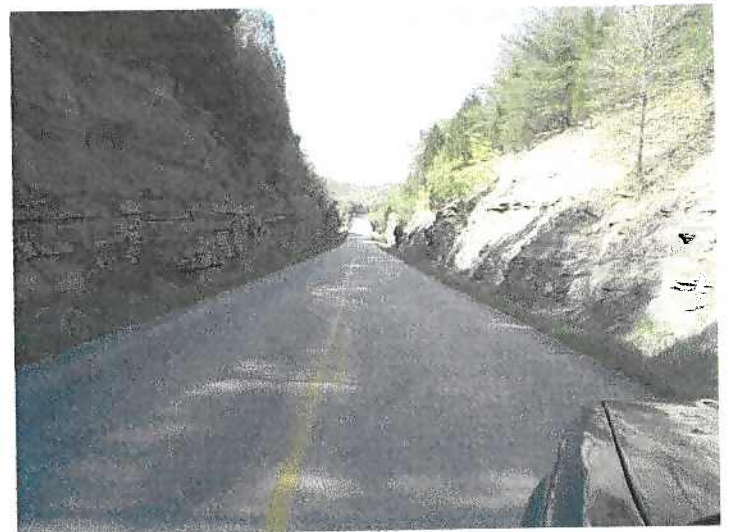


**PROGRAMMING STUDY
KY 88
HART AND GRAYSON COUNTIES
MUNFORDVILLE TO KY 479
ITEM 4-8101.00**



Prepared by the
KENTUCKY TRANSPORTATION CABINET
DIVISION OF PLANNING
March, 2004

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I. INTRODUCTION

A. Study Purpose

The purpose of this Programming Study was to: (a) develop information for corridor improvements along KY 88 between US 31W in or near Munfordsville and the intersection of KY 88 and KY 479 in Grayson County that can be used for future programming documents; (b) provide data to be used when and if the project enters the design phase; and (c) provide background information that can be utilized in the National Environmental Policy Act (NEPA) documentation for the project. Tasks undertaken as part of this effort included:

- Identifying project goals and issues
- Defining the need for the project
- Determining project termini and potential corridors
- Describing the conditions along the existing roadway
- Identifying preliminary environmental concerns
- Estimating the project costs
- Identifying priority segments for future programming activities
- Initiating contact with public officials and agencies

One of the steps in this process was the collection of technical and resource agency input concerning the project. This was accomplished by:

- Compiling information from existing data and reports
- Establishing a project team to provide direction and review for the study
- Coordinating with resource agencies and local officials

Information thus collected was evaluated to accomplish the following:

- Evaluate the project description and logical termini
- Address the geometrics, level of service, vehicle crashes, and other issues that are influencing the project
- Address, in general terms, the project design criteria
- Document known environmental concerns
- Develop a draft statement of project goals

B. Programming and Schedule

The project is described in the 2002 Kentucky Six-Year Highway Plan (FY 2003-2008) as a "Planning Study for KY 88 from Munfordville to Nolin Lake to Determine Scope and Priorities for Future Improvements". No future project phases are defined or scheduled at this time.

II. PROJECT LOCATION, EXISTING CONDITIONS, AND TRAFFIC

A. Project Location

The project termini, as originally described in the 2002 Kentucky Six-Year Highway Plan (see previous paragraph), were fairly general. The project team determined that the study area for the project would be defined as follows:

- On the east, along US 31W from the Green River to the junction of KY 1140 and then along KY 1140 northwesterly for approximately two miles;
- On the north, from KY 1140 approximately two miles northwest of its junction with US 31W to KY 728 approximately 2000 feet north of Cub Run;
- On the west, KY 479 from approximately 2000 north of KY 88 to approximately 2000 feet south of KY 88;
- On the south, from a point approximately 2000 feet south of the intersection of KY 88 and KY 479 easterly to KY 1827 approximately 2000 feet south of Cub Run to Forestville to US 31W at the Green River bridge in Munfordville.

The project area is shown in Exhibit 1 in Appendix A. The project termini were more specifically defined as US 31W in or near Munfordville on the east and the intersection of KY 88 and KY 479 on the west. Several photographs of the project area are shown in Appendix B.

B. Existing Highway Features

Data on the existing conditions along KY 88 were taken from the Division of Planning's Highway Information System (HIS) database and from roadway improvement plans of both the Kentucky Department of Highways (1935, 1937) and the U.S. Army Corps of Engineers (1961).

The KY 88 corridor is located in rolling terrain. Passing sight distance varies from ten percent to thirty percent. There are 38 horizontal curves and 97

vertical curves that do not meet current KYTC guidelines for a 55-mph design speed. The locations of these curves are shown in Tables 1 and 2.

**TABLE 1
HORIZONTAL CURVES WITH DESIGN SPEEDS < 55 MPH**

County	Mile Point	Degree of Curve	Design Speed e = 8%
Hart	1.494	10	44 MPH
Hart	1.792	10	44 MPH
Hart	2.109	12	40 MPH
Hart	3.259	12	40 MPH
Hart	3.396	12	40 MPH
Hart	3.691	10	44 MPH
Hart	3.990	12	40 MPH
Hart	4.123	8	49 MPH
Hart	4.299	12	40 MPH
Hart	4.511	14	38 MPH
Hart	5.075	8	49 MPH
Hart	5.195	12	40 MPH
Hart	5.769	10	44 MPH
Hart	6.518	10	44 MPH
Hart	6.837	8	49 MPH
Hart	7.208	8	49 MPH
Hart	7.941	10	44 MPH
Hart	8.556	14	38 MPH
Hart	9.465	8	49 MPH
Hart	9.657	20	32 MPH
Hart	9.857	10	44 MPH
Hart	10.952	8	49 MPH
Hart	11.870	8	49 MPH
Hart	12.223	12	40 MPH
Hart	12.623	11	42 MPH
Hart	12.700	14	38 MPH
Hart	12.848	18	33 MPH
Hart	12.988	12	40 MPH
Hart	13.839	8	49 MPH
Hart	14.591	8	49 MPH
Hart	14.804	8	49 MPH
Hart	15.066	8	49 MPH
Hart	15.498	12	40 MPH
Hart	15.599	10	44 MPH
Hart	15.694	8	49 MPH
Hart	15.762	12	40 MPH
Hart	15.892	12	40 MPH
Hart	15.997	8	49 MPH

**TABLE 2
VERTICAL CURVES WITH DESIGN SPEEDS< 55 MPH**

County	Mile Point	Vertical Curve	Stopping Sight Distance	Design Speed
Hart	0.468	Sag	468	53 MPH
Hart	0.781	Sag	484	54 MPH
Hart	1.207	Sag	227	33 MPH
Hart	1.368	Crest	339	43 MPH
Hart	1.453	Sag	194	29 MPH
Hart	1.737	Crest	481	54 MPH
Hart	1.813	Crest	364	45 MPH
Hart	1.974	Crest	470	53 MPH
Hart	2.078	Sag	292	39 MPH
Hart	2.145	Crest	344	43 MPH
Hart	2.220	Sag	166	26 MPH
Hart	2.675	Crest	333	42 MPH
Hart	2.732	Sag	339	43 MPH
Hart	2.826	Sag	197	30 MPH
Hart	2.902	Crest	336	43 MPH
Hart	2.987	Crest	330	42 MPH
Hart	3.148	Sag	157	25 MPH
Hart	3.291	Sag	240	34 MPH
Hart	3.432	Crest	312	41 MPH
Hart	3.537	Sag	142	24 MPH
Hart	3.716	Crest	314	41 MPH
Hart	3.830	Crest	303	40 MPH
Hart	3.972	Sag	142	24 MPH
Hart	4.048	Crest	332	42 MPH
Hart	4.152	Sag	249	35 MPH
Hart	4.275	Crest	465	53 MPH
Hart	4.389	Crest	350	44 MPH
Hart	4.853	Sag	234	33 MPH
Hart	5.023	Sag	274	37 MPH
Hart	5.066	Crest	253	35 MPH
Hart	5.109	Sag	197	30 MPH
Hart	5.667	Crest	343	43 MPH
Hart	5.743	Sag	381	46 MPH
Hart	5.876	Sag	243	34 MPH
Hart	6.027	Crest	340	43 MPH
Hart	6.093	Sag	257	35 MPH
Hart	6.216	Crest	371	46 MPH
Hart	6.321	Sag	279	38 MPH
Hart	6.662	Sag	199	30 MPH
Hart	6.766	Crest	364	45 MPH

**TABLE 2 (CONTINUED)
VERTICAL CURVES WITH DESIGN SPEEDS < 55 MPH**

County	Mile Point	Vertical Curve	Stopping Sight Distance	Design Speed
Hart	8.120	Crest	402	48 MPH
Hart	8.191	Sag	198	30 MPH
Hart	8.252	Crest	365	45 MPH
Hart	8.537	Crest	378	46 MPH
Hart	8.669	Sag	167	26 MPH
Hart	8.754	Crest	348	44 MPH
Hart	9.379	Sag	251	35 MPH
Hart	9.446	Crest	280	37 MPH
Hart	9.626	Sag	174	27 MPH
Hart	9.692	Crest	396	48 MPH
Hart	9.787	Crest	311	41 MPH
Hart	9.843	Sag	190	29 MPH
Hart	9.891	Crest	346	43 MPH
Hart	9.976	Sag	200	30 MPH
Hart	10.033	Sag	232	33 MPH
Hart	10.184	Crest	327	42 MPH
Hart	10.317	Sag	191	29 MPH
Hart	10.402	Crest	321	41 MPH
Hart	10.487	Sag	182	28 MPH
Hart	10.554	Crest	382	46 MPH
Hart	10.677	Crest	475	54 MPH
Hart	10.961	Crest	471	53 MPH
Hart	11.065	Sag	481	54 MPH
Hart	11.321	Sag	449	52 MPH
Hart	11.624	Sag	337	43 MPH
Hart	11.794	Crest	406	48 MPH
Hart	11.908	Sag	231	33 MPH
Hart	11.974	Crest	366	45 MPH
Hart	12.040	Sag	348	44 MPH
Hart	12.590	Sag	197	30 MPH
Hart	12.741	Crest	354	44 MPH
Hart	12.893	Crest	316	41 MPH
Hart	12.997	Sag	178	28 MPH
Hart	13.073	Crest	270	37 MPH
Hart	13.257	Sag	190	29 MPH
Hart	13.404	Crest	432	51 MPH
Hart	13.906	Crest	422	50 MPH
Hart	14.057	Sag	281	38 MPH
Hart	14.370	Sag	199	30 MPH

**TABLE 2 (CONTINUED)
VERTICAL CURVES WITH DESIGN SPEEDS < 55 MPH**

County	Mile Point	Vertical Curve	Stopping Sight Distance	Design Speed
Hart	14.498	Crest	314	41 MPH
Hart	14.559	Sag	305	40 MPH
Hart	14.635	Crest	388	47 MPH
Hart	14.886	Sag	268	36 MPH
Hart	15.023	Crest	450	52 MPH
Hart	15.317	Crest	340	43 MPH
Hart	15.610	Sag	229	33 MPH
Hart	15.696	Crest	354	44 MPH
Hart	15.800	Sag	451	52 MPH
Hart	15.904	Sag	268	36 MPH
Hart	16.150	Sag	272	37 MPH
Hart	16.283	Crest	414	49 MPH
Hart	16.392	Crest	368	45 MPH
Hart	16.548	Sag	212	31 MPH
Hart	16.766	Crest	346	43 MPH
Hart	16.908	Sag	254	35 MPH
Hart	17.002	Sag	254	35 MPH
Hart	17.059	Crest	209	31 MPH

KY 88 in the study segment is an undivided two-lane highway with nine-foot wide lanes for 9.5 miles at the west end and ten-foot wide lanes for 8.5 miles at the east end as shown in Table 3. Except for a very short segment with eight-foot wide shoulders near the junction of KY 88 and KY 728 at Cub Run, shoulder widths are either three feet or essentially non-existent. The driving surface is high flexible or mixed asphalt pavement; the most recent resurfacing date is shown in Table 3.

**TABLE 3
ROADWAY CROSS-SECTION**

County	Beginning MP	End MP	Lane Width	Shoulder Width	Year Resurfaced
Grayson	13.555	14.538	9 Feet	3 Feet	2000
Hart	0.00	5.123	9 Feet	3 Feet	1997
Hart	5.123	5.230	9 Feet	8 Feet	1997
Hart	5.230	8.559	9 Feet	3 Feet	1997
Hart	8.559	12.179	10 Feet	0 Feet	1996
Hart	12.179	13.107	10 Feet	3 Feet	1994
Hart	13.107	17.075	10 Feet	0 Feet	1994

KY 88 in the study segment has only two structures, reflecting its ridgetop location. Both structures have bridge sufficiency ratings above 79, meaning that neither is considered in need of replacement; hence neither is eligible for replacement funding. Table 4 depicts detailed information about each of these structures. As noted therein, the structure over Nolin Lake at the west end of the study segment is listed as functionally obsolete with an extremely minor speed reduction. It is noted herein for emphasis that functional obsolescence describes a condition wherein the roadway geometrics do not meet current design standards and is separate and distinct from a condition of structural deficiency. Finally, neither of these bridges has historical significance.

