

APPENDIX D.
ENVIRONMENTAL OVERVIEW

TABLE OF CONTENTS

Section	Page
I. Socioeconomics and Land Use -----	3
A. Population Estimates and Trends -----	3
B. Population by Race-----	5
C. Educational Attainment by Percentage-----	8
D. Economic Data -----	10
E. Farmland-----	24
F. Section 6(f) Resources -----	27
G. Aesthetics/Visual Impacts -----	28
H. Pedestrian and Bicycle Facilities-----	29
I. Construction-----	30
J. Summary and Conclusion of Socioeconomic Issues-----	32
II. Cultural and Historic Resources -----	38
A. Historic Resources -----	38
B. Archaeological Resources-----	40
III. Aquatic and Terrestrial Resources -----	42
A. Watersheds-----	42
B. Floodplain Encroachment-----	42
C. Stream Crossings-----	44
D. Outstanding and Exceptional Water Resources -----	45
E. Wetlands -----	46
F. Federal and State Threatened and Endangered Species -----	47
G. Natural Areas-----	50
IV. Hazardous Materials and Underground Storage Tanks -----	52
V. Air Quality -----	53
VI. Traffic Noise -----	54
VII. Conclusion -----	55

Tables:

Table 1. Roadways (by County) that Intersect or Junction with the Project Corridors-----	1-2
Table 2. Population Estimates & Projections by County-----	3

Table 3. Population Estimates, 1900 - 2000 -----	4
Table 4. Population Projections, 2010 - 2030 -----	5
Table 5. Population Percentages by Race -----	6
Table 6. Educational Attainment by Percentage, 1990 & 2000 -----	9
Table 7. Poverty Status of Individuals, Year 2000, for Project Counties -----	10
Table 8. PCPIs for KY and the Project Counties -----	12
Table 9A. Adair County Manufacturing Firms -----	15
Table 9B. Green County Manufacturing Firms -----	16
Table 9C. Marion County Manufacturing Firms -----	16-17
Table 9D. Taylor County Manufacturing Firms -----	17
Table 9E. Washington County Manufacturing Firms -----	18
Table 10. Labor Characteristics for Each County & LMA--	20-21
Table 11. Labor Availability, 2002 and Future Labor Availability for Counties and LMAs, 2003 – 2007 -----	22
Table 12. Commuting Patterns of Residents and Employees, 2000-----	23
Table 13. Section 6(f) Resources-----	27
Table 14. Available Sites and Buildings-----	35
Table 15. Range of Existing Vehicles Per Day-----	53

Figures:

Figure 1. Adair County Labor Market Area-----	19
Figure 2. Green County Labor Market Area -----	19
Figure 3. Marion County Labor Market Area-----	19
Figure 4. Taylor County Labor Market Area -----	19
Figure 5. Washington County Labor Market Area -----	20

ENVIRONMENTAL OVERVIEW

Heartland Parkway ALTERNATIVES PLANNING STUDY Adair, Green, Marion, Taylor, and Washington Counties ITEM NO. 04-132.00

This preliminary environmental overview analysis identifies potential concerns within the two defined project corridors based upon available data and information sources. The project could bring changes to the local communities including improvements in vehicular access, reduced driving times, convenience, and emergency response times. In addition, the project could enhance the future quality of life and the economic vitality for residents within the area.

The project's termini (endpoints) are from the Louie B. Nunn/Cumberland Parkway, in Adair County to the Martha Layne Collins/Blue Grass Parkway in Washington County. The project corridors are located within Adair, Green, Marion, Taylor and Washington Counties. The county seats of Columbia, Lebanon, Campbellsville and Springfield will be included in the project study. Neither corridor is located near Greensburg. The Option 1 Corridor passes through the southeastern corner of Green County. The project corridors will intersect or junction with several state or federal highways. Following is a table that displays these roadways within the respective counties:

Table 1: Major Roadways (by County) that Intersect or Junction with the Project Corridors

Adair	
Louie B. Nunn/Cumberland Pkwy	KY 61
KY 767	KY 80
KY 55*	
Green	
KY 565	
Marion	
KY 426	US 68*
KY 289	KY 429
KY 49	KY 55*
Taylor	
KY 55*	US 68*
KY 210	KY 70

Washington	
Martha Layne Collins/Bluegrass Pkwy	KY 438
KY 53	KY 528
KY 152	US 150
KY 55*	KY 555*

* These roadways are included as part of the Option 2/3 Corridor.

The project corridors are identified as Option 1 and Option 2/3 Corridors. Option 1 features a parkway west of existing roadways, Option 2 proposes a 4-lane widening of existing KY55/US68/KY555 (with bypasses of the larger cities), and Option 3 proposes a 2-lane with additional passing bays and ultimate 4-lane bypasses of some of the larger cities. The corridors are 2,000 feet wide, which will provide some flexibility in positioning of the alternates to avoid environmentally sensitive issues and resources. The overall Option 2/3 corridor is 2,000 feet in width, but the narrower area of study was selected because Option 2 would add two lanes to the existing roadways, while Option 3 would widen the existing roadway at some locations. No construction activities are anticipated to occur outside 150 feet on either side of the existing roadway. In addition, the 1-mile long passing bays featured as part of Option 3 are to be placed every three miles, however, they can be shifted to avoid environmentally sensitive resources and issues. The project corridor concerns include:

- Socioeconomic and community impacts.
- Environmental justice concerns.
- Culturally sensitive areas including churches, parks, cemeteries and schools.
- Cultural historic sites.
- Archaeological resources.
- Potential threatened and endangered species.
- River and stream crossings.
- Underground storage tanks and hazardous materials.
- Noise and air impacts.

This section of the planning study focuses upon the preliminary environmental footprint for the proposed Heartland Parkway study area (project corridor). A local geographic information system (GIS), topographic maps and field trips were used to gather and record data on existing features, concerns and conditions within the project corridors. The purpose of identifying these features is to assist the project team and the public in deciding upon the location of project alternates to avoid and/or minimize impacts to the natural and human environments.

I. Socioeconomics and Land Use

The socioeconomic portion of the Environmental Overview identifies the existing conditions of the human environment and the related benefits and impacts of the new roadway upon the communities that exist within or near the project corridor. This section identifies current and projected population levels, and labor force and economic status.

A. Population Estimates and Trends

**Table 2
Population Estimates & Projections,
1900 - 2030 for Adair, Green, Marion, Taylor &
Washington Counties**

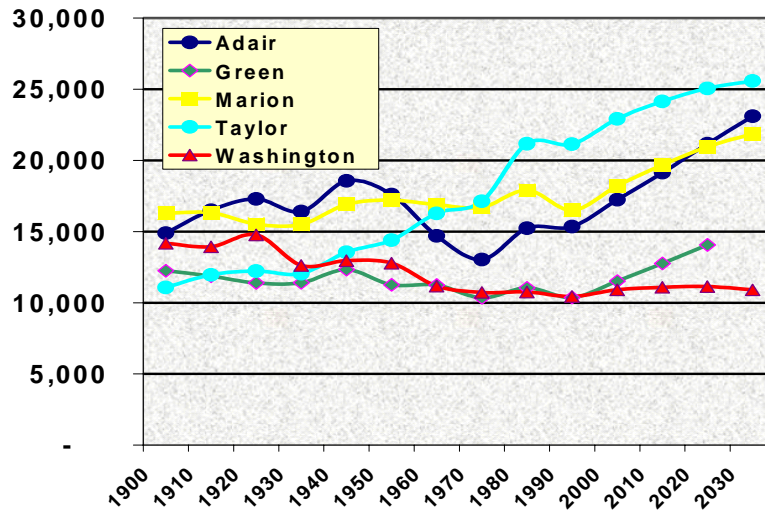


Table 2 (above) and Tables 3 and 4 (below) illustrate the history of each county's population between 1900 and 2000, with projections for the counties beginning at 2010 and carried through 2030. When comparing the population trends with employment figures and labor statistics in this study area, it can be inferred that the fluctuations in population are directly related to the employment conditions. The Kentucky Economic and Development Partnership and the Kentucky Economic Development Cabinet published a report May 2001. The report, *The Recent Economic Performance of Regions in Kentucky*, stated that, "demographic and economic activity are intertwined. A changing population alters the demand for goods and services. Jobs then respond to people. On the other hand, job creation raises expectations for employment and attracts population. People then respond to jobs."

Reviews of population patterns and economic factors in this section have revealed this intertwining of relations for each county. Three counties in the study area experienced growth through the past century – Taylor, Marion and Adair Counties. Taylor County was the least populated county in the study area in 1900. By 1970, it became the most populated county, and its growth continued through 2000. Population projections indicate it is likely that Taylor County will continue this trend surpassing a total of 25,000 residents by 2030 (See Tables 3 and 4 below).

**Table 3: Population Estimates, 1900 - 2000
for Adair, Green, Marion, Taylor and Washington Counties**

Area	1900	1920	1940	1960	1980	1990	2000
Adair	14,888	17,289	18,566	14,699	15,233	15,360	17,244
Green	12,255	11,391	12,321	11,249	11,043	10,371	11,518
Marion	16,290	15,527	16,913	16,887	17,910	16,499	18,212
Taylor	11,075	12,236	13,556	16,285	21,178	21,146	22,927
Washington	14,182	14,773	12,965	11,168	10,764	10,441	10,916

**Table 4: Population Projections, 2010 – 2030
for Adair, Green, Marion, Taylor and Washington Counties**

Area	2010	2020	2030
Adair	19,130	21,166	23,111
Green	12,765	14,066	15,339
Marion	19,682	20,961	21,876
Taylor	24,154	25,067	25,594
Washington	11,091	11,135	10,910

Table 4 includes population projections for the counties. The projections for the counties were extracted from the middle series. The Kentucky State Data Center also performs low and high projections, but recommends the middle series for planning purposes. Taylor, Adair and Marion Counties are predicted to continue increasing in population at rates that are consistent with recent growth trends. Green County is anticipated to grow at a slow rate and Washington County is predicted to continue experiencing a slight decline in growth.

If the no-build alternate is selected for this project, the population trends should continue along the projected growth rates as illustrated above. If Option 1 or Option 2/3 would be selected for the project, population trends could increase in the region as secondary and cumulative impacts associated with economic stimulation.

B. Population by Race

U.S. Census 2002 figures were reviewed to determine the racial balance of the communities within the project area of study, and the results were compared against the racial characteristics of Kentucky (See Table 5 below).

