-2%)	-deep, somewhat poorly drained, nearly level soil found along streams and in narrow valleys, subject to occasional flooding
Strip mine	-consists of a mixture of stones and unconsolidated material, slopes are short and range from gently sloping to very steep
Waverly silt loam, (0-2%)	-deep, poorly drained, nearly level soil found in slightly concave areas along streams, flooding is a severe hazard
Wellston silt loam, (12-20%)	-deep, well drained, sloping to moderately steep soil found on narrow ridgetops and hillsides on uplands, dissected by drainageways
Wellston silty clay loam, (6-12%), severely eroded	-deep, well drained, sloping to moderately steep soil found on convex ridgetops and side slopes, most of the surface layer has been removed by erosion
Zanesville silt loam, (2-6%)	-moderately well drained to well drained, gently sloping to moderately steep soil found on narrow ridgetops and hillsides on uplands, fragipan present,

Zanesville silt loam, (6-12%)	-moderately well drained to well drained, gently sloping to moderately steep soil found on convex ridgetops and side slopes, fragipan present
Zanesville silt loam, (6-12%), severely eroded	-moderately well drained to well drained, gently sloping to moderately steep soil found on side slopes dissected by drainageways, fragipan present, original surface layer removed by erosion

Caldwell County	
Soil Unit	**Descriptions**
Baxter cherty silt loam, (12-20%), eroded	-well drained, strongly sloping to moderately steep soil found on short, irregular slopes near sinkholes and limestone basins, erosion has removed half of the surface layer
Baxter cherty silt loam, (20-30%)	-well drained, strongly sloping to moderately steep soil found on side slopes below narrow ridgetops
Caneyville silt loam, (6-12%)	-well drained soil developed from residuum that weathered from limestone and partly from sandstone and shale
Caneyville very rocky soils, (12-20%)	-partly exposed outcrops of limestone and sandstone, most of the original surface layer has been removed by erosion
Caneyville very rocky soils, (20-30%)	-partly exposed outcrops of limestone and sandstone cover up to 25% of unit, erosion removed original surface layer
Collins silt loam	-deep, well drained soils found along bottom lands near the Tradewater River, subject to occasional flooding
Crider silt loam, (2-6%)	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst),
Crider silt loam, (2-6%), eroded	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), partially eroded surface layer
Crider silt loam, (6-12%)	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst)
Crider silt loam, (6-12%), eroded	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), partially eroded surface layer

Crider silt loam, (12-20%)	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), erosion potential is high
Crider silt loam, (12-20%), eroded	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), partially eroded surface layer
Crider silty clay loam, (12-20%), severely eroded	-well drained upland soil found on ridgetops, side slopes, and in areas of irregular topography (karst), erosion has removed all of the original surface layer
Dekalb,Ramsey, and Muskingum stoney soils, (12-20%)	-excessively drained upland soils that developed in residuum weathered from sandstone, siltstone, and shale, moderately high erosion hazard
Dekalb,Ramsey, and Muskingum stoney soils, (20-40%)	-excessively drained upland soils that developed in residuum weathered from sandstone, siltstone, and shale,high erosion hazard
Falaya silt loam	-somewhat poorly drained soils on bottom lands
Fredonia silty clay loam, (6-12%), eroded	-well-drained upland soils, moderate erosion hazard
Fredonia silty clay loam, (12-20%), eroded	-well-drained upland soils, moderate erosion hazard
Gilpin,Litz,and Muskingum silt loams, (20-30%)	-strongly sloping to steep, well-drained to excessively drained upland soils
Hayter silt loam, (12-20%)	-well-drained soils that developed in old local alluvium, moderate erosion hazard
Huntington silt loam	-well-drained soils on bottom lands
Lindside silt loam	-deep, moderately well-drained soils on bottom lands
Newark silt loam	-somewhat poorly drained soils on bottom lands, high water table in winter and spring
Pembroke silt loam, (2-6%), eroded	-fertile upland soils that are deep and well-drained, contains severely eroded spots
Rock land, sandstone	-consists of areas in which sandstone of various sizes cover 25 to 90 percent of the surface
Russellville silt loam, (2-6%)	-well-drained and moderately well-drained uplands soils with a weak fragipan
Russellville silt loam, (2-6%), eroded	-well-drained and moderately well-drained uplands soils with a weak fragipan, eroded spots
Russellville silt loam, (6-12%)	-well-drained and moderately well-drained uplands soils with a weak fragipan
Russellville silt loam, (6-12%), eroded	-well-drained and moderately well-drained uplands soils with a weak fragipan, eroded spots
Tilsit silt loam, (2-6%)	-moderately well-drained upland soils
Tilsit silt loam, (2-6%), eroded	-moderately well-drained upland soils, eroded areas