**TABLE 4
BRIDGES**

County	MP	Bridge Number	Length	Width	Sufficiency Rating	Other Information
Hart	0.001	B00007	556'	27.2'	79.8	Functionally Obsolete; Minor Speed Reduction
Hart	16.527	B00006	255'	32'	84.7	

Significant intersections with crossroads along the study segment of KY 88 are shown in Table 5. In addition to those listed therein, there are 52 minor crossroads or entrance roads and one railroad crossing. The rail line is operated by CSX Transportation and the segment crossing KY 88 is among the more heavily utilized rail lines in Kentucky with a freight traffic density of between 20 and 50 million gross ton-miles per mile annually. Further, the Department of Defense has designated this rail line as a part of the Strategic Rail Corridor Network, which provides rail connection to key military facilities. More information about this rail line can be found in the Kentucky Transportation Cabinet's 2002 Kentucky Statewide Rail Plan at this web site: <http://transportation.ky.gov/Multimodal/railsystems.htm>.

**TABLE 5
MAJOR CROSSROADS**

County	MP	Description
Grayson	13.555	KY 479
Hart	1.093	KY 1015
Hart	5.123	KY 728
Hart	12.179	KY 2786
Hart	17.817	US 31W

C. Highway Systems

KY 88 in the study segment is functionally classified as a Rural Major Collector. This functional classification is used to describe highway segments that:

- Serve trips that are of relatively short distance
- Are of regional, rather than statewide or interstate, significance
- Serves both access and mobility functions
- Provides connections to county seats

For maintenance purposes, it is classified as a state secondary route. KY 88 in the study segment has a Truck Weight Class of "A" (44,000 pounds gross weight limit) and is not a part of either the Coal Haul or Extended Weight Systems. It is not part of the National Highway System, the National Truck Network, the Forest Highway System, the Appalachian Development Highway System, the Bicycle Route System, or the National or Kentucky Scenic Byway System.

D. Vehicle Crash Analysis

A total of thirty-six (36) vehicle crashes were recorded with valid reference points on KY 88 in the study segment during the five-year period between January 1, 1996 and December 31, 2000. Eighteen of the crashes produced injuries to at least one person, while three crashes resulted in one fatality each. Both segment and spot crash analyses for the study segment of KY 88 were conducted as depicted in Tables 6 and 7. None of the analysis segments, varying in length from one to seven miles, showed a crash critical rate factor over, at, or even approaching 1.0. One spot, the intersection of KY 88 and KY 479 in Grayson County, showed a critical crash rate factor over 1.0; however the sample size for the analysis at this spot was small. No definitive conclusions can be drawn regarding whether crashes at this location are random or causal without more detailed investigation.

E. Traffic and Level of Service

The average daily traffic volume (ADT) in the year 2002 varied from about 700 vehicles just east of the Grayson-Hart County line to almost 2200 vehicles near the CSX railroad crossing just outside of Munfordville (Table 8 and,

in Appendix A, Exhibit 2). Projected future year (2030) average daily traffic volumes, based on an annual growth rate of two percent, range from about 1200 vehicles just east of the Grayson-Hart County line to about 3800 vehicles near the CSX railroad crossing just outside of Munfordville (Table 8 and, in Appendix A, Exhibit 3). Current and projected future year truck volumes are six percent of total vehicular traffic.

**TABLE 6
SEGMENT CRASH ANALYSIS 1996-2000**

County	Begin MP	End MP	Segment Length	Functional Class Rate	Number Crashes	HMVM	RC	Crash Rate	Critical Rate Factor
Grayson	13.555	14.538	0.983	248	6	0.01	663	487	0.73
Hart	0.000	1.093	1.093	248	1	0.01	666	85	0.13
Hart	1.093	5.123	4.030	248	4	0.04	463	100	0.22
Hart	5.123	12.179	7.056	248	15	0.17	351	90	0.26
Hart	12.179	16.770	4.591	248	10	0.14	361	72	0.20

Source: Highway Information System (HIS) DataBase, KYTC and Analysis of Traffic Accident Data in Kentucky (1996 – 2000)
Kentucky Transportation Center, September 2001

**TABLE 7
SPOT CRASH ANALYSIS 1996-2000**

County	Begin MP	End MP	Spot	Functional Class Rate	Number Crashes	MVM	RC	Crash Rate	Critical Rate Factor
Grayson	13.575	13.675	0.100	0.25	3	1.28	1.78	2.3	1.3

Source: Highway Information System (HIS) DataBase, KYTC and Analysis of Traffic Accident Data in Kentucky (1996 – 2000)
Kentucky Transportation Center, September 2001

**TABLE 8
CURRENT (2002) AND PROJECTED FUTURE YEAR (2030)
AVERAGE DAILY TRAFFIC VOLUMES**

County	Route	Begin Point	Begin MP	End Point	End MP	2002 ADT	2030 ADT
Grayson	KY 88	KY 479	13.555	County Line	14.538	880	1530
Hart	KY 88	County Line	0.000	KY 1015	1.093	730	1270
Hart	KY 88	KY 1015	1.093	KY 728	5.123	680	1180
Hart	KY 88	KY 728	5.123	KY 2786	12.179	1610	2800
Hart	KY 88	KY 2786	12.179	I-65 Bridge	16.527	2060	3590
Hart	KY 88	I-65 Bridge	16.527	RR Crossing	17.075	2190	3810

Source: Highway Information System (HIS) DataBase, KYTC

For purposes of Level of Service (LOS) determination, the study segment of KY 88 is considered to be a Class II highway. As shown in Table 9, the LOS is defined in terms of the percent of time spent by one vehicle following another.

**TABLE 9
LOS CRITERIA FOR TWO-LANE HIGHWAYS IN CLASS II**

LOS	Percent Time-Spent-Following
A	< 40
B	>40 but <55
C	>55 but <70
D	>70 but <85
E	>85
F	Flow rate exceeds the segment capacity

Given the low traffic volumes along the study segment of KY 88, one would expect a relatively high LOS and that indeed is the case. Tables 10 and 11 indicate the current year (2002) and future year (2030) LOS for KY 88.

**TABLE 10
EXISTING LEVEL OF SERVICE (2002)**

County	Section	Begin MP	End MP	Segment Length	Average Travel Speed*	Percent Time Spent Following*	V/C	LOS
Grayson	1	13.575	14.538	0.963	33.8	36.1	0.05	A
Hart	2	0.000	1.093	1.093	34.4	34.1	0.05	A
Hart	3	1.093	5.123	4.030	34.6	33.3	0.04	A
Hart	4	5.123	12.179	7.056	30.3	45.1	0.10	B
Hart	5	12.179	16.770	4.591	30.0	51.1	0.13	B
Hart	6	16.770	17.050	0.280	29.9	52.6	0.13	B

Source: Highway Capacity Manual 2000 Chapter 20 (See LOS Criteria in Table 9)

* Based on BFFS of 45 mph and 10 access points per mile

**TABLE 11
FUTURE LEVEL OF SERVICE (2030)****

County	Section	Begin MP	End MP	Segment Length	Average Travel Speed*	Percent Time Spent Following*	V/C	LOS
Grayson	1	13.575	14.538	0.963	31.7	44.7	0.09	B
Hart	2	0.000	1.093	1.093	32.4	41.4	0.08	B
Hart	3	1.093	5.123	4.030	32.7	40.2	0.07	B
Hart	4	5.123	12.179	7.056	28.3	56.5	0.17	C
Hart	5	12.179	16.770	4.591	29.3	58.0	0.17	C
Hart	6	16.770	17.050	0.280	29.2	59.5	0.18	C

Source: Highway Capacity Manual 2000 Chapter 20 (See LOS Criteria in Table 9)

* Based on BFFS of 45 mph and 10 access points per mile

** Without corridor improvements

III. CABINET, PUBLIC, AND AGENCY INPUT

A. Project Team Meeting

A programming study project team meeting was conducted on February 8, 2003. The purpose of this meeting was to discuss the project and to assist in determining issues and concerns to be addressed in the study. A copy of the meeting minutes is included in Appendix C. Issues and concerns discussed by the team with observations and conclusions are as follows:

- The consensus of the team was that the general project area is as follows:
 - On the east, along US 31W from the Green River to the junction of KY 1140 and then along KY 1140 northwesterly for approximately two miles;
 - On the north, from KY 1140 approximately two miles northwest of its junction with US 31W to KY 728 approximately 2000 feet north of Cub Run;
 - On the west, KY 479 from approximately 2000 north of KY 88 to approximately 2000 feet south of KY 88;
 - On the south, from a point approximately 2000 feet south of the intersection of KY 88 and KY 479 easterly to KY 1827 approximately 2000 feet south of Cub Run to Forestville to US 31W at the Green River bridge in Munfordville.
 - The project termini were more specifically defined as US 31W in or near Munfordville on the east and the intersection of KY 88 and KY 479 on the west.
- No previous reports have been found, and, while the roadway design plans for the route are available, the plans for the western 1.346 miles of the project built by the U.S. Army Corps of Engineers are not legible.
- Roadway geometrics do not meet current KYTC standards:
 - Deficient horizontal curvature
 - Deficient vertical curvature
 - Deficient lane widths
 - Deficient shoulder widths
 - Two 90 degree turns within the City of Munfordville
 - Congestion in small residential communities along the corridor
 - Horse and buggy traffic along the corridor
 - Problems created for recreational vehicle travel along the corridor

- Potential benefits of the project include:
 - Improved safety resulting from increased sight distance, increased stopping sight distance, and a wider roadway cross section.
 - Better access from I-65 to Nolin River Lake
 - Potentially improved access to areas of economic growth if the KY 88 corridor were relocated between Mt. Beulah and US 31W north and west of Munfordville.

- KYTC will solicit the assistance of the Barren River Area Development District in obtaining information pertaining to Environmental Justice.

- District 4 Right of Way personnel were asked to assist with a list of real estate questions provided by the KYTC Division of Environmental Analysis. This information is summarized in Appendix D.

- The primary goal is to address safety and traffic flow problems created by the unique traffic composition; i.e. cars, trucks, recreational vehicles, and horse drawn buggies. The short sight distances and the narrow cross section of the roadway increase these problems.

- The team decided that the priority segments should begin at Munfordville and extend to the west. There are two options for the first segment. The first option would begin at US 31W in Munfordville and follow the existing alignment, except for curve improvements, to near KY 2786. The second option for the first segment would begin at US 31W between the existing I-65 – US 31W interchange and the KY 1140 – US 31W intersection and would follow a new alignment to the existing alignment near Mt. Beulah, then along the existing alignment to near KY 2786. The second segment would follow the existing alignment, except for curve improvement, from KY 2786 to the West Side of Cub Run. This section is expected to follow the existing alignment through Kessinger and Cub Run. The third segment would be from the West Side of Cub Run to the intersection of KY 88 and KY 479 in Grayson County. This section would follow the existing alignment, except for curve improvement, and would use the existing bridge over Nolin River Lake. An alternative of spot improvements should also be considered for each of the three segments.

- The Environmental Footprint Area will be the same as the general project area agreed on by the team. QK4 has been retained to do the environmental study for this project.

- Probable design criteria with comments were included with the report sent to the team. After further discussion, the team agreed to recommend design criteria as follows:
 - The functional classification of KY 88 in Grayson and Hart Counties is currently rural major collector. The project team does not expect this to change as a result of improvements to the roadway.
 - The design year for this study will be 2030. The maximum traffic in 2030 is estimated to be 3810 ADT and 440 DHV.
 - The expected design speed will be 55 mph to match the posted speed limit. Since the posted speed limit along the roadway in the communities of Cub Run, Kessinger, and Munfordville is 35 mph, the design speed for these sections can be less than 55 mph, but not less than 35 mph, if necessary.
 - The typical cross-section for rural collector roads with an ADT of 2000 or greater is 12-foot lanes with 8-foot shoulders. The team agreed that due to the unique character of the traffic on KY 88; a cross section of 12-foot lanes and 12-foot shoulders (with 10 foot paved) would be recommended because of the horse and buggy traffic as well as the recreational vehicles traveling to the lake. Curb and gutter with sidewalks should be considered for the portions of the roadway that pass through Cub Run, Kessinger, and Munfordville due to the residential nature of these areas.
- The team did not identify an applicable ITS solution for this project.
- The team agreed that any needs for bicycle/pedestrian traffic would be provided for by the cross sections of 10 foot paved shoulders and/or the sidewalks in the residential areas.

B. Local Officials and Group Meetings

No public meetings were held during the course of this study since no further project development phases are currently funded. However, at the request of the Barren River Area Development District, a meeting was held with the Hart County Transportation Committee⁽¹⁾ in the Hart County Judge-Executive

(1) The Hart County Transportation Committee is an established entity that periodically meets to discuss transportation issues in the community. It was created, and is administratively supported, by the Barren River Area Development District as part of its regional transportation planning program in partnership with the Kentucky Transportation Cabinet.

Office on March 18, 2003. Officials from BRADD and KYTC explained the purpose of the study as outlined previously in this report. KYTC officials outlined the issues that the Planning Study Project Team had articulated for the KY 88 corridor:

- Roadway geometrics do not meet current KYTC standards
 - Deficient horizontal curvature
 - Deficient vertical curvature
 - Deficient lane widths
 - Deficient shoulder widths
 - Two 90 degree turns within the City of Munfordville
- Congestion in small residential communities along the corridor
- Horse and buggy traffic along the corridor
- Problems created for recreational vehicle travel along the corridor

The committee concurred with this listing of issues. KYTC officials listed the potential benefits of improvement to the KY 88 corridor that the Planning Study Project Team had discussed:

- Improved safety resulting from increased sight distance, increased stopping sight distance, and a wider roadway cross section.
- Better access from I-65 to Nolin River Lake
- Potentially improved access to areas of economic growth if the KY 88 corridor were relocated between Mt. Beulah and US 31W north and west of Munfordville.