**Table 5: Population Percentages by Race,
2002 for Kentucky and Project Area Counties**

	Kentucky	Adair County	Green County	Marion County	Nelson County	Taylor County	Washington County
White	90.1	96.1	96.8	89.6	93.4	94.0	91.5
Black	7.3	2.7	2.6	9.1	5.3	5.1	7.5
Asian, Pacific Islander	0.1	0.3	0.1	0.7	0.6	0.3	0.3
American Indian	0.25	0.2	0.0	0.0	0.1	0.1	0.2
Hispanic Origin	1.5	0.8	1.1	0.9	1.1	0.9	1.6

Census tracts were reviewed for each county within the study area to determine the areas populated by minority races. Reviews of the tracts and field visits have determined that no minority neighborhoods or communities will be displaced or segmented by the corridors that are currently being considered for this project.

- **Adair County Census Tracts (9701 – 9706)** revealed that between 93.5 and 98.4 percent of the inhabitants within the respective tracts were white in 2000. The lowest percentage was located in Tract 9704, which includes the city of Columbia. Local officials have indicated that most of the minority population in Adair County resides within or near the city limits. No minority communities of disproportionate numbers of minorities will be relocated by this project.
- **Green County Census Tracts (9901-9904)** indicated that between 93.7 and 99.4 percent of the inhabitants within the respective tracts were white in 2000. The lowest percentage of white inhabitants was found in Tract 9902, which includes the city of Greensburg. Field visits and interviews with local officials have confirmed that most of citizens with minority status reside in or near the city limits.

- **Marion County Census Tracts (9702-9708)** indicated that between 81.1 and 98.7 percent of the inhabitants within the respective tracts were white in 2000. The highest percentages of minorities were of African American descent and the percentages ranged between 0.4 and 17.1 percent. Two of the census tracts, 9702 and 9707, had high percentages of all minorities. These tracts include the city of Lebanon. Conversations with local officials at the Marion County Housing Authority and the Property Valuation Assessment offices and field trips confirmed the census reports. An additional area, Census Tract 9703 (St. Mary), reported 16.3 percent of its inhabitants as African Americans. This area, near Frogtown Road, is just west of the proposed Option 1 corridor. At this time, no corridor that is being studied would affect the minority community. Every consideration will be made if the corridors are shifted to ensure that the project does not segment or relocate this minority community. No other minority communities or disproportionate numbers of minorities will be relocated by the project.
- **Taylor County Census Tracts (9801 – 9805)** indicated that between 91.1 and 98.8 percent of its inhabitants are white. The highest percentage of minorities were located within Tracts 9803, 9804 and 9805. Each of these tracts includes portions of the City of Campbellsville. Field trips and conversations with local officials have indicated that most of the minority residents in Taylor County live within or near the city limits. No minority communities or disproportionate numbers of minorities will be relocated by this project.
- **Washington County Census Tracts (9801-9803)** indicated that between 98.9 and 99.7 percent of its inhabitants are white. The highest percentage of minorities reside in Tract 9802, which includes the city of Springfield. Field trips and conversations with local officials have confirmed that most of the minority residents in Washington County live within or near the city

limits. No minority communities or disproportionate numbers of minorities will be relocated by this project.

According to U.S. Census 2000 reviews and windshield inspections, the project corridors avoid areas within the counties where minority and/or ethnic neighborhoods were identified. Therefore, the potential impacts associated with the reconstruction or new development of a highway appear to be low. If minority or ethnic communities are affected, all efforts will be made to design a roadway that will avoid relocating, dividing or otherwise disrupting minority communities.

If the no-build alternate is selected, racial balances in the region and each of the counties will remain similar to those reported above. Option 1 or Option 2/3 are not anticipated to cause racial balances to change if they are selected as the build alternate for the parkway. Neither corridor displaces or divides disproportionate numbers of minority or ethnic populations. Therefore, no environmental justice concerns appear to exist within the project corridors.

C. Educational Attainment by Percentage

Kentucky had a higher percentage than the project area of high school graduates and of those who earned a Bachelor's Degree or higher. Following is a table that compares the educational attainment by percentages for each county and Kentucky.

**Table 6 - Educational Attainment by Percentage,
1990 & 2000**

Area	High School Graduate or Higher			Bachelors Degree or Higher		
	1990	2000	Percent Change	1990	2000	Percent Change
Kentucky	64.6%	74.1%	14.7	13.6%	17.1%	25.7
Adair County	46.3%	60.1%	29.8	7.4%	10.9%	47.3
Green County	49.0%	61.4%	25.3	6.8%	9.1%	33.8
Marion County	58.9%	70.8%	20.8	6.4%	9.1%	42.2
Taylor County	57.4%	68.0%	18.5	10.1%	12.2%	20.8
Washington County	57.8%	68.8%	19.0	7.5%	13.3%	77.3

The higher percentages of residents who obtained high school diplomas were in the three northern counties – Marion, Taylor and Washington. Reviews of statewide and regional demographics have shown that the higher levels of education are obtained in urbanized areas such as Lexington, Louisville and Northern Kentucky. These areas are more populated, and as a result attract more industry and jobs. The counties within the study area have all realized measurable improvement in educational attainment. These improved graduation rates indicate that the workforce for potential employers has increased. An article in the San Antonio Business Journal indicated that, “a recent study reveals that firms locate in areas with high-performing schools, in part because skilled workers demand excellent learning experiences and opportunities for their children. In addition, good schools improve the quality of the available work force, a key consideration in most corporate locations. This finding corroborates earlier research and is consistent with a fundamental role of government in economic development.”

If the no-build alternate is selected, traffic conditions for students and educators will remain difficult within the towns throughout the corridor. If Option 1 is selected, much of the traffic that travels through the region will be

diverted from the roadways concentrated around the towns, and will ease traffic conditions for local schools and colleges. If Option 2/3 is selected, additional traffic capacity will be provided through additional lanes and bypasses.

D. Economic Data

1. Poverty Rate Estimates

Census data were gathered for each of the counties within the project corridors. Table 7, below, is a comparative chart of the project area county poverty rates:

Table 7: Poverty Status of Individuals, Year 2000, Residing in Adair County, Green County, Marion County & Washington County

Area	Percent below poverty level
Adair County	24.0%
Green County	18.4%
Marion County	18.6%
Taylor County	17.5%
Washington County	13.5%

Field trips and conversations with local officials have indicated that no low income neighborhoods, family clusters or evidence of socially interdependent communities exist within the project corridors. If the corridors are shifted, or if other areas are considered in the future, care will be taken to avoid relocating and segmenting neighborhoods or communities that support these residents.

The project corridors avoid areas within the counties where low income neighborhoods were identified. Field visits and information gathered during the public meetings have revealed that the corridors are located

mainly in areas that are either sparsely populated or unpopulated. Most of the individuals that would meet conditions indicating existence at or below the poverty level are located within or near the limits of the cities. Field trips did not reveal any neighborhoods or concentrations of socially interdependent or family clusters. Therefore, the potential impacts associated with the reconstruction or development of a new highway appear to avoid causing disproportional impacts to low income neighborhoods, and no environmental justice issues appear to exist for either corridor.

If the no-build alternate is selected, economic conditions, including poverty rates, will remain similar to the numbers reported above. If either Option 1 or Option 2/3 are selected, secondary and cumulative impacts to low income residents within the counties appear to be primarily positive. As businesses are attracted to the area and new jobs are established the economic conditions within the area and each respective county are likely to improve. Additionally, if a new roadway is constructed to allow safe and efficient travel to new and existing work sites, it is possible that the poverty rates could be reduced by the creation of the new jobs.

2. Per Capita Personal Income

Per capita personal income (PCPI) is an often-used indicator of financial well-being but because it is an average, it does not reflect income distribution. This indicator combines an area's total income and population. Examining growth in PCPI may illuminate several items, including how well aggregate income is keeping up with population growth, how average income is faring relative to inflation or how income growth compares to others. PCPI is linked to indicators of a literate and well-educated population and therefore PCPI levels in urban areas are typically higher than in rural areas.

In 2001, **Kentucky** had a per capita personal income (PCPI) of \$24,878. This PCPI ranked 41st in the United States and was 82 percent of the national average, \$30,413. In 1991, the PCPI of Kentucky was \$16,207 and ranked 44th in the United States. The average annual growth rate of PCPI over the past 10 years was 4.4 percent. The average annual growth rate for the nation was 4.3 percent. Following is a table that compares PCPIs for Kentucky and the counties within the project study area:

Table 8 PCPIs for KY and the Project Counties

Area	2001 PCPI	State Ranking	Percentage of State Average	Percentage of National Average	Percent of Change 2000 - 2001	1991 – 2001 Annual Average Growth Rate
Kentucky	\$24,878	NA	NA	82%	NA	4.4%
Adair	\$17,317	87	70%	57%	2.8%	3.3%
Green	\$15,815	110	64%	52%	- 1.1%	2.6%
Marion	\$20,009	58	80%	66%	0.2%	2.6%
Taylor	\$19,024	63	76%	63%	2.5%	3.0%
Washington	\$22,113	40	89%	73%	- 1.5%	5.0%

If the no-build alternate is selected, the rate of increases in the PCPIs for the region will continue to increase slowly. If Option 1 or Option 2/3 are selected as the build alternate, the PCPIs could grow at an increased rate, but economic stimulation will be dependent upon the continuing efforts of local, regional, state and federal officials' efforts to recruit and expand industrial and commercial growth.

3. Earnings by Industry

Earnings of persons employed in **Kentucky** increased from \$41,806,161 (*All income estimates with the exception of PCPI are in thousands of dollars, not adjusted for inflation.*) in 1991 to \$70,491,141 in 2001, an

average annual growth rate of 5.4 percent. The largest industries in 2001 were services, 23.4 percent of earnings; state and local government, 12.9 percent; and durable goods manufacturing, 12.5 percent. In 1991, the largest industries were services, 20.3 percent of earnings; state and local government, 12.9 percent; and durable goods manufacturing, 12.2 percent. Of the industries that accounted for at least 5 percent of earnings in 2001, the slowest growing from 1991 to 2001 was nondurable goods manufacturing (6.8 percent of earnings in 2001), which increased at an average annual rate of 2.3 percent; the fastest was finance, insurance, and real estate (5.4 percent of earnings in 2001), which increased at an average annual rate of 7.5 percent.

Earnings of persons employed in **Adair County** decreased from \$142,609 in 2000 to \$142,006 in 2001, a decrease of 0.4 percent. The average annual growth rate from the 1991 estimate of \$96,272 to the 2001 estimate was 4.0 percent.

Earnings of persons employed in **Green County** decreased from \$69,529 in 2000 to \$62,706 in 2001, a decrease of 9.8 percent. The average annual growth rate from the 1991 estimate of \$53,533 to the 2001 estimate was 1.6 percent.

Earnings of persons employed in **Marion County** decreased from \$195,971 in 2000 to \$195,137 in 2001, a decrease of 0.4 percent. The average annual growth rate from the 1991 estimate of \$105,379 to the 2001 estimate was 6.4 percent.