Vicksburg gravelly silt loam	--well-drained to excessively drained soils on bottom lands
Wellston silt loam, (6-12%)	-well-drained upland soils
Wellston silt loam, (12-20%)	-well-drained upland soils
Wellston silt loam, (12-20%), eroded	-well-drained upland soils, eroded
Wellston silt loam, (6-12%), severely eroded	-well-drained upland soils, severely eroded
Zanesville silt loam, (2-6%)	-well-drained and moderately well-drained upland soils with a fragipan
Zanesville silt loam, (2-6%), eroded	-well-drained and moderately well-drained upland soils with a fragipan, eroded
Zanesville silt loam, (6-12%)	-well-drained and moderately well-drained upland soils with a fragipan
Zanesville silt loam, (6-12%), eroded	-well-drained and moderately well-drained upland soils with a fragipan, eroded
Zanesville silt loam, (6-12%), severely eroded	-well-drained and moderately well-drained upland soils with a fragipan, severely eroded area
Zanesville silt loam, (12-20%), eroded	-well-drained and moderately well-drained upland soils with a fragipan, eroded

Lyon County	
Soil Unit	**Descriptions**
Baxter-Hammack complex, (20 to 30%)	-well drained, deep soils found along tributaries of the Cumberland River within a few miles of Lake Barkley
Hammack-Baxter complex, (6-12%)	-well-drained, deep soils found in karst areas, characterized by basins and on adjacent side slopes and narrow ridgetops
Hammack-Baxter complex, (12-20%)	-well-drained, deep soils found in karst areas, characterized by basins and on adjacent side slopes and narrow ridgetops
Lindside silt loam, (0-3%)	-deep, moderately well-drained nearly level soils are found on flood plains and upland depressions
Melvin silt loam, (0-2%)	-nearly level, poorly drained soil is found on floodplains along streams and in depressions throughout the survey area
Nicholson silt loam (2-6%)	-deep, moderately well drained, gently sloping soil found on broad ridges on uplands
Nicholson silt loam (6-12%)	-deep, moderately well drained, gently sloping soil found on side slopes on uplands

Nicholson silty clay loam, (6-12%), severely eroded	-deep, moderately well drained sloping soil found on side slopes of uplands, severely eroded portions
Nolin silt loam, (0-2%)	-deep, well drained nearly level soil found on floodplains and in depressions on uplands, some hazard of flooding

ADDENDUM

KENTUCKY TRANSPORTATION CABINET
FRANKFORT, KENTUCKY 40622
WWW.KENTUCKY.GOV

ERNIE FLETCHER
GOVERNOR

MAXWELL C. BAILEY
SECRETARY

MEMORANDUM

To: Jimmy Wilson
Division of Planning

From: Tony Vinegar
Division of Environmental Analysis

Date: March 10, 2005

Re: Strategic Corridor Planning Study - Eddyville to Henderson
Henderson, Caldwell, Webster, Hopkins and Lyon Counties, Kentucky
Item #2-69.10

The Strategic Corridor Planning Study has been evaluated by the Division of Environmental Analysis for any potential environmental challenges that would need to be addressed during future design stages. The following comments are based solely upon the corridor study data presented; additional comments could be provided if/when the scope of the project is narrowed:

1. Base studies will be required for noise issues if the project is to be federally funded.
2. If the project were to be federally funded then limited base studies would be required to determine any air impacts. The planning study should also clearly state that the project originates from the latest conforming STIP.
3. There is potential for channel changes and wetland impacts if the project extends away from current right-of way limits; impacts to these resources should be avoided. These areas if impacted would require 401 and 404 permits and special precautions that limit impacts during construction. They would also pose mitigation challenges with regard to the design process; expenditures for stream restoration and wetland mitigation could be very costly. Excess waste sites, if any should be considered and assessed early in the design process. Floodplain impacts could be costly and hinder project schedules; every effort should be made to avoid construction in the floodplains.

4. Any impacts to the listed endangered species should be avoided; if unavoidable would require costly mitigation and could hinder the project schedule. Base studies would likely recommend mist netting surveys for endangered bats, as part of a biological assessment that would likely be required. Contrary to what is discussed in the report Coach Cave is not located near the project. Impacts to the Pennyrile trail should be avoided and/or minimized.
5. Specific details concerning HAZMAT and storage tanks would need to be obtained through a thorough site assessment later once alignments are developed.
6. Potential section 4(f) and 106 issues exist due to the presence of many potentially historic structures and should be evaluated along with a detailed base study by a qualified historian.
7. A base study for archaeology will be required. Impact to Cemeteries should be limited/avoided if at all possible.
8. Environmental Justice issues will require mitigation if the design of the road is shown to directly impact the areas of concern. Every effort should be made to coordinate those mitigation efforts with local officials, KYTC and FHWA.

Our staff appreciates the opportunity to provide early comments on projects during the planning stage. If you should have any questions regarding these comments please contact me at 564-7250.

TV
Attachments

C: Files