The committee dissented from the third benefit statement and expressed a preference for a new interchange with I-65 at KY 88. The committee also felt that the projected 2% annual growth rate in vehicular traffic was too conservative.

C. Resource Agency Coordination

Early agency coordination letters were sent to various resource agencies, interested organizations, local officials, and internal Cabinet offices to obtain input and comments regarding the potential impacts associated with this project. Copies of request letters, mailing list, and the responses are included in Appendix E. Issues identified and concerns raised as a result of this process include:

- Geotechnical Engineering Branch, KYTC Division of Materials: Caves will likely be encountered in limestone beds underlying sandstone formations on the eastern side of the KY 88 corridor; special construction techniques on the eastern side of the KY 88 corridor, such as retention basins, grass line ditches, and/or avoidance of open sinkholes for drainage disposal, will likely be necessary to prevent highway runoff from entering the cave system associated with the Green River; chemical stabilization of soil subgrades will likely be necessary; KY 88 in the study segment is in Seismic Risk Zone 2 (which is defined as an area of moderate damage due to earthquake activity).
- Division of Forestry, Department for Natural Resources: There are no trees of historical or cultural significance nor any listed on the state Big Tree list along KY 88 in the study segment; within the study area there are several hundred acres of productive forestland and five existing and one proposed Stewardship Forest(s) (Appendix E).
- Kentucky State Nature Preserves Commission, Natural Resources and Environmental Protection Cabinet: Concerns include the karstic nature of the area including an underground basin that supports the Mammoth Cave Shrimp (*Palaemonias ganteri*), listed as endangered by the U.S. Fish and Wildlife Service; several caves that harbor rare bats and a species of cave beetle; the potential presence of Eggert's sunflower (*Helianthus eggertii*), listed as threatened by the USFWS; and a desire to minimize further fragmentation of forested tracts in the region.
- Natural Resources Conservation Service, U.S. Department of Agriculture: expressed a general concern about potential impacts on prime farmland soils and farmlands of statewide importance.
- Department of Fish and Wildlife Resources, Kentucky Tourism Development Cabinet: Notes likely presence of Indiana bat (*Myotis sodalis*) and Gray bat (*Myotis grisescens*) in the KY 88 study segment and recommends procedural and mitigational efforts during subsequent project development phases in that regard; recommends procedural techniques to be employed during subsequent project development phases concerning intermittent or perennial streams.
- Division of Air Quality, Department for Environmental Protection: Noted general concerns about Fugitive Emissions, open burning, and air quality conformity. (Note: neither Hart nor Grayson County is currently listed as a non-attainment area).

- Kentucky Geological Survey, University of Kentucky: General comments, similar to those of the Geotechnical Engineering Branch of the KYTC Division of Materials.
- Permits Branch, KYTC Division of Traffic Operations: Urges that if roadway is significantly reconstructed it be as a partially or fully controlled access facility and discusses procedural requirements if this happens; recommends that design speed used in subsequent project development phases be the same as anticipated posted speed; recommends construction of access control fence.
- KYTC Division of Environmental Analysis: Indicated that many of the identified wetlands are in a karst plain with no surface connectivity and thus would not be considered "jurisdictional"; indicates likely presence of Indiana bat, gray bat, Eggert's Sunflower, Price's Potato Bean, and mussels; noted several potentially eligible/listed cultural historic sites and recommended full baseline study in subsequent project development phases; indicated potential for several UST/HAZ sites and recommended a phase one study in subsequent project development phases; noted likely impact on ephemeral streams; indicated that noise and air aspects of the project should not be a cause for concern.
- Resource Conservation and Local Assistance Branch, Division of Waste Management, Department for Environmental Protection: Requests the use of pulverized glass aggregates in roadbed construction during subsequent project development phases.
- Superfund Branch, Division of Waste Management, Department for Environmental Protection: There are sixteen Superfund sites listed in Grayson County and seventeen Superfund sites listed in Hart County (Appendix E). A quick perusal of the descriptions of the specific site locations appears to indicate that few, if any, of the listed sites in Grayson County and fewer than six of the listed sites in Hart County may be in the KY 88 project corridor. A more detailed analysis of these features will be conducted as a part of any future project development activities.
- Underground Storage Tank Branch, Division of Waste Management, Department for Environmental Protection: There are 142 underground storage tank (UST) sites listed in Grayson County and 119 UST sites listed in Hart County (Appendix E). A quick perusal of the descriptions of the specific site locations appears to indicate that many of these are located outside the KY 88 project corridor. A more detailed analysis of these features will be conducted as a part of any future project development activities.

- Fish and Wildlife Service, U.S. Department of the Interior: Encouraged use of Best Management Practices during future construction; indicated the possible presence of four Threatened or Endangered Species (Indiana bat, gray bat, Eggert's sunflower (each mentioned by others) and the Kentucky cave shrimp) and outlined procedures to follow associated with those in future project development phases.
- Kentucky Cabinet for Workforce Development: Supported concept of project.
- Office of Environmental Services, Kentucky Department of Agriculture: Stated preference for alternative improvement concepts that would disrupt the least amount of farmland.
- Centers for Disease Control and Prevention, Public Health Service, U. S. Department of Health and Human Services: Outlined issues that they want considered as a part of future project development phases, including air quality, water quality and quantity; wetlands and floodplains, hazardous materials and wastes, non-hazardous solid wastes and other materials, noise, occupational health and safety, land use and housing, and environmental justice.
- The following agencies responded to KYTC's solicitation for comments, but indicated that they had none at this time:
 - Department for Surface Mining Reclamation and Enforcement
 - Department of Military Affairs
 - Kentucky Cabinet for Health Services
 - Barren River District Health Department (Note: this response is incorporated in that of the Cabinet for Health Services.)

IV. ENVIRONMENTAL AND SOCIOECONOMIC OVERVIEW

A. Environmental Footprint

Presnell Associates, Inc. (d/b/a "QK4"), under contract to assist the Division of Planning, developed an Environmental Overview Report as shown in Appendix F. Included in that report was environmental resource data portrayed graphically on both USGS topographic and KYOGIS orthographic base maps. Issues identified as possibly requiring particular consideration in subsequent project development phases include:

- Potential impacts on surface and ground water sources and karst features.
- Culturally sensitive locations:
 - Fifteen cemeteries
 - Numerous churches
 - Munfordville Elementary School
- Tourist and recreation areas:
 - Nolin Lake Reservoir and Wildlife Management Areas
 - Wax Recreational Area
 - Nolin Lake State Park
 - Mammoth Cave National Park
- Three properties listed on the National Register of Historic Places, two of which are located within a potential historic district, as well as nineteen additional sites potentially eligible for designation.
- Additional archaeological investigations will be required.
- Sixty-five surface streams
- The requirement for development of a non-point source pollution control plan.
- Issues related to the Green River and Mammoth Cave National Park
- Numerous wetlands
- Various permits
 - Nationwide or individual permit from the U.S. Army Corps of Engineers
 - Kentucky Pollutant Discharge Elimination System General Stormwater Permit
 - (Possibly) a Floodplain Construction Permit
 - Water Quality Certification
- Construction restrictions/conditions associated with the likely presence of the Indiana bat and/or the gray bat
- Four "managed land" areas
- Twenty-seven possible contamination sites

B. Environmental Justice

The Barren River Area Development District conducted a review of the 2000 Census data for the purpose of identifying environmental justice and community impact issues. The purpose of this review was to assist the Kentucky Transportation Cabinet in meeting the requirements of Federal Executive Order 12898, which states that "...each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations..." and hence to ensure equal environmental protection to all groups potentially impacted by the KY 88 project. Although EO 12898 does not specifically address consideration of the elderly population, the U. S. Department of Transportation encourages the consideration of this demographic subset in Environmental Justice discussions. A copy of BRADD's Environmental Justice and Community Impact Report is included in Appendix G.

The BRADD study concludes that the potential for disproportionately high and/or adverse affects on minority populations impacted by the KY 88 project is very small. However, a concentration of low-income persons may exist in the Kessinger area along KY 88, and the potential impacts of a KY 88 project would need to be considered in greater detail in subsequent phases of project development. No other areas with a potential concentration of low-income persons along the KY 88 corridor were identified. Finally, a concentration of elderly persons may exist within the Munfordville portion of the KY 88 project; the potential impacts on elderly persons in Munfordville would need to be considered in greater detail in subsequent phases of project development.

Although not specifically identified in Federal Environmental Justice language, BRADD took the commendable step of including an analysis of potential impacts on Amish families within the KY 88 corridor in its report. Included in the BRADD report is a map showing concentrations of Amish families along Logsdon Valley Road and the Forestville area near KY 88. Further, an Amish school (Cedar Lane) is located along KY 88. Discussions with members of the community indicated that horse and buggy traffic is concentrated from the Logsdon Valley and Forestville areas into the City of Munfordville with peak travel times on Sundays and Thursdays. Specific consideration of this factor would need to be considered in greater detail in subsequent phases of project development.

V. TERMINI AND LENGTH

As indicated above, the project termini were defined to be US 31W in or near Munfordville on the east and the intersection of KY 88 and KY 479 on the west, a distance of 18.8 miles along the existing route.

VI. DRAFT PROJECT GOALS

Inasmuch as existing and projected future traffic volumes along the study segment of KY 88 do not portend systemic congestion problems, it does not appear that additional through lanes of travel are needed. However, the somewhat unique mixture of vehicular traffic composition traveling on the geometric deficiencies of the existing through lanes creates a roadway environment of less than optimal safety conditions. Thus, improving safety for all roadway users is the principal project goal.

VII. RECOMMENDATIONS

A. Geometric Design Features

Probable design criteria were discussed by the KY 88 project team, which agreed to the following recommendations:

- The functional classification of KY 88 in Grayson and Hart Counties is currently rural major collector. The project team does not expect this to change as a result of improvements to the roadway.
- The design year for this study will be 2030. The average daily vehicular traffic in 2030 ranges from about 1200 vehicles just east of the Grayson-Hart County line to about 3800 vehicles near the CSX railroad crossing just outside of Munfordville (Table 8 and, in Appendix A, Exhibit 3) with a design hour volume (DHV) of approximately 440.
- The expected design speed will be 55 mph to match the posted speed limit. Since the posted speed limit along the roadway in the communities of Cub Run, Kessinger, and Munfordville is 35 mph, the design speed for these sections could be less than 55 mph, but not less than 35 mph, if necessary.
- The typical cross-section for rural collector roads with an ADT of 2000 or greater is 12-foot lanes with 8-foot shoulders. The KY 88 project team agreed that, due to the unique character of the traffic on KY 88, a cross section of 12-foot lanes and 12-foot shoulders (with 10 foot paved) would be recommended because of the horse and buggy traffic as well as the recreational vehicles traveling to Nolin Lake. Curb and gutter with sidewalks should be considered for the portions of the roadway that pass through Cub

Run, Kessinger, and Munfordville due to the residential nature of these areas.

B. Priority Segments and Cost Estimates

The KY 88 project team recommended that the priority segments should begin at Munfordville and extend to the west. There are two options for the first segment. The first option would begin at US 31W in Munfordville and follow the existing alignment, except for curve improvements, to near KY 2786. The second option for the first segment would begin at US 31W between the existing I-65 – US 31W interchange and the KY 1140 – US 31W intersection and would follow a new alignment to the existing alignment near Mt. Beulah, then along the existing alignment to near KY 2786. The second segment would follow the existing alignment, except for curve improvement, from KY 2786 to the West Side of Cub Run. This section is expected to follow the existing alignment through Kessinger and Cub Run. The third segment would be from the West Side of Cub Run to the intersection of KY 88 and KY 479 in Grayson County. This section would follow the existing alignment, except for curve improvement, and would use the existing bridge over Nolin River Lake. The KY 88 project team also recommended that an alternative of spot improvements should also be considered for each of the three segments. Cost estimates for these segments and alternatives are depicted in Table 12.