Earnings of persons employed in **Taylor County** increased from \$263,243 in 2000 to \$268,365 in 2001, an increase of 1.9 percent. The average annual growth rate from the 1991 estimate of \$232,572 to the 2001 estimate was 1.4 percent.

Earnings of persons employed in **Washington County** decreased from \$110,956 in 2000 to \$101,752 in 2001, a decrease of 8.3 percent. The average annual growth rate from the 1991 estimate of \$61,816 to the 2001 estimate was 5.1 percent.

These economic indicators reveal that the area provides moderate to low contributions to the cumulative figures for the Commonwealth. Many factors contribute to these conditions including the populations of the area, the number of available jobs, the capabilities of the workforce and the distance of available work.

If the no-build alternate is selected, earnings rates continue to increase/decrease at similar rates. If either Option 1 or Option 2/3 are selected, and if local and regional officials continue in their efforts to recruit new industrial and commercial business into the region, it is likely that earnings increases will accelerate based upon levels of new economic activity within each county and the region. In addition, agricultural earnings may increase with the improved traffic and travel times for area farmers.

4. Major Manufacturers by County

Each county within the project corridor features at least one industrial park. The parks have been constructed to attract industries, and to continue the promotion of economic development. The purpose of identifying and listing manufacturing statistics is to establish relationships between population patterns, commuting patterns, income distributions and employment conditions within the respective counties and the labor market areas. Following are tables listing the major manufacturing firms for each county, and their corresponding products, total number of employees and the year of establishment:

Table 9A - Adair County Manufacturing Firms

Firm	Product(s)	Emp.	Year Established
FABCO Inc	Machine shop: arc & gas welding; drilling, boring, cutting, honing; structural steel fabricating	9	1980
Gaddie-Shamrock LLC	Crushed limestone & asphalt products	50	1938
Garry Humphress & Sons Inc	Antique reproduction furniture	2	1974
Green River Window & Door Co	Wooden windows & doors for log homes	12	1991
Hancock Furniture Inc	Wooden bedroom & dining room furniture. Custom furniture-Designing and building.	4	1979
Image Analysis Inc	Medical devices	10	1992
Imo Pump Inc	Hydraulic pumps, Fuel system pumps	91	1974
J Downey & Son Lumber	Heading; hardwood, rough & dimension lumber sawing	45	1975
Kentucky Tie & Lumber Co	Hardwood lumber & pallet materials	70	1958
Long's Precision Die Machining	Machine shop: surface, centerless & cylindrical grinding, MIG welding, drilling, boring, cutting, honing, mill & lathe work	2	1988
McCammish Manufacturing Co	Furniture	43	1997
Mid-State Signs	Custom electrical signs	4	1975
Northeastern Products Corp	Sawdust processing: animal bedding & smoking sawdust	14	1986
Old Craftsman Furniture Shop	Cherry bedroom furniture	5	1980
Pyles Concrete Inc	Precast & ready-mixed concrete	20	1962
South Central Printing Inc	Offset & letterpress printing: calendars, book composing, business forms and cards, tags & labels; side & saddle stitch binding, process color printing.	21	1979
Tenco Manufacturing	Sheltered workshop: contract assembling	9	1980
W H Sandusky & Son Inc	Sawing & planing mill: hardwood, rough, dimension, grade lumber & millwork	15	1925
Total Number of Firms = 18		Total number of employees = 426	

Table 9B - Green County Manufacturing Firms

Firm	Product(s)	Emp.	Year Established
A & B Downey Lumber Co	Millwork, hardwood & softwood lumber	9	1979
Aluminum Fabricators Inc	Aluminum steeples, cupolas & architectural metal products	21	1981
Andy's Woodcrafts	wooden caskets & coffins	1	1996
Bishop's Cabinet Shop Inc	Custom kitchen cabinets, counter tops, vanities & entertainment centers	5	1954
C & F Custom Quilting Inc	Bedspreads, comforters, dust ruffles & pillows	6	1983
Greensburg Bottling Co	Carbonated beverages	27	1926
Nally & Haydon Surfacing Inc	Asphalt	15	1963
Stor Mor Inc	Portable insulated steel buildings	31	1995
Topps Safety Apparel Inc	Work clothes & uniforms	49	1967
Yates Welding	Arc welding & custom metal fabricating	2	1986
Total Number of Firms = 10		Total number of employees = 166	

Table 9C - Marion County Manufacturing Firms

Firm	Product(s)	Emp.	Year Established
American Wood Fibers Inc	Cedar, poplar & pine wood products	25	1990
Angell Manufacturing Co	Metal nameplates & plaques & aluminum trim	150	1965
Canton Cooperage Co	Wine barrels, staves & headings	41	1983
Central Kentucky Tool & Engineering Inc	Machine shop: general, lathe, mill & CNC machining; EDM, drilling, cutting, honing, tool & die, sheet metal fabricating, stamping, welding, grinding & CAD	50	1970
Curtis-Maruyasu America Inc	Tube fabricating	375	1988
Hendrickson Truck Suspension Systems	Heavy truck suspensions	57	1998
Kentucky Cooperage Inc	White oak whiskey barrels	211	1983
Lebanon Oak Flooring Co	Millwork, hardwood & dimension furniture parts & flooring	60	1897
Montebello Packaging Inc	Collapsible aluminum and laminate squeeze tubes primarily for the pharmaceutical and cosmetic industries	98	1999
Morton Custom Plastics	Plastic Products	175	1994
Nally & Haydon Surfacing LLC	Crushed limestone & asphalt	55	1991
NSU Corp	Muffler component parts, fiberglass for headliners for various automotive companies, substrate board	70	2001
Plastic Products Co Inc	Plastic injection molding	120	1986
Portland Forge	Custom impression steel die forgings for truck & farm machinery industries	100	1990
Summa Technology Inc	Metal fabrication: cutting, sawing, laser cutting, welding (certified), design services, specialize in returnable material handling racks & baskets	96	1976

Table 9C continued

Firm	Product(s)	Emp.	Year Established
TG Kentucky LLC	Rubber molded & plastic interior automobile parts	500	1999
Union Tools Inc	Wooden tool handles	40	1994
Universal Sportswear Inc	Sewing contractors	36	1994
Total Number of Firms = 20		Total number of employees = 2,259	

Table 9D - Taylor County Manufacturing Firms

Firm	Product(s)	Emp.	Year Established
Adanta Human Development Services	Sheltered workshop: contract assembling & light bench woodworking; assemble screws and washers, count and package screws; count concrete nails and box.	21	1976
Air Safety Kentucky	Respiratory Protection Equipment	16	2003
Airguard	Air filtration products	187	2000
Brentwood International	Paper converting	21	1990
Campbellsville Apparel	Men's T-Shirts & briefs	197	1999
Campbellsville Industries Inc	Ornamental metal & aluminum fabricating; steeples, cupolas, crosses, cornices, awnings, columns, louvers, shutters, railings & balusters	125	1955
Central Kentucky Glass Co	Aluminum store front frames	15	1975
Classic Kitchens Inc	Custom wooden cabinets, vanities & bookcases	32	1983
Cox Interior Inc	Hardwood moldings, trim, stair parts, interior doors & mantels	726	1983
Creation Sportswear Inc	Textile screen printing	35	1984
Farmer's Gate Co	Steel gates, coral panels, round bale feeders, walk-throughs	16	1997
Fleetwood Travel Trailers of Kentucky	Travel Trailers	230	2000
Ingersoll-Rand Co	Vacuum pumps & air & gas compressors	180	1969
J & D Auto Electric	Starter, alternator & generator rebuilding service	15	1983
Lippert Components	Trailer Chassis	20	2001
Murakami Manufacturing USA	Motor vehicle parts & accessories	30	2001
Parker-Kalon	Threaded fasteners	110	1964
Poly Pro LLC	Interior & exterior molding components made of a polyurethane foam.	15	1999
Tec-Fab Inc	Custom sheet metal fabricating: bell towers, church steeples, cupolas, cornices, crosses & columns	15	1978
Whitney Lumber Inc	Hardwood lumber	18	1952
Wholesale Hardwood Interiors	Custom millwork, hardwood flooring, interior moldings, door & stair parts	80	1985
Total Number of Firms = 21		Total number of employees = 2,104	

Table 9E - Washington County Manufacturing Firms

Firm	Product(s)	Emp.	Year Established
Akebono Corporation	Friction brake pads	40	2002
All Weather Insulation LLC	Cellulose insulation & hydro seeding mulch	11	1978
Barber Cabinet Co Inc	Wooden, laminated & custom made vanities & kitchen cabinets	58	1947
Boone Sheet Metal Inc	Sheet metal fabricating	12	1991
Midwest Stamping Co	Mig welding.	83	1998
North American Pipe Corp	Industrial & construction plastic pipe	73	1969
Smith Cabinet Craft Inc	Custom wooden cabinets, counter tops & entertainment centers	15	1986
Springfield Products Inc	Automobile armrests & interior plastic parts, seat trim components, instrument panel components	270	1990
Toyotomi-America Co	Automotive after-market products; automotive stampings	151	1999
Total Number of Firms = 9		Total number of employees = 713	

Source: Kentucky Cabinet for Economic Development (01/13/2004).

If the no-build alternate is selected, truck and commuter access to and from these facilities will remain unchanged. Traffic conditions associated with rush hours in the downtown areas will not improve. If Option 1 is selected as the build alternate, through traffic including trucks and commuters will be diverted from the crowded conditions in the downtown areas. Option 1 will provide commuters who travel through the region between work and home the quickest route by totally avoiding the downtown areas. Additionally, Option 1 would provide the quickest access for trucks to major highways such as parkways and interstates. If Option 2/3 is selected, traffic capacity will be increased along the existing roadways. This increase in capacity will provide trucks, farmers and commuters improved, safer, more efficient passage between the towns and through the region.

5. Labor Force Market

The counties within this study area and the defined labor market areas indicate that a high number of the area population will be available for existing and future labor. Following are maps that identify the labor

market areas (LMA) for each county. The LMA typically includes the counties immediately surrounding the identified county.

Figure 1 Adair County Labor Market Area

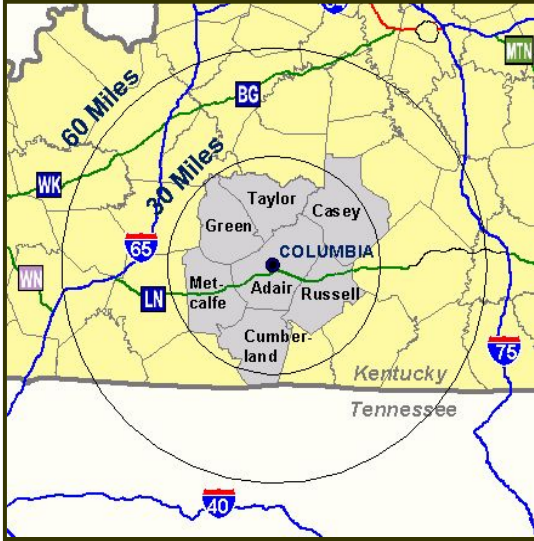


Figure 2 Green County Labor Market Area

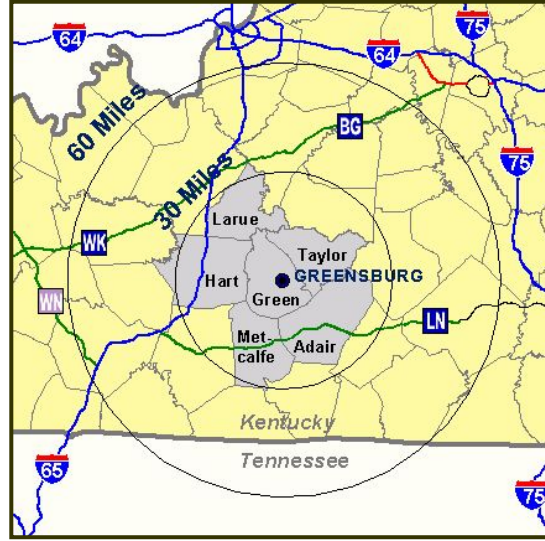


Figure 3 Marion County Labor Market Area



Figure 4 Taylor County Labor Market Area



Figure 5 Washington County Labor Market Area

The following table illustrates the conditions of labor forces for each of the counties and their respective labor market areas (LMA). Each county and its corresponding LMA is illustrated above.

TABLE 10 - Labor Characteristics for Each County and LMA*

(* LMA totals overlap. Several counties are included in more than one LMA.)

	Adair County		Labor Market Area	
	2002	Nov. 2003	2002	Nov. 2003
Civilian Labor Force	7,958	7,753	43,144	43,299
Employed	7,527	7,415	40,311	40,944
Unemployed	431	338	2,833	2,355
Unemployment Rate (%)	5.4	4.4	6.6	5.4
	Green County		Labor Market Area	
	2002	Nov. 2003	2002	Nov. 2003
Civilian Labor Force	4,689	4,669	41,306	41,815
Employed	4,430	4,501	39,090	40,057
Unemployed	259	168	2,216	1,758
Unemployment Rate (%)	5.5	3.6	5.4	4.2
	Marion County		Labor Market Area	
	2002	Nov. 2003	2002	Nov. 2003
Civilian Labor Force	11,379	11,740	122,828	124,774
Employed	10,940	11,322	115,225	118,170
Unemployed	439	418	7,603	6,604
Unemployment Rate (%)	3.9	3.6	6.2	5.3
	Taylor County		Labor Market Area	
	2002	Nov. 2003	2002	Nov. 2003
Civilian Labor Force	9,474	9,432	78,432	77,840
Employed	8,784	8,854	73,148	74,269
Unemployed	690	578	5,284	3,571
Unemployment Rate (%)	7.3	6.1	6.7	4.6

TABLE 10 - Labor Characteristics for Each County and LMA (cont.)

	Washington County		Labor Market Area	
	2002	Nov. 2003	2002	Nov. 2003
Civilian Labor Force	6,093	6,075	169,985	170,967
Employed	5,785	5,829	159,725	163,385
Unemployed	308	246	10,260	7,582
Unemployment Rate (%)	5.1	4.0	6.0	4.4

6. Total Available Labor

As noted above, labor market areas (LMA) are typically the counties that surround the identified county. The county seat is usually the economic center for the county because all government services are located within the county seat. Table 11 (following) illustrates the available labor forces within each county of the study area and their relevant LMAs. Please refer to the Figures 1 – 5 above to identify the counties within the respective LMAs. Each county and LMA identify the total number of unemployed persons, the potential labor supply, the underemployed (individuals who work at jobs that are below their qualifications), and a projected available labor force between 2003 and 2007.

If the no-build alternate is selected, changes to the LMAs in respect to employment and unemployment activities will remain unchanged. If Option 1 or Option 2/3 is selected for the build alternate, LMAs could see increases in totals of employed residents, and a decrease in unemployment rates. As mentioned below, half or more of those working in each of the LMAs are underemployed. The new roadway could assist local and regional officials' attempts to recruit new industrial and commercial firms into the region. Many of the underemployed citizens would be likely to shift to the available, higher paying jobs. This would open jobs that pay lower and require less skills. Unemployed residents may be able to find work that was formerly unavailable.

**Table 11 - Labor Availability, 2002 and Future Labor Availability
for Counties and LMAs, 2003 - 2007**

	Available Labor, 2001				Future Labor: Becoming 18 Years of Age (2003-2007)
	Total	Unemployed	Potential Labor Supply	Underemployed	
Labor Market Area	13,212	2,888	2,355	7,969	6,995
Adair County	2,085	388	359	1,338	1,172
	Available Labor, 2001				Future Labor: Becoming 18 Years of Age (2003-2007)
	Total	Unemployed	Potential Labor Supply	Underemployed	
Labor Market Area	11,297	2,329	2,007	6,961	6,534
Green County	1,456	332	303	821	826
	Available Labor, 2001				Future Labor: Becoming 18 Years of Age (2003-2007)
	Total	Unemployed	Potential Labor Supply	Underemployed	
Labor Market Area	36,224	7,469	4,865	23,890	19,288
Marion County	2,303	620	183	1,500	1,290
	Available Labor, 2001				Future Labor: Becoming 18 Years of Age (2003-2007)
	Total	Unemployed	Potential Labor Supply	Underemployed	
Labor Market Area	12,322	2,854	1,972	7,496	6,944
Taylor County	2,961	606	540	1,815	1,605
	Available Labor, 2001				Future Labor: Becoming 18 Years of Age (2003-2007)
	Total	Unemployed	Potential Labor Supply	Underemployed	
Labor Market Area	18,514	4,275	1,878	12,361	9,590
Washington County	1,394	379	143	872	848

7. Commuting Patterns

Following are data that report the number of commuters who work within their respective counties and the total number of commuters who work outside their respective counties. It has been estimated that between 23.3 (Taylor County) and 47.1 (Green County) percent of the residents commute out of their resident county to worksites. The number of workers commuting into the counties varies between 11.2 (Green County) and 32.1 (Washington County) percent. When these figures are cross

referenced with the number of manufacturers and their total number of employees, it becomes evident that the commuting patterns are directly proportional to the number of jobs available within the counties.

Table 12 – Commuting Patterns of Residents and Employees, 2000

Residents of Adair County	2000	Percent
Working and Residing In County	4,500	62.3
Commuting Out of County	2,722	37.7
Total Residents	7,222	100.0
Employees in Adair County		
Working and Residing In County	4,500	82.9
Commuting Into County	931	17.1
Total Employees	5,431	100.0
Residents of Green County	2000	Percent
Working and Residing In County	2,504	52.9
Commuting Out of County	2,229	47.1
Total Residents	4,733	100.0
Employees in Green County		
Working and Residing In County	2,504	88.8
Commuting Into County	317	11.2
Total Employees	2,821	100.0
Residents of Marion County	2000	Percent
Working and Residing In County	5,056	67.0
Commuting Out of County	2,487	33.0
Total Residents	7,543	100.0
Employees in Marion County		
Working and Residing In County	5,056	77.5
Commuting Into County	1,472	22.5
Total Employees	6,528	100.0
Residents of Taylor County	2000	Percent
Working and Residing In County	7,488	76.7
Commuting Out of County	2,281	23.3
Total Residents	9,769	100.0
Employees in Taylor County		
Working and Residing In County	7,488	76.5
Commuting Into County	2,294	23.5
Total Employees	9,782	100.0
Residents of Washington County	2000	Percent
Working and Residing In County	2,744	57.3
Commuting Out of County	2,043	42.7
Total Residents	4,787	100.0
Employees in Washington County		
Working and Residing In County	2,744	67.9
Commuting Into County	1,297	32.1
Total Employees	4,041	100.0

If the no-build alternate is selected, commuting patterns are anticipated to remain similar to those reported above. If Option 1 is selected as the build alternate, commuting patterns would be anticipated to drop as new industrial and commercial sites are developed within the corridor. It is likely that this decrease in commuting patterns could be slower than if Option 2/3 is chosen. Option 2/3 is located more closely to the existing and proposed industrial parks in the region. The proximity of Option 2/3 would provide a closer access to residents who may choose to work in their home counties.

E. FARMLAND

1. Purchase of Agricultural Conservation Easements

Under Kentucky's Farmland Preservation Program, the Purchase of Agricultural Conservation Easement (PACE) Corporation has been authorized to purchase agricultural conservation easements. These easements are to ensure that lands currently in agricultural use will continue to remain available for agriculture and not be converted to other uses. Since 1994, PACE has purchased conservation agreements with 75 farms totaling 16,238 acres. In addition, 19 easements on 3,069 acres have been donated to the program. Another 512 applications are pending for a total of 101,000 acres.

In the project area, conservation easements have been purchased in Washington and Taylor Counties. Applications for additional conservation easements have been submitted in all counties in the project area except for Marion (i.e., Washington: 1 to 3 applications; Green and Adair: 4 to 9 applications; and Taylor: 10 to 20 applications).

In Taylor County, several conservation easements have been established on farms off KY 883 near the intersection with US 68. In addition, several

conservation easements have been purchased for farms along the Green River near the Tebbs Bend Battlefield. In Washington County, a farm with a conservation easement is located off US 150 near the Nelson County line and therefore, this farm is outside the project corridors.

The potential exists that alternates developed in either corridor could affect conservation easements either purchased by PACE or donated by landowners. If alternates cannot be developed to avoid these farms, KYTC will have to coordinate with both the landowner and PACE to reimburse or replace properties with agricultural conservation easements. If alternates are developed that will affect farmland with conservation easements, the Land Evaluation Site Assessment (LESA) scores will be affected. The no-build alternate, if selected, would have no effects upon conservation easements. Potential impacts to agricultural conservation easements would be higher for Option 1 than Option 2/3. Option 1 is a new roadway, and Option 2/3 would provide improvements and widening of existing roadways. Option 2/3 is located in areas where development occurred while Option 1 has seen very limited development. In addition, if Option 1 is selected, improvements to crossroads will be necessary to provide safe and efficient access between the county seats and the new roadway. This could cause additional loss of agricultural conservation easements. Option 2/3, located in a more developed area would require less farmland. In addition, fewer agricultural conservation easements are situated in this corridor, and it is unlikely that connecting roads would be required to be improved. Therefore, Option 2/3 has fewer secondary/cumulative impacts and fewer direct impacts on agricultural conservation easements than Option 1.