C. Programming Estimates

For programming purposes, two alternative cost estimates for the priority section (Segment 1) are recommended. One of these estimates is for the spot improvements option. As shown in Table 12, the phase cost estimates for this alternative are as follows:

Design:	\$ 700,000
Right-of-Way:	\$ 1,000,000
Utilities:	\$ 330,000
Construction:	\$ 9,170,000
Total:	\$ 11,200,000

For the full construction cost estimate, no decision is made at this stage regarding the inclusion of a grade separation at the railroad crossing; this decision would be made during the Design phase. The programming cost estimate, however, assumes that a grade separation would be included. Further, since no public meetings or hearings were conducted as a part of this limited analysis, an assumption is made that KY 88 would be reconstructed along the existing alignment. This, too, is a decision that would be made during the Project

TABLE 12
COST ESTIMATES BY SECTION

Segment Number	SEGMENT DESCRIPTION		TYPE OF IMPROVEMENT	APPROXIMATE LENGTH (MILES)	Phase Cost Estimates (Millions)					Total Cost Estimate (Millions)	Estimated Cost per Mile (Millions)
	EASTERN TERMINUS	WESTERN TERMINUS			Project Planning/ Location Approval	Phase II Design	R/W	Utilities	Construction		
1	US 31W in Munfordville	KY 2786	Reconstruction without grade separation @ RR crossing	5.6	\$0.60	\$1.50	\$3.00	\$1.00	\$11.00	\$17.10	\$3.05
1	US 31W in Munfordville	KY 2786	Reconstruction with grade separation @ RR crossing	5.6	\$0.75	\$1.70	\$4.00	\$1.00	\$12.50	\$19.95	\$3.56
1a	US 31W between the existing I-65 - US 31W interchange and the KY 1140 - US 31W intersection	KY 2786	Reconstruction without grade separation @ RR crossing	3.7	\$0.40	\$1.00	\$2.00	\$0.50	\$8.50	\$12.40	\$3.35
1a	US 31W between the existing I-65 - US 31W interchange and the KY 1140 - US 31W intersection	KY 2786	Reconstruction with grade separation @ RR crossing	3.7	\$0.40	\$1.20	\$2.00	\$0.50	\$10.00	\$14.10	\$3.81
2	KY 2786	West Side of Cub Run	Reconstruction	7.1	\$0.75	\$1.75	\$3.50	\$1.10	\$12.50	\$19.60	\$2.76
3	West Side of Cub Run	KY 479	Reconstruction	6.1	\$1.00	\$1.50	\$3.00	\$1.00	\$13.00	\$19.50	\$3.20
1	US 31W in Munfordville	KY 2786	Spot Improvements	5.6	\$0.00	\$0.70	\$1.00	\$0.33	\$9.17	\$11.20	\$2.00
2	KY 2786	West Side of Cub Run	Spot Improvements	7.1	\$0.00	\$0.69	\$1.17	\$0.37	\$11.78	\$14.20	\$2.00
3	West Side of Cub Run	KY 479	Spot Improvements	6.1	\$0.00	\$0.76	\$1.00	\$0.33	\$10.10	\$12.20	\$2.00

Planning/Location Approval phase of any subsequent project development activities:

Project Planning/Location Approval:	\$ 750,000
Design:	\$ 1,700,000
Right-of-Way:	\$ 4,000,000
Utilities:	\$ 1,000,000
Construction:	\$ 12,500,000
Total:	\$ 19,950,000

The cumulative effect of these two assumptions is the use of a liberal cost estimator for the full reconstruction of Segment 1; alternate decisions about the alignment east of KY 2786 and/or the use of a grade separation at the railroad crossing would result in a cost estimate lower than that presented here.

VIII. ACKNOWLEDGEMENTS

Appreciation is herewith expressed to Patty Dunaway, Gary Valentine, Kevin Young, Kevin Cartwright, Jeff Schaefer, Dean Loy, Paul Sanders, Leo Lewis, and Doug Smith of District 4, to Tom Jobe, recently retired Chief District 4 Engineer, to John Matheney of the Barren River Area Development District, to Michael Briggs, formerly with BRADD, to Joe Tucker and Julie Towe with the Division of Planning, and to Danny Jasper, Eric Scott, and Barbara Limle, formerly of the Division of Planning, for their participation in the Project Team meeting and field inspection, providing cost estimates, relocation data and other information, preparation of graphics for this report, and for development and reporting of environmental justice and community impact information. Finally, thanks go to QK4 for their work in the development of the environmental footprint.

IX. CONTACTS

The following persons may be contacted if additional information is needed concerning the project or the programming study process:

- Annette Coffey, P.E., Director, Division of Planning
- Daryl Greer, P.E., Transportation Engineer Branch Manager, Strategic Planning Activity Center, Division of Planning
- Jim Wilson, P.E., Team Leader, Strategic Planning Activity Center, Division of Planning
- Bruce Siria, P.E., KY 88 Programming Study Project Manager, Strategic Planning Activity Center, Division of Planning

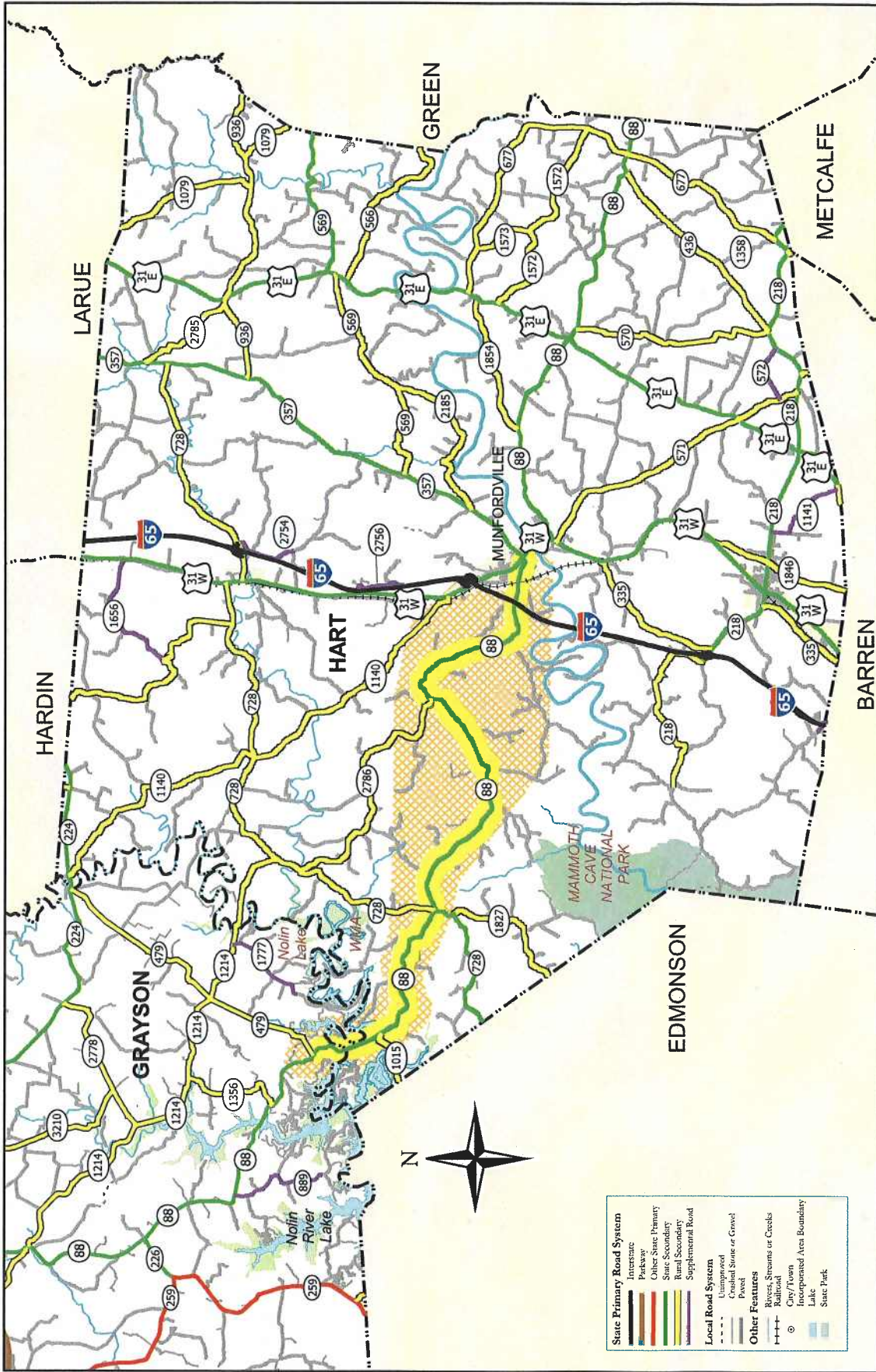
The following address and phone number may be used:

Phone: 502-564-7183

Address: Division of Planning
Kentucky Transportation Cabinet
Transportation Office Building
200 Mero Street
Frankfort, KY 40622

APPENDIX A

EXHIBITS



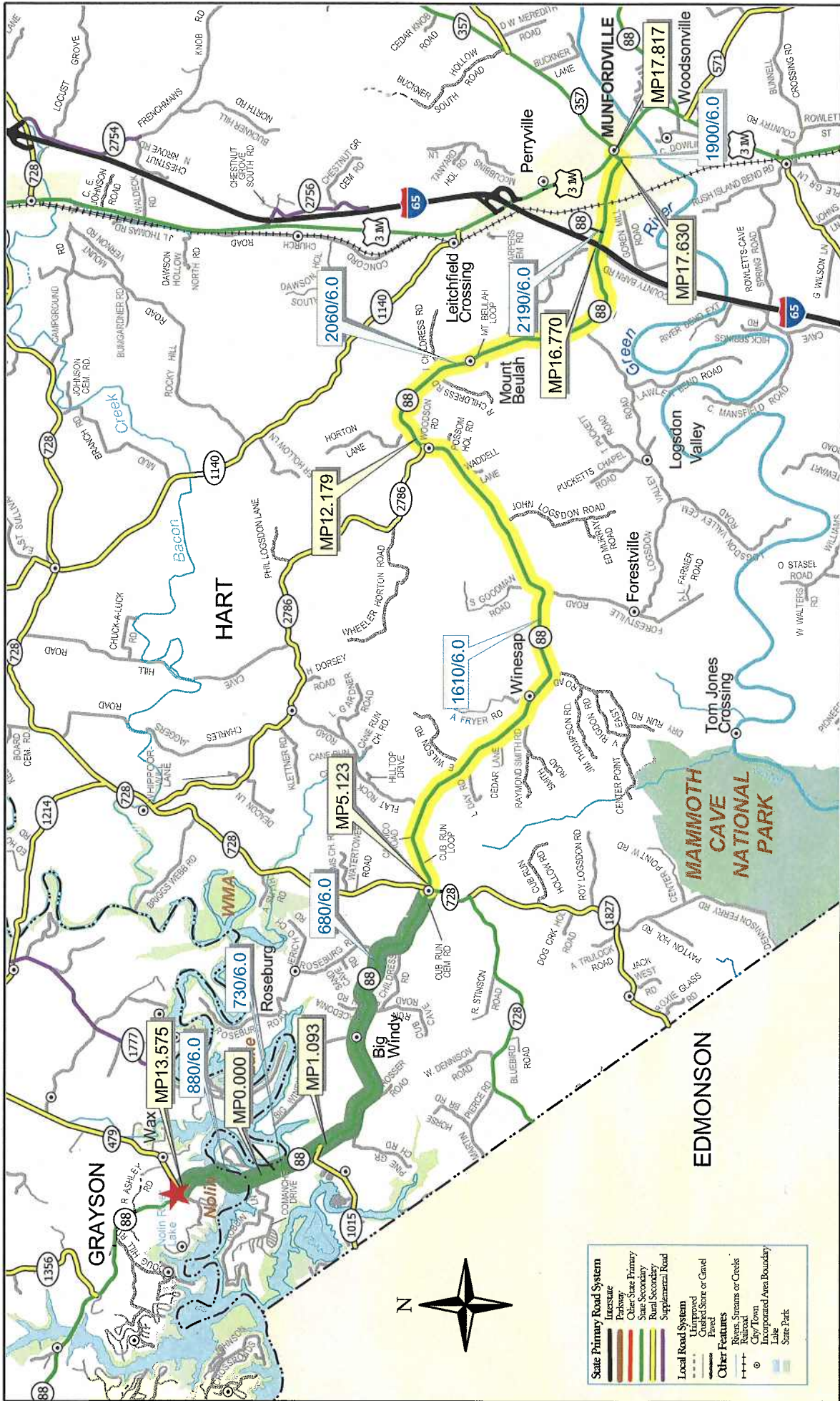
8 Miles

EXHIBIT 1
PROJECT LOCATION
GRAYSON & HART COUNTIES
 KY 88 from KY 479
 to Munfordville
 Grayson-Hart Counties
 Item 04-8101.00

LEGEND

- STUDY CORRIDOR
- PROJECT LIMITS

State Primary Road System	
	Interstate
	Other State Primary
	State Secondary
	Rural Secondary
	Supplemental Road
Local Road System	
	Unimproved
	Partial Stone or Gravel
	Gravel
Other Features	
	River, Stream or Creek
	Railroad
	City/Town
	Incorporated Area Boundary
	Lake
	State Park