2. Agricultural Districts

Under Kentucky's Agricultural District and Conservation Act, owner or owners of land may petition the local conservation district to create an

agricultural district within a county. The creation of agricultural districts is part of a policy to protect and conserve agricultural lands. An agricultural district must be a minimum of 250 contiguous acres and must be capable of supporting active agricultural production. To support the preservation of agricultural lands, KYTC is required to consider and mitigate the impact of present and future plans upon the continued agricultural use of land within an agricultural district. KYTC would be required to coordinate with the local conservation district to consider impact and potential mitigation.

Fourteen agricultural districts have been identified near Options 1, 2, and 3 (See Appendix A, Figure 10). One agricultural district (044-02) is located within the Option 1 corridor. This agricultural district is located in Green County near Gresham where KY 565 and KY 1913 intersect. No agricultural districts are currently located within the Option 2 or Option 3 corridors. If Option 1 is selected, efforts should be made to avoid the agricultural district. If avoidance is not feasible, coordination with the local conservation district and mitigation may be necessary.

If the no-build alternate is selected, there will be no impacts on agricultural districts. The number of agricultural districts is increasing in the region, and most of the districts are located in the areas surrounding Option 1. Option 2/3 is situated closer to areas either already developed or undergoing land use transitions to residential, commercial and industrial applications. Option 1 would have the greater potential impact on agricultural districts than Option 2/3. Secondary and cumulative impacts include further potential loss of farmlands under this classification resulting from commercial development along the new corridor interchanges and the possible improvements to roadways connecting Option 1 to the county seats. Future design phases will need to coordinate with the Natural Resource Conservation Service on potential impacts to farmlands rated as prime, unique, or of statewide importance.

F. Section 6(f) Resources

The project area was reviewed and inspected for 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, tennis courts, and baseball fields (see Table 13 for a breakdown of the number of Section 6(f) resources by county).

Table 13: Section 6(f) Resources

County	Number of Section 6(f) Resources	Section 6(f) Resources Potentially Affected		
		Option 1	Corridor 2	Corridor 3
Adair	4	0	0	0
Green	3	0	0	0
Marion	4	0	0	0
Taylor	6	0	0	0
Washington	5	0	1	1

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, only the Idle Hour Community Park in Springfield has the potential to be affected. The Idle Hour Community Park is located at the intersection of KY 555 and KY 528. It contains tennis courts, baseball and softball fields, basketball, volleyball, croquet and shuffleboard courts, tot lot, walking trails, and picnic area. Option 1 and Option 2/3 have the potential to affect this park. Any widening on the east side of KY 555 in front of the Idle Hour Community Park would acquire property from a Section 6(f) resource and require replacement property for mitigation. It appears that alternates could be developed that widen on the west side of the existing roadway and therefore, would not affect the park. Potential Section 6(f) impacts could be avoided.

If the no-build alternate is selected, no impacts to Section 6(f) resources would occur. If either Option 1 or Option 2/3 are selected, positive secondary and cumulative impacts may result from the improved access for area residents. The improved access could result in increased numbers of visits by residents. Indirect impacts would include increased social and recreational activities for families and acquaintances at these resources.

G. Aesthetics/Visual Impacts

It is anticipated that the project will have only a minimal visual impact on the community. 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 is expected to have only minor visual effects on the area. The project corridor is not part of the Kentucky Scenic Byway system. Interviews with local officials and reviews of area maps indicate no corridor features, scenic areas or recognized areas of beauty should be acquired within the project corridors. The most noticeable visual impact of the project will be the removal of existing vegetation. This will affect nearby residents. 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 would minimize the visual impacts of the project construction. Potential visual effects on several historic properties could be mitigated with appropriate landscaping.

If the no-build alternate is selected, no visual changes will occur in the area. If Option 1 is selected, the new roadway will be located in an area that has been primarily agricultural. Secondary and cumulative impacts may include highway commercial development (i.e. gas stations, restaurants, hotels) at interchanges. If Option 2/3 is selected, visual changes will be minimal because the project will be a road improvement to an existing highway facility. Secondary and cumulative impacts associated with Option 2/3 would be some additional development along the existing corridor.

H. Pedestrian and Bicycle Facilities

KYTC will consider the need for bicycle facilities and pedestrian walkways as required by the Kentucky Pedestrian and Bicycle Travel Policy (July 2002).

No dedicated bicycle facilities or pedestrian walkways have been included in the proposed project corridors. Based on observation of pedestrian traffic and the public involvement process, little pedestrian traffic occurs along the existing roadways. Currently, pedestrian facilities occur only in the segments of existing KY 555 and KY 55 in Lebanon, Campbellsville, and Columbia and these facilities would be unchanged. Due to the primarily rural nature of the project corridors and planned bypasses of the larger cities, it is anticipated that there will be little pedestrian traffic and there may not be a need for pedestrian walkways as part of the project.

Little bicycle traffic and no bicycle facilities exist in the project area. Washington, Marion, Taylor, Adair, and Green Counties do not have comprehensive bicycle plans. If Option 1 is selected, no facilities would be included in the project plans. Limited access highways do not allow bicycle and pedestrian traffic. If Option 2/3 is selected, no local government agencies, community interest groups, or public comments have requested bicycle facilities or improvements to assist bicyclists. Therefore, no impacts are anticipated for Option 2/3. The new highway should still improve conditions for bicyclists by providing wider, paved, 10-foot shoulders.

I. Construction

Potential construction impacts from the Heartland Parkway Project are expected to be minimal, of short-term duration, and with no adverse environmental impacts. Traffic will be maintained at all times. A maintenance-of-traffic plan would be prepared during the design phase. The KYTC Division of Environmental Analysis and the KYTC Division of Highway Design would coordinate construction commitments in the design notes. The Contractor would be required to follow all requirements as outlined by KYTC.

Construction activities will cause some erosion because areas cleared of trees and vegetation are prone to erosion during storm events. KYTC will implement the erosion and sedimentation controls specified in the Kentucky Department of Highways Standard 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. It is not anticipated that the project will require waste disposal sites to manage excavation material.

Standard noise reducing measures would be implemented during the construction phase to prevent construction noise from becoming a public nuisance.

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 KDHSS Section 107.01.04. During construction, KYTC or its contractor will apply water or

other approved materials (chemical dust suppressants), as appropriate, to control dust.

If the no-build alternate is selected, no construction impacts will occur. If Option 1 is selected as the build alternate, it will require greater amounts of excavation material (primarily farmland) than Option 2/3. Option 2/3 is located along existing highways in the region.

J. Summary and Conclusion of Socioeconomic Issues

The project area is located in south central Kentucky. The socioeconomic characteristics of the area include small cities and large expanses of agricultural areas. The land use of each community is similar. Most of the government services, commercial activities and neighborhoods are located within or near the city limits. The majority of the minority residents are also situated within or near the city limits (except for one community in the Frogtown area west of Lebanon in Marion County). This minority community would not be required to relocate. It is situated approximately ½ mile west of the western corridor.

Reviews of U.S. Census figures, conversations with local officials and area field trips have revealed that the project area counties are similar. Each county has a high percentage of employees in the respective workforces that are currently working in jobs that pay less and require less than the employees' qualifications. The educational attainments for each of the counties have increased over the past ten years, and the unemployment rates have remained fairly constant. All but one of the five counties has increased in population. Washington County has remained relatively stable over the past forty years and is predicted to continue this pattern through 2030. The increasing educational attainment, the underemployed workforce and the stable to increasing populations mean that a trainable, available workforce is

available within the project area. If industries and commercial companies locate to communities within the region, it is likely that those who are underemployed would move into the available higher paying jobs – some immediately and some after job-specific training. As this migration to new jobs develops, it is likely that the lower paying jobs that would become available could be filled by those who currently are unemployed or entering the workforce for the first time. The secondary/cumulative benefit is the ultimate lowering of the unemployment rates, improved per capita income levels for the region and overall improved economies for the project counties and the region. As economies improve, residents would be less likely to move to other counties or states in search of employment, and populations would continue to increase, but at higher rates. These benefits would include economic stimulation of the respective counties and the region, population retention for counties that are experiencing outmigration, a safe, efficient roadway to transport workers, goods and raw materials to and from work sites, improved access to government services and reductions in poverty rates.

A study, *“Do New Highways Attract Businesses?”* was conducted for the Transportation Research Board (January 2003); Hodge, Daniel J. (Cambridge Systematics, Inc.), Glen Weisbrod (Economic Development Research Group, Inc.), and Arno Hart (Wilbur Smith Associates, Inc.). Included in the study’s methodology was an economic development survey to identify key economic development issues, and why companies chose not to expand or relocate in their study area. The top concerns included a lack of transportation access/infrastructure, availability of buildings and an available labor force. Furthermore, comments from participants in the survey included that “while transportation is not the only concern among economic development practitioners...it is consistently cited as a key consideration among companies contemplating an expansion or relocation and has influenced companies to relocate elsewhere.”

Industrial recruiters, private consultants who work with firms who seek to expand or relocate operations, were interviewed for the study. These consultants work with state and local industrial development authorities to locate proper sites for their representative firms. They cited that at least 67 percent of industrial projects require immediate (1 to 2 miles) highway access and the remaining 33 percent of the projects demand one hour access to an interstate.

In reviewing the conditions within this study area, the individual counties and the labor market areas provide an ample and capable workforce to attract industry (50,000 in the combined labor market areas, 6,000 within the 5 counties). In addition, the educational attainment for the overall area has increased between 13 and 30 percent for the five counties over the past ten years. The missing component is an improved highway infrastructure. The new highway could significantly enhance travel within and through the area and provide a more efficient, safer linkage to interstate highways 64 and 65, and the Louie B. Nunn/Cumberland and the Martha Layne Collins/Blue Grass Parkways. The actual amount of industry that could be attracted to relocate or expand in this area would also be dependent upon the ability of local industrial developers, investments in complementary water, sewer, building spaces, and other infrastructure, labor force training and the recruiting and retention efforts of local officials. A survey was made of each of the counties to determine the amount of available land and/or buildings suitable for industrial relocation or expansion. Each county had available structures and sites with complementary infrastructure (power, water, sewer, and communication lines). A total of over 1,300 acres suitable for development is available and 18 buildings are currently on the market. Each of the potential sites and all of the buildings are between 1 and 60 miles to an interstate or parkway. Following is a table listing available industrial/commercial sites and buildings within the five counties:

Table 14 – Available Sites and Buildings

County	Site	Building	Acreage	Distance to Interstate
Adair	Osh Kosh # 2	NA	12 acres	1 mile to Nunn PKWY 49 miles to I-65
Adair	Unnamed	NA	327 acres	4.6 miles to Nunn PKWY
Green	Unnamed	NA	103 acres	20.9 miles to Nunn PKWY
Green	Unnamed	NA	7 acres	23.7 miles to Nunn PKWY
Green	NA	Greensburg Furniture	NA	20 miles to Nunn PKYW 40 miles to I-65 50 miles to BG PKWY*
Green	NA	Green County Spec #1	NA	18 miles to Nunn PKWY 40 miles to I-65 55 miles to BG PKWY
Marion	Unnamed	NA	205 acres	24 miles to BG PKWY
Marion	Unnamed	NA	30 acres	22 miles to BG PKWY
Marion	NA	Lebanon Spec.#4	NA	20 miles to BG PKWY 40 miles to I-65
Marion	NA	Marion Co. Spec. #3	NA	23 miles to BG PKWY 44 miles to I-64
Taylor	Heartland Ind. Park	NA	202 acres	32 miles to Nunn PKWY 45 miles to BG PKWY
Taylor	Campbellsville Ind. Park	NA	58 acres	23 miles to Nunn PKWY 42 miles to BG PKWY
Taylor	Campbellsville Airport Site	NA	13 acres	25 miles to Nunn PKWY 40 miles to BG PKWY
Taylor	NA	Fruit of the Loom	NA	20 miles to Nunn PKWY 40 miles to I-65
Taylor	NA	Western KY Coca Cola	NA	15 miles to BG PKWY 40 miles to I-65
Taylor	NA	Taylor Co. Spec. #3	NA	23 miles to BG PKWY
Washington	Clearview Commerce Center	NA	359 acres	13 miles to BG PKWY
Washington	229-003	NA		15 miles to BG PKWY
Washington		11 buildings	NA	All buildings are located within or near Springfield and within 15 miles of the BG PKWY

* BG PKWY = Martha Layne Collins/Bluegrass Parkway

The closest regional economic centers are Bardstown, Bowling Green, Elizabethtown, Lexington, and Louisville. One of the highest commuting percentages for residents commuting out of the county to other areas to work was in Washington County – 42.7 percent. Many of the residents in Washington County travel to Bardstown, Elizabethtown and Louisville to work. These commuters have close and easy access to these regional economic centers via the Blue Grass Parkway, US 31W and Interstates 64 and 65. When combined with the proximity to these areas, the Washington County populace has the least challenging commute to jobs that are available outside of their resident county. When considering the loss of jobs in Washington County it may partially explain the reason the population trend has been in decline. As people secure jobs in areas farther from their home and as they establish themselves into long term jobs, they become more inclined to relocate closer to their workplaces.

Green County has the highest percentage (47.0%) of residents that commute out of the county to workplaces. Green County has the lowest number of manufacturing firms, one of the lowest population totals and is the most isolated of the counties in this study. New and/or improved roadways would allow residents safer, more efficient access to jobs. The Heartland Parkway would provide a regional link between Green County and other south-central Kentucky counties. A secondary impact would be the possible attraction of new industry to an area with a high percentage of workforce in Green County that is available for placement. The attraction of industry and the stimulation of local economies would result in lower unemployment rates and lower poverty rates. In addition, the improved economies would lower the out-migration of residents to other counties.

The increase of populations in Taylor and Marion Counties can be associated with the increase in industrial activities. These two counties have the highest number of manufacturing firms and the highest total of employees working in

this job sector of the counties included in this report. Only Adair County has a higher projected population for 2030 than Marion County. Adair County has been cited by local officials as a desirable retirement county due to its low cost of living, and its proximity to the lake resorts of Barren River, Green River, Cumberland and Dale Hollow Lakes.

The number of high school graduates has increased between 13.3 percent in Washington County and 29.7 percent in Adair County. The increases can indicate a more capable workforce for each of the counties, which might attract industry. In addition, if jobs are created, the per capita personal income and total personal incomes will increase with the better wages that accompany industrial jobs. As reported in the labor section of this report, many of the residents in the counties are overqualified for the jobs they currently occupy. These jobs, including clerical and retail work, will likely be vacated as the overqualified workers move toward the higher paying industrial jobs. The remaining workforce, including unemployed residents, would likely fill the non-industrial jobs reducing the unemployment rates for the counties.

Each county has at least one industrial park with available infrastructure such as water, gas, electricity, internal roads, telecommunication lines and other needs that are essential to attracting and maintaining light industrial and commercial businesses. Each industrial site is located less than 50 miles from an interstate highway or parkway, but the current roadways do not allow 4-lane access to these highways. Industrial firms have consistently cited adequate transportation infrastructure as a priority in relocating or expanding operations into a new community. The proposed roadway will allow more efficient transportation of raw materials, agricultural products, and finished goods, and will provide a safe means of travel for commuters between their residences and work destinations.

The new roadway will provide improved access for area residents to governmental and commercial services in each county seat. The new roadway will also promote social interactivity between area residents. Safer, more efficient roadways will provide an opportunity for increased visits to cities for residents who live in the farther areas of the counties.

Additionally, the improved roadway will further promote tourism in the area for the Green River State Park, numerous historical sites and districts and for the institutions of higher learning. These institutions include Campbellsville University, Saint Catharine College (which recently was granted approval to upgrade from a two-year to a four-year institution), and Lindsay Wilson College. The improved roadway will provide secondary and cumulative benefits through reduced travel times and improved safety for college personnel and students.

II. CULTURAL AND HISTORIC RESOURCES

A. Historic Resources

Information about the historic cultural resources within Washington, Marion, Taylor, Adair, and Green Counties was compiled from the Kentucky Heritage Council (which is considered the State Historic Preservation Officer or SHPO) site files, National Register of Historic Places, and County planning documents. A windshield survey was conducted of the Option 1 corridor and the Option 2/3 corridor to identify sites listed on the National Register or over 50 years in age that could be potentially eligible for the National Register. The project team noted that many historic sites are located within or near the city limits of the county seats. The Tebbs Bend Battlefield National Register Historic District located along KY 55 in Taylor and Green Counties is located between the two corridors and will be avoided by the project. In addition, the

existing roadways are relatively new and most structures along the roadways are relatively new, therefore fewer of the structures along and near the roadways are eligible for the National Register in comparison to the older, more densely populated areas within and near the city limits of the respective counties.

A total of 64 listed or potentially eligible historic buildings within the two corridors were identified in Washington, Marion, Taylor, Adair, and Green Counties. As shown in Appendix A, Figure 9, Option 2/3 could affect 21 structures. Option 1 could affect 43 structures. Due to the widths of the corridors, the potential exists to avoid or minimize impacts to historic sites.

Bridges currently maintained by the Kentucky Transportation Cabinet were included in the assessment for the five counties. An initial review of these findings indicates that there is one potentially historic bridge in the project corridors. This bridge is located in Taylor County on KY 55. It crosses the Green River, and only Option 2/3 would affect this bridge.

The proposed Lebanon and Columbia Bypasses have previously been surveyed for historic and cultural resources. In the area of the Lebanon Bypass (Options 2/3), 3 sites were determined eligible for the National Register as part of an earlier project, and one additional site may be eligible for listing on the National Register. In the Columbia Bypass area, no cultural historic sites would be affected.

A final determination of eligibility for the National Register sites will require additional research, photography, physical examination of the structures, and evaluation of these sites relative to the integrity standards established by similar properties in the counties under consideration, which are currently listed on the National Register, and consultation with the SHPO.

If any historic property listed or eligible for listing on the National Register is used for a transportation project, a Section 4(f) evaluation must be conducted. 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 historic sites. If a historic property will be affected, avoidance alternatives and mitigation measures must be considered.

B. Archaeological Resources

The archaeological review included archival (e.g., historic map) and site file research and a windshield survey of the corridors to determine the nature and range of possible archaeological resources. The identification of areas of high archaeological potential was based on the analysis of existing archaeological and historic data.

A search of records maintained by the Office of State Archaeology determined if previously recorded archaeological sites were situated within or near the study corridors. The majority of the previously recorded sites are prehistoric open habitations without mounds. These sites may include hunting, fishing, gathering sites as well as base camps and villages. Structural remains and burial sites could possibly be found at these types of sites. Historic farms/residences (e.g., presettlement to approximately 1945) and cave sites are also located in the alternate corridors.

Twenty-three previously recorded archaeological sites have been identified along the Option 2/3 corridor. Of the 23 previously recorded archaeological sites along Option 2/3, 6 sites have been disturbed by prior road construction; one site has been disturbed by livestock and; one site has been disturbed by construction of a new home.

Five archaeological sites were identified within the Option 1 corridor. The disparity between the two corridors is likely the result of the limited number of previous cultural resource management studies in the project corridors and should not be interpreted to indicate actual site density in each corridor.

Based on a historic map review and windshield survey, efforts were made to identify potential historic archaeological sites predating 1900. These sites have the potential to yield more significant archaeological data. Eleven potential historic archaeological sites were located along the Options 1 and 2/3 corridors. These sites were predominantly in Washington and Marion Counties. All of these sites included at least a residence, barn or rock wall. Probably the most significant historic archaeological site would be the Tebbs Bend Battlefield National Register Historic District located along KY 55 in Taylor and Green Counties. The location of archaeological resources in the Tebbs Bend Battlefield Historic District is not known but could include entrenchments, fortifications, military roads, camp locations and battlefield areas. The Option 2/3 corridor contained at least 4 potential historic archaeological sites. Three residences and one church site were identified.

Ten cemeteries were identified during the windshield survey in the two corridors. Seven of the cemeteries were located in the Option 1 corridor and three cemeteries were located in the Option 2/3 corridor.

The no-build option would have no effect on archaeological resources. Both build corridors have a high potential for archaeological sites. The lack of widespread development (commercial, industrial and residential) has probably left many archaeological sites relatively undisturbed. The two corridors traverse a variety of landform types (e.g., floodplains, hillsides) that have the potential to contain prehistoric and historic archaeological sites. A Section 4(f) evaluation must be conducted and avoidance options considered if right of way is taken from any archaeological site requiring preservation in

place (e.g., a burial site such as areas within the Tebbs Bend Battlefield Historic District).

When alignments within a corridor are developed, an archaeological survey will be conducted to identify archaeological sites. It should be noted that additional archaeological sites may be present within each corridor, but they may not be documented at this time.

III. AQUATIC AND TERRESTRIAL RESOURCES

A. Watersheds

The proposed corridors cross two large watersheds. These rivers collect most of the surface water that drains from the five counties crossed for this project. The northern watershed in the Outer Bluegrass Region is Rolling Fork, which drains most of Washington and Marion Counties. Rolling Fork has a drainage area of approximately 1,450 square miles. Once in Taylor County, the Muldraugh Hill separates the Outer Bluegrass Region from the Mississippi Plateau Region. The watershed south of the Muldraugh Hill that drains most of Taylor, Green, and Adair Counties is the Green River, which has a drainage area of approximately 8,810 square miles.