**EXHIBIT 2
YEAR 2002
TRAFFIC AND LEVEL
OF SERVICE**

KY 88 from KY 479
to Munfordville
Grayson-Hart Counties
Item 04-8101.00



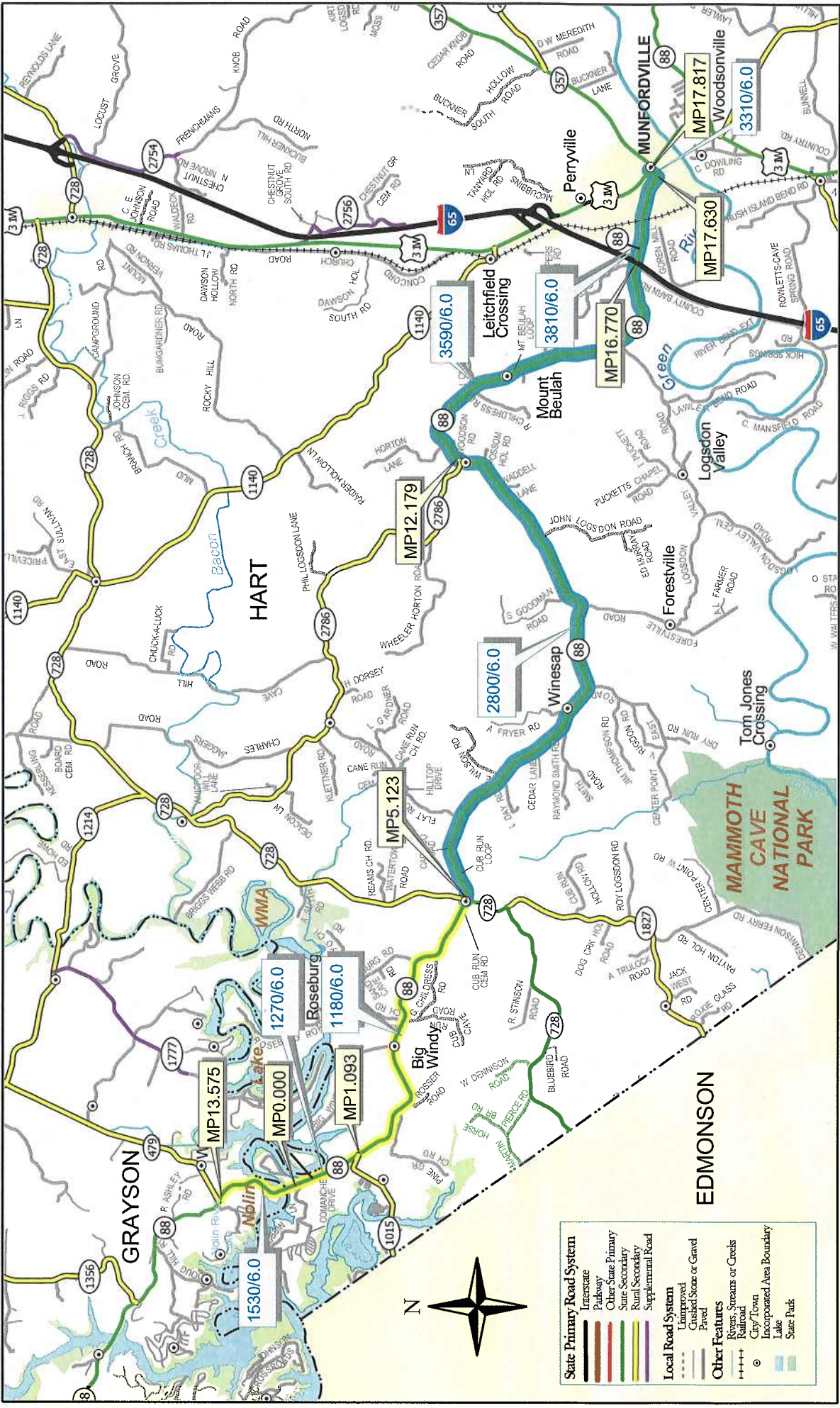
LEGEND

2002 LOS

- A
- B
- C

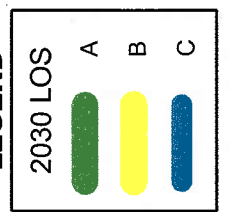
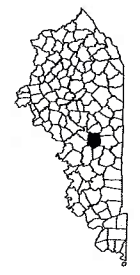
HIGH ACCIDENT LOCATION

- State Primary Road System**
- Interstate
 - Parbony
 - Other State Primary
 - State Secondary
 - Rural Secondary
 - Supplemental Road
- Local Road System**
- Unimproved
 - Unimproved or Gravel
 - Paved
- Other Features**
- Rivers, Streams or Creeks
 - Railroad
 - City/Town
 - Incorporated Area Boundary
 - Lake
 - State Park



**EXHIBIT 3
YEAR 2030
TRAFFIC & LEVEL
OF SERVICE**

KY 88 from KY 479
to Munfordville
Grayson-Hart Counties
Item 04-8101.00

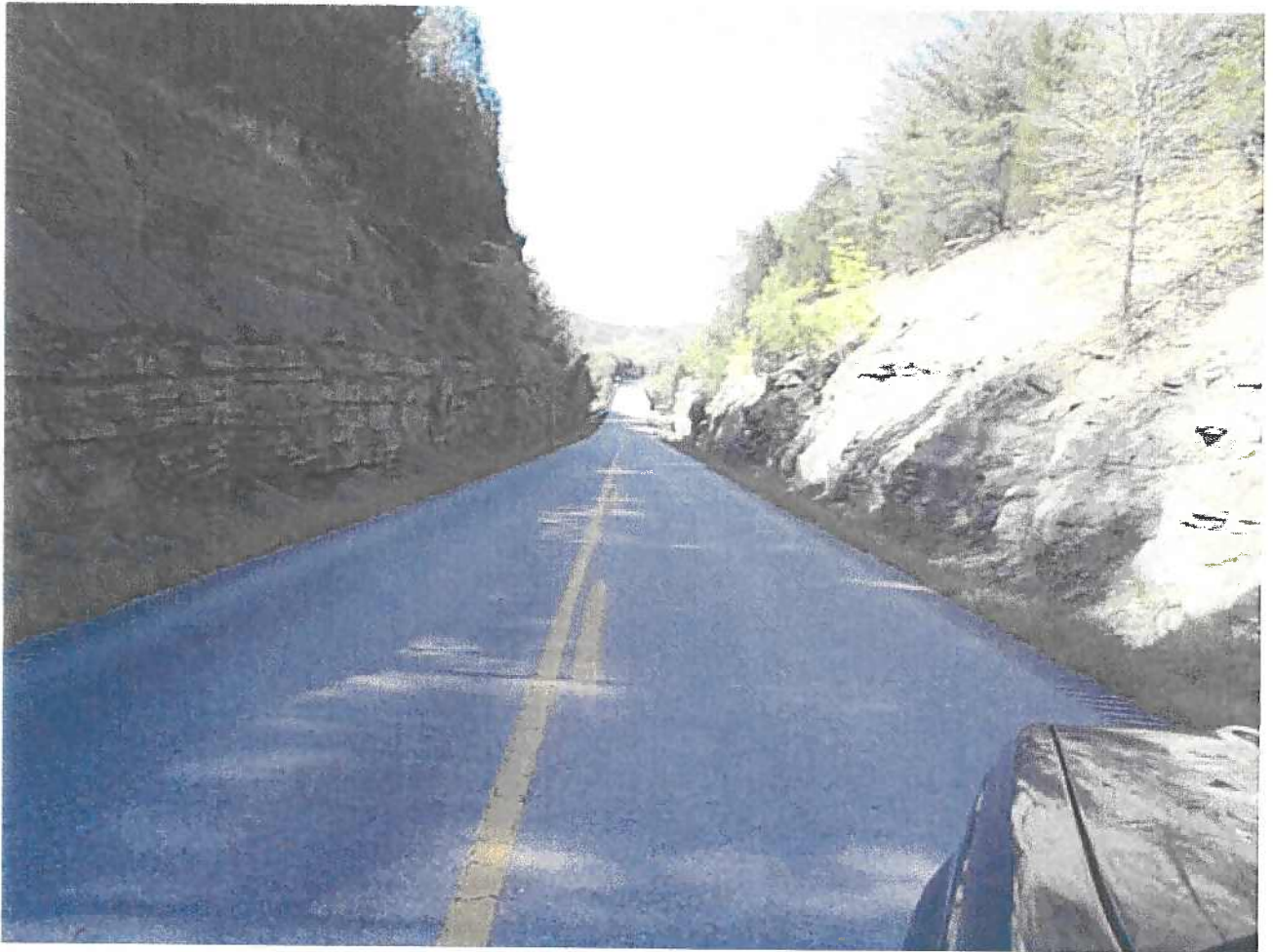


APPENDIX B
PHOTOGRAPHS OF PROJECT AREA

Typical Ridgetop Section



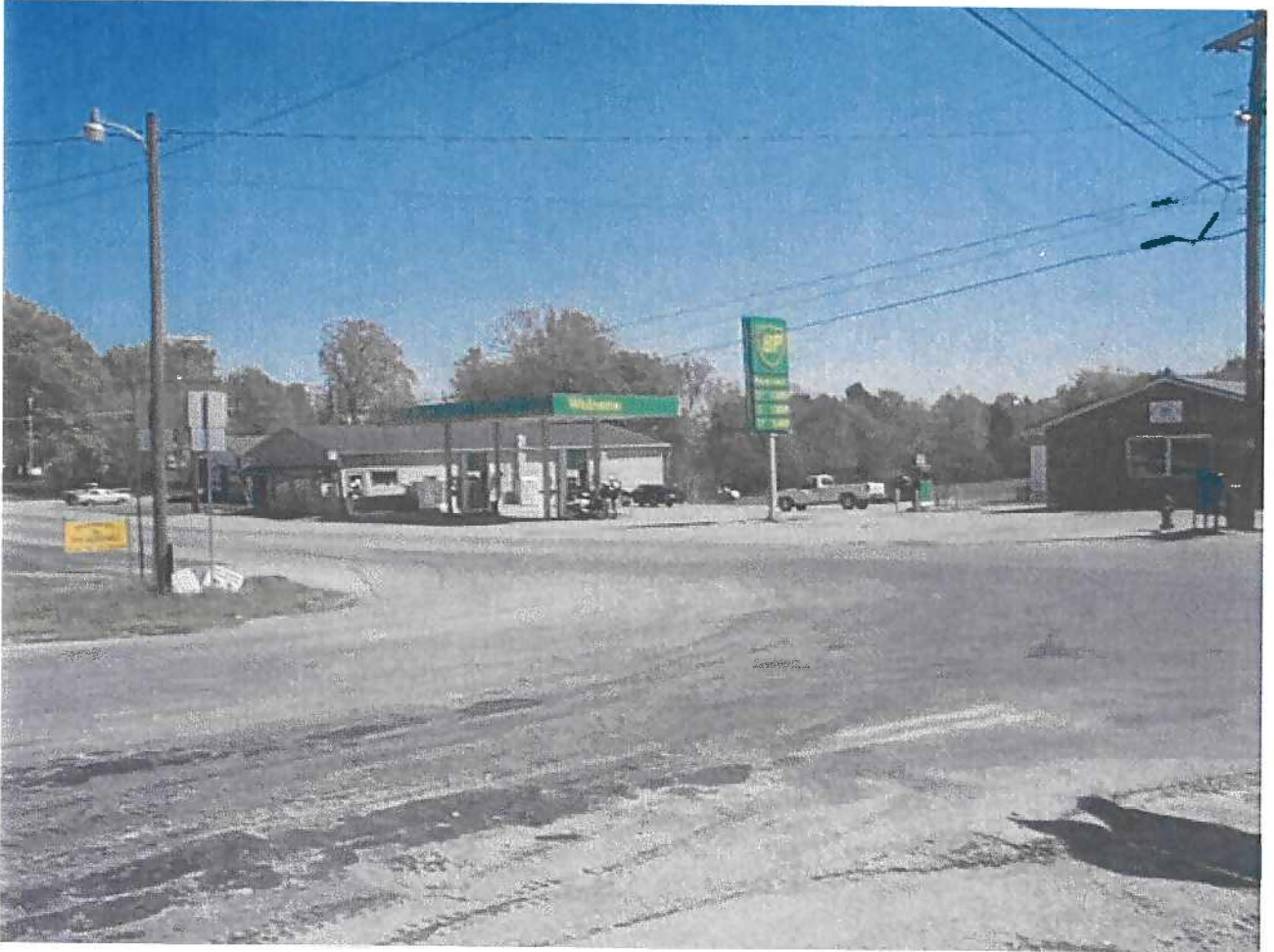
Typical Cut Through Hilltop



Adjacent Auto Salvage Operation



Typical Intersection with Adjacent Gas Station/Food Mart-Deli



Cub Run Stop-and-Go Market



APPENDIX C

**PROJECT TEAM
MEETING MINUTES**

Meeting Minutes
Hart and Grayson Counties Item No. 04-8101.00
KY 88 from KY 479 to Munfordville
10:00a.m. E.S.T. February 5, 2003

A project team meeting for the KY 88 (Hart and Grayson Counties) programming study was held in the KYTC District 4 conference room on February 5, 2003. Those attending the meeting were as follows:

Tom Jobe Jr.	District 4 – Chief District Engineer
Patty Dunaway	District 4 – Planning Br. Mgr.
Kevin Young	District 4 – Planning
Kevin Cartwright	District 4 – Design
Jeff Schaefer	District 4 – Environmental
Dean M. Loy	District 4 – Right of Way
Paul Sanders	District 4 – Construction
E.L. Lewis	District 4 – Traffic
Doug Smith	District 4 – Construction
John B. Matheney	BRADD
Michael Briggs	BRADD
Bruce Siria	KYTC – Planning
Joe Tucker	KYTC – Planning
Eric Scott	KYTC – Planning
Danny Jasper	KYTC – Planning

The meeting began with Patty Dunaway stating that the purpose of the team is to assist with a programming study of KY 88 and asked everyone to introduce themselves.

Danny Jasper then explained that the objective of the study is to determine the needs, estimated cost, and priorities for future programming. No future phases are approved at this time. Reference was made to the project information that included an agenda for the meeting, maps, exhibits, and a short report on the project. This information had previously been e-mailed to the team members. The agenda and report listed items to be discussed by the team. The maps showed location, topographical view, aerial view, and traffic with crashes and level of service information. The exhibits along with the report gave the existing characteristics of the KY 88 corridor, which include that the major problems are alignment and cross-section. There do not appear to be problems with level of service. The only location with a Critical Rate Factor greater than 1.0 was at MP 13.575 to MP 13.675, however the sample size was very small in that there were three crashes at this location in four years.