B. Floodplain Encroachment

The Federal Emergency Management Agency (FEMA) was consulted for information regarding floodplains within the proposed corridors. No published floodplain information is available for Washington, Green, and Adair Counties. Those counties that had published information (Marion and Taylor Counties) were searched to identify potential floodplain encroachments by both corridors. For viewing of published floodplains, refer to the following internet

link:

<http://store.msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>

The project team considered potential impacts to floodplain areas for both the three build options and the no-build option. If the no-build option is selected, there will be no effect on floodplains.

The Option 1 corridor crosses eight known floodplain zones within Marion and Taylor Counties. All floodplains crossed are listed as 100-year flood areas with no flood hazard factors determined (Zone A areas). Two Zone A floodplain areas along Hardins Creek and Rolling Fork River are crossed in Marion County. Additional Zone A floodplain areas crossed in Taylor County are along Big Pitman Creek, Middle Pitman Creek, Little Pitman Creek, Flat Run, Little Meadow Creek, and Meadow Creek. Some floodplain impacts (i.e. loss of riparian vegetation, disturbance of habitat, potential for increased sedimentation in the stream, etc) would be expected during construction if this corridor were selected. Fills and/or cuts in the floodplains during construction may limit the buffering capacity of flood control for that area.

Additional floodplain zones likely exist along streams in Washington, Green, and Adair Counties but these zones are not mapped. Zone A floodplains may exist along Cartwright Creek in Washington County, Green River in Green County, and Russell Creek in Adair County. The Option 1 corridor is likely to have greater impacts to floodplains since new construction would be required at all crossings, which may lead to greater disturbances.

The Option 2/3 corridor crosses two known floodplain zones in Marion County. A Zone A floodplain area exists along Cartwright Creek and Rolling

Fork River in Marion County. These areas are listed as 100-year floodplains with no flood hazard factors determined. Some impacts would be expected to these floodplains (i.e. loss of riparian vegetation, disturbance of habitat, potential for increased sedimentation in the stream, etc) during construction if this corridor were selected. Additional floodplain zones likely exist along streams in Washington, Green, and Adair Counties but these zones are not mapped. Zone A floodplains may exist along Long Lick and Beech Fork in Washington County, Green River in Green County, and Russell Creek in Adair County. The Option 2/3 corridor would likely have a smaller impact on floodplains since fewer are crossed and all of these streams currently have spanning structures in place.

C. Stream Crossings

Both Option 1 and Option 2/3 will involve many stream crossings. Impacts to these areas may range from water quality issues to channel changes to removal of plant and animal habitat. Bridges, culverts, and other structures will need to be constructed for the Option 1 corridor or need to be widened and updated for the Option 2/3 corridor.

Perennial (water is always present in perennial streams) and intermittent (water is present except in late summer and fall in intermittent streams) stream crossings occur throughout both of the study corridors. Option 1 has the potential to cross approximately 64 perennial streams and 32 intermittent streams. Ephemeral stream (water rarely is present except during and immediately after a rain event) crossings could not be determined from viewing topographic maps. The amount of actual stream crossings will likely be reduced when alignments are selected within the corridor. This corridor will likely have a greater impact on area streams than upgrading existing roadways since some areas of streams have not been previously disturbed.

New structures (bridges and culverts) may cause the loss of certain riparian zones as well as disturbance of the stream's flow pattern and its water quality. Potential for channel changes exists as well with construction in this corridor. Various impacts to streams and rivers may require permits and potential stream restoration/mitigation.

Stream crossings for the Option 2/3 corridor are less than for the Option 1 corridor. Approximately 37 perennial streams and 10 intermittent streams will be crossed. Most of these streams currently have some structure (bridge or culvert) spanning them. Widening and upgrading these crossings will likely incur fewer impacts to area streams than constructing new crossings. Potential for channel changes exists as well with construction in this corridor. Various impacts to streams and rivers may require permits and potential stream restoration/mitigation.

D. Outstanding and Exceptional Water Resources

No wild and scenic rivers have been identified within the project area. The Green River and Russell Creek are listed under Special Use Waters determined by the Kentucky Division of Water (KYDOW). The Green River from milepoint 305 (Green River Lake dam) to milepoint 207 is classified as an Outstanding State Resource Water. This classification is given to certain surface waters that are designated as unique waters of the Commonwealth. Both corridors cross the Green River at points within this designation. Russell Creek is listed as an Exceptional Water and Reference Reach Stream. Exceptional Waters are "water bodies whose quality exceeds that necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water" (KYDOW, 401 KAR 5:030, Section 3). A Reference Reach Water is a stream representative of a large number of similar streams within a definable geographic area. These streams are categorized as the least

impacted within that ecoregion. Both Option 1 and Option 2/3 corridors cross the Green River and Russell Creek within the designated areas. Precautions should be taken to minimize impacts to these special streams. The no-build option would not impact these streams.

E. Wetlands

Wetlands were identified using National Wetland Inventory (NWI) maps for Washington, Marion, Taylor, Green, and Adair Counties. The wetlands were then divided into subgroups (i.e. ponds, riverine, emergent, forested, and lacustrine) so that they could be easily compared by type between the two corridors. Wetlands were not broken down into jurisdictional and non-jurisdictional and size was not calculated since these characterizations are primarily determined through field inspection.

The Option 1 corridor consists of a 2000-foot wide area within which a smaller alignment can be selected. Within this corridor, approximately 211 ponded wetlands were identified, along with 18 riverine wetlands, 17 emergent wetlands, 9 forested wetlands, and zero lacustrine (lake) wetlands. Upon selection of alignments within this corridor, many of these wetlands may be avoided. Numbers of wetland impacts cannot be addressed until final alignments are selected. Best judgment should be used when designing alignments to avoid impacting wetlands. If this is not possible, mitigation may be an option to compensate for those impacts.

The Option 2/3 corridor expands 150 feet on either side of the existing roadway. The overall corridor is 2,000 feet in width, but the narrower area of study was selected because Option 2 would add two lanes to the existing roadways, while Option 3 would widen the existing roadway. No construction activities are anticipated to occur outside 150 feet on either side of the

existing roadway. Within Corridor 2/3, approximately 17 ponded wetlands were identified, along with 3 riverine wetlands, 1 emergent wetland, 1 forested wetland, and 1 lacustrine wetland. Depending on where the road would be widened, impacts to many of these wetlands can be avoided. Numbers of wetland impacts cannot be addressed until final alignments are selected. Best judgment shall be used when designing alignments to avoid impacting wetlands. If this is not possible, mitigation may be an option to compensate for those impacts.

The Option 1 corridor has greater potential to impact wetlands compared to the widening of existing roadways under Option 2/3 (Appendix A, Figures 5A and 5B). The no-build option would not impact wetlands.

F. Federal and State Threatened and Endangered Species

The data summarized in this analysis represents known occurrences of federal threatened and endangered species within both corridor options. Information came from coordination with the United States Fish and Wildlife Service (USFWS) in Frankfort, Kentucky. Initial data was gathered from county records displayed on the USFWS website. This information is very general and does not necessarily imply that a specific number of impacts would occur within a corridor. The following paragraphs list and briefly describe the federally threatened and endangered species that can occur within the project's corridors.

The federally endangered Indiana bat (*Myotis sodalis*) is a medium-sized bat, 3.5 inches in length, with dark gray to brownish-black fur (Slone and Wethington, 2001). Typical winter habitats for the Indiana bat include limestone caves with stable temperatures of 39 to 46 degrees F. During summer months, maternity colonies roost under loose bark in floodplain and

riparian forests. Indiana bats forage along streams or other bodies of water near forests, as well as in the canopy of upland and bottomland forests. The Indiana bat is listed as occurring in Taylor and Adair Counties, but habitat may be available in surrounding counties (Washington, Marion, and Green) to support breeding populations. The Option 1 corridor may be more likely to contain suitable habitat since it contains more contiguous tracts of forest and crosses several large streams.

The gray bat (*Myotis grisescens*, federally endangered) is a medium-sized bat, 3-4 inches in length, with gray fur, which is sometimes russet in summer. Gray bats roost, breed, rear young, and hibernate in caves year round. They migrate between summer and winter caves and will use transient or stopover caves along the way (Slone and Wethington, 2001). The gray bat is listed as occurring in Taylor, Green, and Adair Counties. Washington and Marion Counties contain less karst topography than Taylor, Green, and Adair Counties, therefore this limits the occurrence of gray bats in those areas. Building in the Option 1 corridor would likely have more potential impacts to riparian zones where the bats forage and potentially two known caves that may house gray bats. Additional caves may exist within Option 1, but they have not been identified.

The bald eagle (*Haliaeetus leucocephalus*, federally threatened) is a large, dark-brown bird with a bright yellow bill, eyes, and feet and all white head. An adult is 3-3.5 feet tall with a wingspan of 6-7.5 feet. Bald eagles are found mostly along major rivers and large, open bodies of water where fish, waterfowl, and other prey are abundant (Slone and Wethington, 2001). The bald eagle is listed as occurring in Taylor County, likely near Green River Lake. Construction of either corridor is not likely to impact habitat or feeding grounds of the bald eagle.

Eggert's sunflower (*Helianthus eggertii*, federally threatened) is a perennial plant that stands 3.5-6.5 feet tall and has sessile (without a stalk) leaves oppositely arranged on the stem with yellow flowers about 1 inch across. This plant occurs in barrens/woodland ecosystems, which are a mix of grassy treeless openings among a thin overstory of small to medium-sized trees. Additional habitat includes fields and roadsides where barrens formerly existed (Slone and Wethington, 2001). Eggert's sunflower occurs only in Taylor County. Both corridors could potential harm habitat that may be suitable for Eggert's sunflower.

The fanshell mussel (*Cyprogenia stegaria*, federally endangered) has a subcircular shell that is rarely more than 3.2 inches long. Shell color is light green or yellow with green rays. This mussel is found in medium sized to large rivers of the Ohio River basin (Slone and Wethington, 2001). The fanshell is listed as occurring in Marion and Green Counties. Option 1 and Option 2/3 could potentially impact habitat suitable for the fanshell since both corridors cross the Green River.

The clubshell mussel (*Pleurobema clava*, federally endangered) is a small to medium-sized mussel that rarely exceeds 3 inches in length. The clubshell has a triangular shell that is dull yellow or yellowish brown with prominent dark green rays. This species is usually found burrowed 2 to 4 inches below the surface in clean sand or gravel in big rivers (Slone and Wethington, 2001). This species occurs in the Green River and was found in Taylor and Green Counties. Both corridors could potentially impact habitat that may be suitable for the clubshell since Option 1 and Option 2/3 both cross the Green River.