The team discussed the project as outlined on the agenda with observations and conclusions as follows:

2. Project Goals and Objectives

- a. The consensus of the team was that the general project area is from Munfordville to KY 479 in Grayson County. The East End of the project will be along US 31W from the Green River to the Jct. of KY 1140 and then along KY 1140 for approximately 2 miles. The north boundary will extend west from KY 1140 to KY 728 approximately 2000 feet north of Cub Run. The south boundary will extend west from the US 31W bridge over the Green River for approximately 6 miles and then northwest to KY 1827 approximately 2000 feet south of Cub Run. Between Cub Run and KY 479 the study area will be approximately 2000 feet on each side of the existing alignment.
- b. Danny Jasper informed the team no previous study reports were found and, that while the roadway design plans for the route are available, the plans for the western 1.346 miles of the project are not legible. These 1.346 miles were built by the Corps of Engineers when the Nolin River Lake was impounded. District 4 Planning and Design agreed to try to find legible plans in their records.
- c. Problems with the existing roadway and network include:
 - The geometrics of the roadway are much less than current KYTC standards with respect to horizontal and vertical alignment as well as lane and shoulder width.
 - The route has two 90-degree turns in Munfordville and the narrow cross section causes congestion in the small residential communities along the corridor.
 - The corridor has a unique traffic problem of horse and buggy travel by the Amish and/or Mennonite communities. The narrow cross section and short sight distances along the roadway amplify this problem.
 - The roadway geometrics create difficulty for seasonal recreational vehicles traveling to Nolin River Lake. This traffic may increase if a Lodge is built at the Nolin State Park, however several of the team members believe this type of traffic will seek other routes unless KY 88 is improved.
 - Team members from District 4 Planning and BRADD stated that the community (Hart County Transportation Committee) believes an interchange between KY 88 and I-65 is needed.
- d. Benefits of the project will include:
 - Improved safety due to upgrading the geometrics to current KYTC standards. This will provide more sight distance for passing and stopping as well as a wider cross section.
 - Better access from I-65 to Nolin River Lake.
 - Better access to areas of potential economic growth if the relocation alternative between Mt. Beulah and 31W north of the existing I-65 interchange is chosen.
- e. Additional information which might be helpful include:
 - Accurate count of horse and buggy traffic

- Accurate count of recreational traffic
 - Accurate count of access points along the roadway
- f. The KYTC Division of Planning will send a letter to the BRADD requesting assistance in obtaining information pertaining to Environmental Justice. Also the District 4 Right of Way personnel was asked to assist with a list of real estate questions provided by the KYTC Division of Environmental Analysis.
 - g. The team agreed with the western terminus being located at KY 479 however the eastern terminus was changed from the railroad at MP 17.075 to the jct. of US 31W at MP 17.817.
 - h. The primary goal is to address safety and traffic flow problems created by the unique traffic composition; i.e. cars, trucks, recreational vehicles, and horse drawn buggies. The short sight distances and the narrow cross section of the roadway increase these problems.
3. The team decided that the priority segments should begin at Munfordville and extend to the west. There are two options for the first segment The first option will begin at US 31W in Munfordville and follow the existing alignment, except for curve improvements, to near KY 2786. The second option for the first segment will begin at US 31W between the existing I-65 – US 31W interchange and the KY 1140 – US 31W intersection and will follow a new alignment to the existing alignment near Mt. Beulah. It would then follow the existing alignment, except for curve improvement, to near KY 2786. The second priority will begin near KY 2786 and extend westward following the existing alignment, except for curve improvement, to the West Side of Cub Run. This section is expected to follow the existing alignment through Kessinger and Cub Run. The third segment will be from the West Side of Cub Run to the intersection of KY 88 and KY 479 in Grayson County. This section will follow the existing alignment, except for curve improvement, and will use the existing bridge over Nolin River Lake. An alternative of spot improvements will also be considered for each of the three segments.
 4. The Environmental Footprint Area will be same as the general project area agreed on by the team. QK4 has been retained to do the study for this project.
 5. Probable design criteria with comments were included with the report sent to the team. After further discussion, the team agreed to recommend design criteria as follows:
 - a. The functional classification of KY 88 in Grayson and Hart Counties is currently rural major collector. The project team does not expect this to change as a result of improvements to the roadway
 - b. The design year for this study will be 2030. The traffic in 2030 is estimated to be 3810 ADT and 440 DHV.

- c. The expected design speed will be 55 mph to match the posted speed limit. Since the posted speed limit along the roadway in the communities of Cub Run, Kessinger, and Munfordville is 35 mph, the design speed for these sections can be less than 55 mph, but not less than 35 mph, if necessary.
 - d. The typical cross-section for rural collector roads with an ADT of 2000 or greater is 12-foot lanes with 8-foot shoulders. The team agreed that due to the unique character of the traffic on KY 88; a cross section of 12-foot lanes and 12-foot shoulders (with 10 foot paved) would be recommended because of the horse and buggy traffic as well as the recreational vehicles traveling to the lake. Curb and gutter with sidewalks should be considered for the portions of the roadway that pass through Cub Run, Kessinger, and Munfordville due to the residential nature of these areas.
 - e. The team did not identify an applicable ITS solution for this project.
 - f. The team agreed that any needs for bicycle/pedestrian traffic would be provided for by the cross sections of 10 foot paved shoulders and/or the sidewalks in the residential areas.
6. a. Danny Jasper informed the team that the KYTC Division of Planning would send a request to resource agencies for comments. The request will be by letter with:
 - A draft statement of Study Purpose and Project Goals.
 - Project location map.
 - Maps showing one high crash location along with 2002 and projected 2030 average daily traffic.
 - Environmental Footprint.
 - c. The team agreed that a meeting with the Hart County Transportation Committee would be considered. Patty Dunaway and Danny Jasper will “follow up” on this.
7. John Matheney of BRADD suggested an “Information Meeting” with the public to ask for input. Patty Dunaway, Bruce Siria, and Danny Jasper explained that since no further phases beyond this programming study are approved at time for this corridor, the KYTC Division of Planning does not feel that involvement of the general public is appropriate at this stage. Danny Jasper agreed to review this with other Division of Planning Staff.
8. a. The team does not know of any previously developed information or reports.
 - b. Patty Dunaway presented a list of items/information which Gary Valentine, D-4 Pre-construction Branch Manager requested to be included in the report. He stated that their items would be very beneficial to start Phase 1 Design. The items are:

- Purpose and Need
 - Logical Termini
 - Traffic Information including Accident Analysis
 - Existing Geometrics of Roadway
 - Functional Classification
 - Probable Design Speed
 - Probable Typical Section
 - Are Bicycle/Pedestrian Facilities Warranted
 - Contact List (Local Officials, Agencies, Interest Groups, etc.)
 - Potential Project Area (Not Corridors)
 - Environmental Footprint of Potential Project Area.
 - Cost Estimates
 - Priority Sections for future following Phase 1 Design
- c. The only other level of detail beyond what has already been discussed was that an estimate of cost per mile based on a comparable project in the area be provided to Danny Jasper by the D-4 staff.
- d. The question of spot improvement versus reconstruction was discussed. The consensus of opinion was that this solution would be an acceptable alternative for the western section, i.e. between Cub Run and KY 479, which is the section of third priority. The team agreed that this should also be considered as an alternative for the other segments.
9. The meeting ended at noon, and after lunch a field review of the project was made by Patty Dunaway, Jeff Schaefer, Bruce Siria, Joe Tucker, Erik Scott, and Danny Jasper. John Matheney and Michael Briggs also drove the route prior to returning to their office.

APPENDIX D

ADVANCE RELOCATION INFORMATION



Commonwealth of Kentucky
Transportation Cabinet

Department of Highways, District Four
634 E. Dixie, P.O. Box 309
Elizabethtown, Kentucky 42702-0309
270/766-5066 (Fax) 270/766-5069
Tom Jobe, Jr.
Chief District Engineer

James C. Codell, III
Secretary of Transportation

Clifford C. Linkes, P.E.
Deputy Secretary

Paul E. Patton
Governor

MEMORANDUM

TO: Patty Dunaway
Planning Branch Manager
District # 4

FROM: Dean M. Loy *DM Loy*
Right of Way Supervisor
District # 4

DATE: 17 February 2003

RE: Hart/Grayson, Item # 04-8101.00
KY 88 from KY 479 to Munfordsville
Real Estate Questions

Attached are the questions related to the subject project? The information gathered is based upon actual field studies and information gathered from the Hart County PVA, US Census, and other sources. Some data is estimated because actual data is not currently available. This data should be used for estimation purposes only. No guarantees are expressed or implied as to accuracy and reasonable assumptions were made when data was not available.



Hart/Grayson, Item # 04-8101.00
KY 88 from KY 479 to Munfordsville
Real Estate Questions
Page 2

1. How many homes and mobile homes sell per year in the county?
81 Houses, 37 Mobile Homes
2. How many home and mobile homes sell per year in the project area?
Unknown (No specific data available)
3. What are the characteristics of a typical per-owned home and mobile home including number of bedrooms, age, and price/value range?
Typical: 3 bedrooms, 1 to 2 baths

Age: Yr. Built 1999 to 2000-264 +/-, Yr. Built 1995 to 1998-854 +/-, Yr. Built 1990 to 1994-712 +/-, Yr. Built 1980 to 1989-1065 +/-, Yr. Built 1970 to 1979-1,378 +/-, Yr. Built 1960 to 1969-1,121 +/-, Yr. Built 1940 to 1959-1,440 +/-, Yr. Built 1939 or earlier-1,211 +/-

Value: Less than \$50,000-929 +/-, \$50,000 to \$99,999-1,341 +/-, \$100,000 to \$149,999-237 +/-, \$150,000 to \$199,999-74, \$200,000 to \$299,999-32, \$300,000 to \$499,999-12.

4. What are the characteristics of a typical newly constructed home?
Vinyled sided or Brick Veneer with 3 bedrooms, 1 to 2 baths
5. How many new homes are constructed in a year?
1999 to 2000-264 +/-
6. How many homes are listed on the market at any given time? How long to they remain on the market? Has the market remained stable, increased or decreased over the past five year?
Listed: approximately 2.5% out of 8,045 housing units.

Market Time: 6 to 9 months +/-

Market Analysis: appears to be in equilibrium

7. How many rental units are available currently? What are the typical rental rate ranges? How many rental units are conventional homes, apartments, or mobile homes?
Rental Units Available: Typical vacancy rate 12.3% of available housing (1,359).

Hart/Grayson, Item # 04-8101.00
KY 88 from KY 479 to Munfordsville
Real Estate Questions
Page 3

Rental Ranges: Less \$200-286 +/-, \$200 to \$299-275 +/-, \$300 to \$499-468 +/-, \$500 to \$749-139 +/-, \$750 to \$999-5 +/-, \$1,000 to \$1,499-8, \$1,500 or more-4.

Type of rental units: varies with the majority being single family units.

8. Do suitable replacement locations for businesses exist within the county, city and project area?
Yes, Yes, Yes

9. Are businesses dependent upon their existing location? Is it necessary for the business to remain in the nearby or immediate area?
No, Yes

10. How many farms are located in the project area and how many are estimated to be affected by the project?
Farms: 108, all

11. Is the project likely to impact agricultural activities in the corridor? If yes, to what extent?
Yes, if current alignment is used minimal damages will occur to farmland being only strip takes with minor severance.

PROJECT DATA:

HOUSES	Number
FRAME HOUSES	77
VINYL SIDING HOUSES	57
ALUMINUM SIDING HOUSES	8
BRICK HOUSES	46
STONE HOUSES	6
LOG HOUSES	3
TOTAL HOUSES	197
SPECIAL PURPOSE	
CHURCHES	9
CEMETARYS	8
POST OFFICE	1
COMMUNICATION TOWERS	2
TOTAL SPECIAL PURPOSE	20
FARMS	108
MOBILE HOMES	47
BUSINESSES	21

APPENDIX E
RESOURCE AGENCY LETTERS



Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

James C. Codell, III
Secretary of Transportation

Paul E. Patton
Governor

Clifford C. Linkes, P.E.
Deputy Secretary

October 14, 2003

(See Attached List)

«Mailing_Title» «First_Name» «Last_Name»«Suffix»
«Title»
«Organization»
«Address1»
«Address2»
«City», «State» «Zip»

Dear «Letter_Title» «Last_Name»:

SUBJECT: Planning Study
Grayson and Hart Counties
KY 88 from KY 479 to Munfordville
Item No. 4-8101.00

We are requesting your agency's input and comments on a planning study to determine the need for, and potential impacts of, a proposed highway project. The Kentucky Transportation Cabinet has assembled a study team to evaluate possible improvements to KY 88 from KY 479 in Grayson County to Munfordville in Hart County.

We ask that you identify specific issues or concerns of your agency that could affect the development of the project. This planning study will include a scoping process for the early identification of potential alternatives, environmental issues, and impacts related to the proposed project. We believe that early identification of issues or concerns can help us develop highway project alternatives to avoid or minimize negative impacts.

We respectfully ask that you provide us with your comments by November 21, 2003, to ensure timely progress in this planning effort.

We have enclosed the following project information for your review and comment:

- Project Location Map
- Year 2002 Traffic and Level of Service



KENTUCKY TRANSPORTATION CABINET
"PROVIDE A SAFE, EFFICIENT, ENVIRONMENTALLY SOUND, AND FISCALLY RESPONSIBLE TRANSPORTATION SYSTEM
WHICH PROMOTES ECONOMIC GROWTH AND ENHANCES THE QUALITY OF LIFE IN KENTUCKY."
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- Year 2030 Traffic and Level of Service
- Topographic Environmental Footprint
- Digital Orthograph Environmental Footprint

We appreciate any input you can provide concerning this project. Please direct any comments, questions, or requests for additional information to Bruce Siria of the Division of Planning at 502/564-7183 or at bruce.siria@mail.state.ky.us. Please address all written correspondence to Annette Coffey, P.E., Director, Division of Planning, Kentucky Transportation Cabinet, 125 Holmes Street, Frankfort, KY 40622.

Sincerely,



Annette Coffey, P.E.
Director
Division of Planning

AC:BSS:RC

Enclosures

c: Tom Jobe
Patty Dunaway
Jeff Schaefer
George Best
Tony Vinegar

Ms. LaVerne Reid
District Manager
Ports District Office, Federal Aviation Administration
3385 Airways Blvd., Suite 302
Memphis TN 38116

American Association of Truckers
P.O. Box 487
Benton KY 42025

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Adjutant General
Department of Military Affairs
Boone Nat'l Guard Ctr., 100 Minuteman Pky.
Frankfort KY 40601

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Acting Commissioner
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10th, floor, Capital Plaza Tower, 500 Mero St.
Frankfort KY 40601

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President
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Kentuckians for The Commonwealth
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Kentucky Geological Survey, University of Kentucky
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Albuquerque NM 87185-5400

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U.S. Dept. of Agriculture, Natural Resources Conservation Service
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Field Supervisor
U.S. Dept. of the Interior, Fish and Wildlife Service
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Bridge Administrator
United States Coast Guard, Bridge Branch
1222 Spruce Street
St. Louis MO 63103

The Honorable Jim Bunning
United States Senator
United States Senate
316 Hart Senate Office Building
Washington DC 20510

The Honorable Mitch McConnell
United States Senator
United States Senate
361-A Russell Senate Office Building
Washington DC 20510

The Honorable Virgil Moore
Kentucky State Senator
Kentucky State Senate
241 Virgil Moore Road
Leitchfield KY 42754

The Honorable Dottie J. Simms
Kentucky State Representative
Kentucky House of Representatives
9 Violet Avenue
Horse Cave KY 42749

The Honorable C. B. Embry, Jr.
Kentucky State Representative
Kentucky House of Representatives
P.O. Box 1215
Morgantown KY 42261-1215

The Honorable Terry Shelton
Hart County Judge-Executive
Hart County Courthouse
P.O. Box 490
Munfordville KY 42765-0490

The Honorable Gary L. Logsdon
Grayson County Judge-Executive
Grayson County Courthouse
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Leitchfield KY 42754-1127

The Honorable John Johnson
City of Munfordville
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Munfordville KY 42765-2635

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Executive Director
Kentucky Association of Riverports, Henderson County Riverport
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Henderson KY 42420

Colonel Robert E. Stockbower
District Engineer
U. S. Army Corps of Engineers, Louisville District
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The Honorable Ron Lewis
United States Representative - District 2
U. S. House of Representatives
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Washington DC 20515

Mr. John Milchick , Jr.
Kentucky State Coordinator
3. Department of Housing & Urban Development, Ky. State
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601 West Broadway
Louisville KY 40202



DIV OF PLANNING

2003 OCT 17 A 9: 51

Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

James C. Codell, III
Secretary of Transportation

Paul E. Patton
Governor

Clifford C. Linkes, P.E.
Deputy Secretary

MEMORANDUM

TO: Annette Coffey, P.E.
Director
Division of Planning

FROM: Phillip Mann *PM*
Acting Branch Manager
Permits Branch

DATE: October 16, 2003

RE: Grayson and Hart Counties
KY 88, from KY 479 to Mundfordville
Item No. 4-8101.00

The Permits Branch has reviewed the data provided for subject study site and wish to offer the following.

1. We urge the Cabinet to classify this project and all new projects as partially or fully controlled access facilities.
2. Assuming the project is partial control access, we encourage all possible access points be set on the plans in accordance with 603 KAR 5:120, even if they are not to be constructed at that time.
3. When buying R/W for this and all reconstruction routes, assuming the access control is partial control, new deed for all adjoining property owners need to be executed to identify the access control even if no new R/W is acquired,
4. In addition, we would like to make every effort possible to have the design speed to be the same as anticipated posted speed when the project is complete.
5. We would like to see access control fence installed with the project.
6. If the proposed roadway is to be on the N. H. S., early notification of the final line and grade is needed. This enables us to monitor outdoor advertising devices prior to road construction being completed.
7. Please notify this office if the proposed roadway is to be placed on the National Highway System. This information is needed to assist this office in regulating the installation of any outdoor advertising device.

Thank you for the opportunity to verbalize our concerns.

DPM/dpm



KENTUCKY TRANSPORTATION CABINET

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WHICH PROMOTES ECONOMIC GROWTH AND ENHANCES THE QUALITY OF LIFE IN KENTUCKY."
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FISH & WILDLIFE COMMISSION
Mike Boatwright, Paducah
Tom Baker, Bowling Green
Allen K. Gailor, Louisville
Ron Southall, Elizabethtown
Dr. James R. Rich, Taylor Mill, Chairman
Ben Frank Brown, Richmond
Doug Hensley, Hazard
Dr. Robert C. Webb, Grayson
David H. Godby, Somerset



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

October 22, 2003

Annette Coffey
Project Engineer
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes St.
Frankfort, KY 40622

RE: Threatened/Endangered Species and Critical Habitat Review: KY 88 Improvement,
Item # 4-8101.00, Grayson and Hart Counties, Kentucky

Dear Ms. Coffey:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for the above-referenced information. The Kentucky Fish and Wildlife Information System indicates that the federally endangered Indiana bat and Gray bat are known to occur in both Hart and Grayson Counties. Numerous other federally threatened and endangered species are known to occur within Hart and Grayson Counties, however, impact to these species is not anticipated from the proposed project (see attachments). Please be aware that our database system is a dynamic one that only represents our current knowledge of the various species distributions.

Based on this information, KDFWR makes the following recommendations.

In counties in which gray bats (*Myotis grisescens*) are known to occur, any cave entrances that exist within the project area (i.e. the right-of-way and regeneration sites) should be surveyed for potential use by gray bats. Because gray bats are cave residents year-round and maternity colonies are generally found in close proximity to rivers, streams and lakes, any caves within the project area could offer potentially valuable habitat to resident gray bats. If a bat survey is necessary, please contact this office at (502) 564-7109 or the US Fish and Wildlife Service office at (502) 695-0468 for information on how to proceed.

In counties in which Indiana bats (*Myotis sodalis*) are known to occur, any wooded areas that may be impacted by the proposed project should be examined for potential Indiana bat habitat. Indiana bats form maternity colonies and roost under the bark of trees in both riparian and upland areas. Therefore, disturbance of trees with exfoliating bark, dead limbs or cavities should be avoided between March 31 and October 15.



Arnold L. Mitchell Bldg. #1 Game Farm Road Frankfort, Ky 40601
An Equal Opportunity Employer M/F/D

The KDFWR recommends that you contact the appropriate US Corps of Engineers office (Louisville COE (502) 582-5452, Nashville COE (615) 736-5181) and the Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water (502) 564-3410 prior to any excavation within the waterways of Kentucky. Additionally, KDFWR recommends the following for the portions of the project that cross intermittent or perennial streams:

1. Development/excavation during a low flow period to minimize disturbance;
2. Proper placement of erosion control structures below highly disturbed areas to minimize entry of silt to the stream;
3. Replanting of disturbed areas after construction, including stream banks and right-of- ways, with native vegetation for soil stabilization and enhancement of fish and wildlife populations;
4. Return all disturbed instream habitat to its original condition upon completion of construction in the area;
5. Preservation of any tree canopy overhanging the stream;
6. Return all right-of-ways to original elevation.

KDFWR recommends that you look at the appropriate US Department of the Interior National Wetlands Inventory Map to determine where the proposed project may impact wetlands along KY 88. The appropriate US Army Corps of Engineers office and the Kentucky Division of Water should be contacted before any construction takes place in jurisdictional wetlands.

I hope this information proves useful to you. If you have any questions or require additional comment, please call me at the above listed number, extension 366.

Sincerely,



Brad Pendley
Wildlife Biologist

cc: Environmental Section File

DIV OF PLANNING
2003 OCT 21 A 10:49

Species Information

Viewable/
Downloadable
Maps

Download GIS
Data

KFWIS FTP
Site

Links

Species Information

Federal Threatened and Endangered Species observations for selected counties

Linked life history provided courtesy of [NatureServe Explorer](#).
[US Status Definitions](#) [Kentucky Status Definitions](#)

List Federal Threatened and Endangered Species observations in 2 selected counties.

**Selected counties are: GRAYSON, HART.
18 records are listed.**

Page 1 of 1

Scientific Name	Common Name	Class	County	US Status	KY Status	Reference
<i>EPIOBLASMA OBLIQUATA</i>	CATSPAW	BIVALVIA	HART	(LE,XN)	N	Reference
<i>EPIOBLASMA OBLIQUATA OBLIQUATA</i>	CATSPAW	BIVALVIA	HART	LE	E	Reference
<i>PLEUROBEMA CLAVA</i>	CLUBSHELL	BIVALVIA	GRAYSON	LE	E	Reference
<i>PLEUROBEMA CLAVA</i>	CLUBSHELL	BIVALVIA	HART	LE	E	Reference
<i>HEMISTENA LATA</i>	CRACKING PEARLYMUSSEL	BIVALVIA	HART	(LE,XN)	X	Reference
<i>CYPROGENIA STEGARIA</i>	FANSHELL	BIVALVIA	HART	LE	E	Reference
<i>MYOTIS GRISESCENS</i>	GRAY MYOTIS	MAMMALIA	GRAYSON	LE	E	Reference
<i>MYOTIS GRISESCENS</i>	GRAY MYOTIS	MAMMALIA	HART	LE	E	Reference
<i>MYOTIS SODALIS</i>	INDIANA BAT	MAMMALIA	GRAYSON	LE	E	Reference
<i>MYOTIS SODALIS</i>	INDIANA BAT	MAMMALIA	HART	LE	E	Reference
<i>EPIOBLASMA TORULOSA RANGIANA</i>	NORTHERN RIFFLESHELL	BIVALVIA	GRAYSON	LE	E	Reference
<i>EPIOBLASMA TORULOSA RANGIANA</i>	NORTHERN RIFFLESHELL	BIVALVIA	HART	LE	E	Reference
<i>PLETHOBASUS COOPERIANUS</i>	ORANGEFOOT PIMPLEBACK	BIVALVIA	HART	LE	E	Reference
<i>OBOVARIA RETUSA</i>	RING PINK	BIVALVIA	HART	LE	E	Reference
<i>PLEUROBEMA PLENUM</i>	ROUGH PIGTOE	BIVALVIA	HART	LE	E	Reference
<i>EPTODFA</i>						

<u>LEPTODON</u>	SCALESHELL	BIVALVIA	HART	LE	X	Reference
<u>EPIOBLASMA TORULOSA TORULOSA</u>	TUBERCLED BLOSSOM	BIVALVIA	GRAYSON	(LE,XN)	X	Reference
<u>EPIOBLASMA TORULOSA TORULOSA</u>	TUBERCLED BLOSSOM	BIVALVIA	HART	(LE,XN)	X	Reference



Last Updated - 03/27/03

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Species Information

Species Information

State Threatened and Endangered Species observations for selected counties

Viewable/
Downloadable
Maps

Linked life history provided courtesy of NatureServe Explorer.
[US Status Definitions](#) [Kentucky Status Definitions](#)

Download GIS
Data

List State Threatened and Endangered Species observations in 2 selected counties.

KFWIS FTP
Site

Selected counties are: **GRAYSON, HART.**
55 records are listed.