The rough pigtoe (*Pleurobema plenum*, federally endangered) is a medium-sized mussel with an inflated triangular shaped shell. Shell color ranges from dark brown to yellowish brown. Light green rays may be present on younger specimens. This is a large river species, usually found on gravel bottoms (Slone and Wethington, 2001). This species is known from the Green River in Green and Taylor Counties. Options 1 and 2/3 could potentially impact habitat that may be suitable for the rough pigtoe since both corridors cross the Green River.

Several other mussels are listed as historical records from Taylor and Green counties. These mussels have not been collected as live specimens for over ten years and most are believed to be extirpated (removed or displaced) from the area. The northern riffleshell (*Epioblasma torulosa rangiana*, federally endangered), fat pocketbook (*Potamilus capax*, federally endangered), and the tubercled blossom (*Epioblasma torulosa torulosa*, federally endangered) are formerly known from the Green River in Taylor and Green County but are believed to be extirpated from this river. All three of these mussels have preferred habitat that consists of large rivers with clean sand or gravel bottoms.

The Kentucky Department of Fish and Wildlife Resources (KDFWR) Fish and Wildlife Information System (FWIS) and the Kentucky State Nature Preserves Commission (KSNPC) County Report of Monitored Species were consulted for lists of state and federal threatened and endangered species that may occur within proposed Options 1 and 2/3 corridors. See Appendix C, Table 9 for a list of state and federal threatened and endangered species that occur within the corresponding counties.

G. Natural Areas

The Kentucky State Nature Preserves Commission monitors areas considered relatively undisturbed or areas that have recovered sufficiently from previous disturbances. These exemplary natural communities have the flora (plants) and fauna (animals) that represent the natural communities that existed in Kentucky at the time of European colonization. One example of a Calcareous Mesophytic Forest occurs in Adair County. This type of community is considered very common. Green County contains one known Bottomland Hardwood Forest, which is a rare occurrence. Two examples of Limestone Slope Glades, which are considered uncommon to rare, occur in Marion County. The county may also support four Siltstone/Shale Glades (listed as uncertain). Taylor County contains an extremely rare example of Xerohydric Flatwoods and possibly one example of Siltstone/Shale Glade (listed as uncertain). A formal data request would be required in order to obtain specific locations of each natural community.

Both Option 1 and Option 2/3 corridors occur within the boundaries of the Green River Bioreserve, a system of above ground and subterranean aquatic habitats comprising the recharge area of the Green River and associated Mammoth Cave systems. The Green River Bioreserve is the complete Green River watershed from the Green River Lake Dam to the Nolin River in Mammoth Cave National Park. Nationally, it is an important site for the conservation of rare aquatic organisms. Future design phases must consider appropriate erosion and sediment control measures to minimize impacts to the bioreserve.

The Kentucky Division of Forestry's "Kentucky's Big Trees" list indicates that two state champion trees occur within the project vicinity. According to the list, a champion black willow (*Salix nigra*) is located in the back yard of a residence off KY 55 in Columbia. It does not appear that this tree falls within

the Option 2/3 corridor. A champion cucumbertree (*Magnolia acuminata*) is reported three miles west of Campbellsville. Based on the location description provided, it is unknown whether this tree occurs within the limits of the Option 1 corridor.

IV. Hazardous Materials and Underground Storage Tanks

A record search and a windshield survey of the project area was performed to identify any sites with hazardous materials or underground storage tanks. The records search did not identify any sites on the Resource Conservation and Recovery Act (RCRA) Notifiers' list of hazardous waste generators, sites on the Comprehensive Environmental Response, Compensation, and Liability Act Information System of potential Superfund sites, or sites with incidents involving hazardous materials. The record search for listed underground storage tanks (USTs) did not indicate any USTs within the project area. No landfills (including illegal landfills) or dump sites were identified during field trips through Options 1 and 2/3. The windshield surveys identified some existing and former businesses primarily along both the Option 1 corridor and the Option 2/3 corridor, but most will not have hazardous materials. The sites identified include existing and former gasoline stations, auto repair facilities, etc. A few sites have the potential to contain hazardous materials. The Option 1 corridor contained an estimated 6 sites that were service stations, auto repair shops, etc. The Option 2/3 corridor contained an estimated 25 to 30 sites of similar nature. Every effort will be made to avoid these sites during the design process. If any sites must be included in the right of way limits of the project, Phase II hazardous materials investigations may be necessary. At this time, it is not anticipated that hazardous materials or underground storage tanks will be a significant issue for the project.

If the no-build option is selected, no impacts will occur to hazardous materials or underground storage tanks.

V. Air Quality

Air quality concerns routinely exist for most types of highway improvements. For the Heartland Parkway corridors, air quality issues are of particular concern relative to where the corridors fall in close proximity to sensitive land uses, such as population centers (Springfield, Lebanon, Campbellsville, and Columbia), natural areas (Green River Lake and Willisburg Lake), and recreational facilities. Sensitive areas exist in larger numbers within the Option 2/3 corridor along KY 555 and KY 55. For the Option 1 corridor air quality concerns focus more on residential receptors.

Washington and Marion Counties are located within the North Central Kentucky Intrastate Air Quality Control Region. Taylor, Green, and Adair Counties are located in the South Central Kentucky Intrastate Air Quality Control Region. All counties crossed by the corridors (Washington, Marion, Taylor, Green, and Adair Counties) 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.

Following is a table that displays the ranges of VPD for each of the project counties:

**TABLE 15: Range of Existing (2003 Figures)
Vehicles Per Day for Project Counties***

Area	Vehicles Per Day
Adair County	7,700 to 26,100
Marion County	6,500 to 17,400
Taylor County	6,500 to 24,200
Washington County	3,200 to 8,500

* VPD not included for Green County.

For the Heartland Parkway corridor alternates, maximum future traffic volumes (2030 projections) are expected to reach 46,600 (Option 1 corridor) VPD or 51,700 (Option 2/3 corridor) VPD. These traffic volumes are not expected to cause carbon monoxide concentrations to exceed the one-hour standard of 35 parts per million (ppm) or the eight-hour standard of 9 ppm. Future levels of transportation-related pollutants are not expected to impact the attainment status of Washington, Marion, Taylor, Green, and Adair Counties. More site-specific air quality analysis and computer modeling will be conducted when alternates are developed. No air quality mitigation is expected to be necessary for this project.

If the no-build alternate is selected, future impacts to air quality will not occur. Secondary and cumulative impacts include the potential for additional air impacts if industrial and commercial businesses move into the available sites within the project region. Changes in potential air impacts from traffic changes are built into air quality modeling that will be required for individual projects.

VI. Traffic Noise

KY 555 and KY 55 carry normal volumes of traffic and the existing receptors are already accustomed to some level of traffic noise. While the Option 1 corridor has roadways crossing it, the majority of the corridor would have traffic traveling on a new roadway alignment. Depending on the alignments 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. In addition, the Option 2/3 corridor along KY 555 and KY 55 will require the relocation of some residences and commercial facilities. For the relocatees, traffic noise will not be an issue.

More site-specific traffic noise analysis and computer modeling would be conducted as alternates are developed. Future traffic noise levels in the study

area may approach or exceed regulatory thresholds for which noise abatement considerations are appropriate at individual receptors (e.g., for residences 67 dBA and commercial facilities 72 dBA). For the Option 1 corridor, predicted future noise levels may increase by over 10 dBA at individual receptors. The construction of noise barriers is not expected to be necessary or prudent for the residential or church facilities in the project area. Lincoln Holmstead State Park, Tebbs Civil War Battlefield, and other cultural resources that would be considered sensitive receptors will be assessed by computer modeling once alternates have been developed. Every effort will be made to avoid or minimize noise impacts to cultural resources.

Existing traffic volumes and projection ranges have been listed in Table 15, above, and the paragraph immediately following the table in the Air Quality Section on page 53. Once alternates have been developed, computer modeling would assess each alternate's predicted impact on the area noise environment. Receptor sites would be selected that are representative of residences, businesses, churches, parks, and other development along the project corridor.

If the no build alternate is selected, future impacts from traffic noise are not anticipated. Secondary and cumulative impacts include the potential for additional noise impacts if industrial and commercial businesses move into the available sites within the project region. Changes in potential noise impacts from traffic changes are built into noise modeling that will be required for individual projects.

VII. Conclusion

Field surveys, record searches and contacts with resource agencies, government representatives and the general public have identified environmental issues and sensitive areas. Potential impacts to the human and natural environment will be considered as the project moves into future phases and are described below:

- The project area hosts many natural, scenic and sensitive areas including the Green River Lake State Park, Lincoln Homestead State Park, Green River Bioreserve, Tebbs Bend Battlefield and Green County caves.
- These scenic areas potentially are home to several federally listed endangered or threatened species such as the Indiana bat, gray bat, bald eagle, Eggert's sunflower and several species of mussels.
- The project corridors cross numerous streams which will require widening of bridges, extending culverts, or constructing new structures. Construction impacts on streams and floodplains will need to be evaluated and if appropriate, mitigated.
- Both project corridors will cross the Green River, which is classified as outstanding state resource water, and Russell Creek, which is classified as exceptional water. Erosion and sedimentation controls will be necessary to minimize impacts to these streams.
- Wetlands could be affected by future project phases and all reasonable efforts will be made to avoid or minimize impacts.
- The project corridors contain 64 historic sites that are listed or are potentially eligible for listing on the National Register of Historic Places. The project area also has a high potential for containing unrecorded prehistoric or historic archaeological sites. Historic and archaeological surveys will need to be conducted to determine/confirm the presence of historic or archaeological sites and potential to avoid or minimize project impacts.
- If historic sites (e.g., Tebbs Bend Battlefield) or recreation areas (e.g., Green River State Park) are impacted, a Section 4(f) evaluation will be necessary.
- A new or improved roadway will enhance regional access for travelers, workers, tourists, and transporters of raw materials, finished products and agricultural products. Beneficial impacts of future phases include

anticipated opportunities for industry, tourism, higher education and agricultural activities.

- Only low numbers of residential or commercial relocations are expected in future design phases.
- As the predominant land use in the project area is agricultural, potential impacts to farmlands rated as prime, unique, or of statewide importance must be considered. One agricultural district is in the Option 1 corridor and if avoidance is not feasible, coordination with the local conservation district is required.
- Several service stations, automobile repair shops, and auto salvage yards occur in the project corridors and could have potential hazardous materials and underground storage tank sites. Further consideration will be necessary to confirm the presence of these sites and reasonable efforts will be made to assess avoidance and mitigation options.