Links

Page 1 of 2

Scientific Name	Common Name	Class	County	US Status	KY Status
<i>BOTAURUS LENTIGINOSUS</i>	AMERICAN BITTERN	AVES	HART	N	H
<i>LAMPETRA APPENDIX</i>	AMERICAN BROOK LAMPREY	CEPHALASPIDOMORPHI	HART	N	T
<i>FULICA AMERICANA</i>	AMERICAN COOT	AVES	GRAYSON	N	H
<i>ERIMYSTAX INSIGNIS</i>	BLOTCHED CHUB	OSTEICHTHYES	HART	N	E
<i>BARBICAMBARUS CORNUTUS</i>	BOTTLEBRUSH CRAYFISH	MALACOSTRACA	GRAYSON	N	S
<i>BARBICAMBARUS CORNUTUS</i>	BOTTLEBRUSH CRAYFISH	MALACOSTRACA	HART	N	S
<i>EPIOBLASMA OBLIQUATA OBLIQUATA</i>	CATSPAW	BIVALVIA	HART	LE	E
<i>PLEUROBEMA CLAVA</i>	CLUBSHELL	BIVALVIA	GRAYSON	LE	E
<i>PLEUROBEMA CLAVA</i>	CLUBSHELL	BIVALVIA	HART	LE	E
<i>HEMISTENA LATA</i>	CRACKING PEARLYMUSSEL	BIVALVIA	HART	(LE,XN)	X
<i>JUNCO HYEMALIS</i>	DARK-EYED JUNCO	AVES	HART	N	S
<i>SPILOGALE PUTORIUS</i>	EASTERN SPOTTED SKUNK	MAMMALIA	GRAYSON	N	S
<i>ALASMIDONTA MARGINATA</i>	ELKTOE	BIVALVIA	HART	N	T
<i>NYCTICEIUS HUMERALIS</i>	EVENING BAT	MAMMALIA	HART	N	T
<i>CYPROGENIA STEGARIA</i>	FANSHELL	BIVALVIA	HART	LE	E

<i>MYOTIS GRISESCENS</i>	GRAY MYOTIS	MAMMALIA	GRAYSON	LE	E
<i>MYOTIS GRISESCENS</i>	GRAY MYOTIS	MAMMALIA	HART	LE	E
<i>ARDEA HERODIAS</i>	GREAT BLUE HERON	AVES	GRAYSON	N	S
<i>ARDEA HERODIAS</i>	GREAT BLUE HERON	AVES	HART	N	S
<i>AMMODRAMUS HENSLOWII</i>	HENSLOW'S SPARROW	AVES	GRAYSON	N	S
<i>MYOTIS SODALIS</i>	INDIANA BAT	MAMMALIA	GRAYSON	LE	E
<i>MYOTIS SODALIS</i>	INDIANA BAT	MAMMALIA	HART	LE	E
<i>VILLOSA ORTMANNI</i>	KENTUCKY CREEKSHELL	BIVALVIA	GRAYSON	N	T
<i>VILLOSA ORTMANNI</i>	KENTUCKY CREEKSHELL	BIVALVIA	HART	N	T
<i>ERIMYZON SUCETTA</i>	LAKE CHUBSUCKER	OSTEICHTHYES	GRAYSON	N	T
<i>VILLOSA LIENOSA</i>	LITTLE SPECTACLECASE	BIVALVIA	GRAYSON	N	S
<i>VILLOSA LIENOSA</i>	LITTLE SPECTACLECASE	BIVALVIA	HART	N	S
<i>CIRCUS CYANEUS</i>	NORTHERN HARRIER	AVES	GRAYSON	N	T
<i>CIRCUS CYANEUS</i>	NORTHERN HARRIER	AVES	HART	N	T
<i>EPIOBLASMA TORULOSA RANGIANA</i>	NORTHERN RIFFLESHELL	BIVALVIA	GRAYSON	LE	E
<i>EPIOBLASMA TORULOSA RANGIANA</i>	NORTHERN RIFFLESHELL	BIVALVIA	HART	LE	E
<i>PLETHOBASUS COOPERIANUS</i>	ORANGEFOOT PIMPLEBACK	BIVALVIA	HART	LE	E
<i>PANDION HALIAETUS</i>	OSPREY	AVES	HART	N	T
<i>HYBOPSIS AMNIS</i>	PALLID SHINER	OSTEICHTHYES	HART	N	H
<i>LAMPSILIS OVATA</i>	POCKETBOOK	BIVALVIA	HART	N	E
<i>PLEUROBEMA RUBRUM</i>	PYRAMID PIGTOE	BIVALVIA	HART	N	E
<i>QUADRULA CYLINDRICA CYLINDRICA</i>	RABBITSFOOT	BIVALVIA	HART	N	T
<i>VILLOSA FABALIS</i>	RAYED BEAN	BIVALVIA	GRAYSON	N	E
<i>VILLOSA FABALIS</i>	RAYED BEAN	BIVALVIA	HART	N	E
<i>OBOVARIA RETUSA</i>	RING PINK	BIVALVIA	HART	LE	E
<i>PLEUROBEMA</i>	ROUGH PIGTOE	BIVALVIA	HART	LE	E

<u>PLENUM</u>	<u>ROCKY HORNET</u>	<u>BIVALVIA</u>	<u>HART</u>	<u>LE</u>	<u>T</u>
<u>SIMPSONIAS AMBIGUA</u>	<u>SALAMANDER MUSSEL</u>	<u>BIVALVIA</u>	<u>HART</u>	<u>N</u>	<u>T</u>
<u>LEPTODEA LEPTODON</u>	<u>SCALESHELL</u>	<u>BIVALVIA</u>	<u>HART</u>	<u>LE</u>	<u>X</u>
<u>ACCIPITER STRIATUS</u>	<u>SHARP- SHINNED HAWK</u>	<u>AVES</u>	<u>GRAYSON</u>	<u>N</u>	<u>S</u>
<u>PLETHOBASUS CYPHYUS</u>	<u>SHEEPNOSE</u>	<u>BIVALVIA</u>	<u>HART</u>	<u>N</u>	<u>S</u>
<u>EPIOBLASMA TRIQUETRA</u>	<u>SNUFFBOX</u>	<u>BIVALVIA</u>	<u>GRAYSON</u>	<u>N</u>	<u>S</u>
<u>EPIOBLASMA TRIQUETRA</u>	<u>SNUFFBOX</u>	<u>BIVALVIA</u>	<u>HART</u>	<u>N</u>	<u>S</u>
<u>TYPHLICHTHYS SUBTERRANEUS</u>	<u>SOUTHERN CAVEFISH</u>	<u>OSTEICHTHYES</u>	<u>HART</u>	<u>N</u>	<u>S</u>
<u>CUMBERLANDIA MONODONTA</u>	<u>SPECTACLECASE</u>	<u>BIVALVIA</u>	<u>HART</u>	<u>N</u>	<u>E</u>
<u>ETHEOSTOMA MACULATUM</u>	<u>SPOTTED DARTER</u>	<u>OSTEICHTHYES</u>	<u>HART</u>	<u>N</u>	<u>T</u>

1 2 [Next >>]



Last Updated - 03/27/03

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Species Information

Species Information

State Threatened and Endangered Species observations for selected counties

Viewable/
Downloadable
Maps

Linked life history provided courtesy of [NatureServe Explorer](#).
[US Status Definitions](#) [Kentucky Status Definitions](#)

Download GIS
Data

List State Threatened and Endangered Species observations in 2 selected counties.

KFWIS FTP
Site

**Selected counties are: GRAYSON, HART.
55 records are listed.**

Links

Page 2 of 2

Scientific Name	Common Name	Class	County	US Status	KY Status	Reference
<u><i>PHENACOBIVS URANOPS</i></u>	STARGAZING MINNOW	OSTEICHTHYES	GRAYSON	N	S	Reference
<u><i>PHENACOBIVS URANOPS</i></u>	STARGAZING MINNOW	OSTEICHTHYES	HART	N	S	Reference
<u><i>CYGNUS BUCCINATOR</i></u>	TRUMPETER SWAN	AVES	HART	N	X	Reference
<u><i>EPIOBLASMA TORULOSA TORULOSA</i></u>	TUBERCLED BLOSSOM	BIVALVIA	GRAYSON	(LE,XN)	X	Reference
<u><i>EPIOBLASMA TORULOSA TORULOSA</i></u>	TUBERCLED BLOSSOM	BIVALVIA	HART	(LE,XN)	X	Reference

[<< Prev] 1 2



Last Updated - 03/27/03



UNIVERSITY OF KENTUCKY

DIV OF PLANNING

2003 OCT 27 A 10: 50

Kentucky Geological Survey

Research and Graduate Studies
228 Mining and Mineral Resources Building
Lexington, KY 40506-0107
Phone: (859) 257-5500
Fax: (859) 257-1147
www.uky.edu/kgs

October 23, 2003

Annette Coffey, P.E.
Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

Dear Ms. Coffey:

This letter is to summarize any geologic concerns for the planning study:
Grayson and Hart Counties
Possible improvements to Ky. 88, from Ky. 479 to Munfordville, Ky.
Item No. 4-8101.00

Physiographic Region

This planning study starts in the Dripping Springs Escarpment, which is underlain by limestone, conglomerates, sandstone, siltstone, and shale. Two miles west of Munfordville, the planning study will encounter limestone of the Mississippian Plateau (Pennyroyal or Pennyrile) physiographic region.

Karst Potential

This planning study would be likely to encounter karst features such as sinkholes and caves two miles west of Munfordville, Ky.

Landslide Potential

This planning study would encounter pre- or post-landslide hazards in the shale units. Between Kessinger and Munfordville there are units of slumped sandstone, conglomerate, and shale to the north of Ky. 88.

Unconsolidated Sediments

This planning study would not encounter any unconsolidated sediments.

Resource Conflicts

This planning study might encounter resource conflicts such as prior ownership of property for quarrying.



Materials Suitability

This planning study would be in the proximity of materials such as limestone, slumped sandstone, and gravel that may be suitable for construction stone.

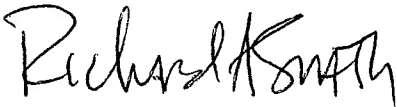
Fault Potential

This planning study would encounter faulted areas.

Earthquake Ground Motions

This planning study area has a probable peak ground acceleration (PGA) due to earthquake ground motion of 0.09g. There would be a low potential for liquefaction or slope failure in the unconsolidated sediments at or near streams caused by bedrock ground motion.

Sincerely,

A handwritten signature in black ink that reads "Richard A. Smath". The signature is written in a cursive, slightly slanted style.

Richard A. Smath
Geologist

cc: Richard Wilson



COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION FOR AIR QUALITY
803 SCHENKEL LN
FRANKFORT KY 40601-1403

October 28, 2003

DIV OF PLANNING
2003 OCT 29 A 10:30

Ms. Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey,

The Division has reviewed the Planning Study for the possible improvements on KY 88 from KY 479 to Munfordville in Grayson and Hart Counties, Item Number 04-8101.00. The following Kentucky Administrative Regulations apply to this proposed project:

Kentucky Division for Air Quality Regulation **401 KAR 63:010** Fugitive Emissions states that no person shall cause, suffer, or allow any material to be handled, processed, transported, or stored without taking reasonable precaution to prevent particulate matter from becoming airborne. Additional requirements include the covering of open bodied trucks, operating outside the work area transporting materials likely to become airborne, and that no one shall allow earth or other material being transported by truck or earth moving equipment to be deposited onto a paved street or roadway. Please note the attached Fugitive Emissions Fact Sheet.

Kentucky Division for Air Quality Regulation **401 KAR 63:005** states that open burning is prohibited. Open Burning is defined as the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the outdoor atmosphere without passing through a stack or chimney. However, open burning may be utilized for the expressed purposes listed on the attached Open Burning Fact Sheet incorporated by reference in 401 KAR 63:005 Section 3, Prohibition of Open Burning.

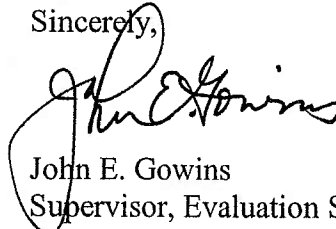
Finally, the projects listed in this document must meet the conformity requirements of the Clean Air Act as amended and the transportation planning provisions of Title 23 and Title 49 of United States Code.



Ms. Annette Coffey Letter
October 28, 2003
Page 2

Every effort should be made to maintain compliance with the preceding regulations and requirements. The Division also suggests an investigation into compliance with applicable regulations in the local governments. If there are any questions relating to this matter, please contact me at (502) 573-3382 extension 347.

Sincerely,

A handwritten signature in black ink, appearing to read "John E. Gowins". The signature is written in a cursive style with a large, looping initial "J".

John E. Gowins
Supervisor, Evaluation Section
Program Planning & Administration Branch

JEG/jmf



Natural Resources Conservation Service
771 Corporate Drive; Suite 210
Lexington, KY 40503-5479

Ms. Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

October 30, 2003

Dear Ms. Coffey:

In regards to the Planning Study for Grayson and Hart Counties (KY 88 from KY 479 to Munfordville, Item No. 4-8101.00), the USDA-Natural Resources Conservation Service (NRCS) is concerned with potential impacts that the proposed highway project might have upon prime farmland soils and additional farmlands of statewide importance. If federal dollars are to be used to convert important farmlands from agricultural uses to non-agricultural uses a Form AD-1006 (or Form NRCS-CPA-106 if the project is a corridor type project) must be submitted to the local NRCS office. These forms may be obtained from the local NRCS office and are also available as electronic forms on the web at http://www.nrcs.usda.gov/programs/fppa/pdf_files/AD1006.PDF and http://www.nrcs.usda.gov/programs/fppa/pdf_files/CPA106.pdf.

The contact persons are:

Brent Miller, District Conservationist
USDA-Natural Resources Conservation Service
115 Commerce Drive
Leitchfield, KY 42445-2217

phone: (270) 259-3738

Billy D. Finkbeiner, District Conservationist
USDA-Natural Resources Conservation Service
805 Main Street, PO Box 186
Munfordville, KY 42765-0186

phone: (270) 524-5631

Mr. Miller and Mr. Finkbeiner can help in identifying important farmlands in the proposed project area.

Sincerely,

DAVID G. SAWYER
State Conservationist

cc: Brent Miller, District Conservationist, Leitchfield, KY
Billy Finkbeiner, District Conservationist, Munfordville, KY
Harold Woodlee, Area Conservationist, Frankfort, KY

2003 NOV -4 A 10: 17
DIV OF PLANNING

Wilson

A-2

MEMORANDUM

DIV OF PLANNING

P-9-2003

TO: Annette Coffey, P.E.
Director
Division of Planning

2003 NOV -5 A 8:46

FROM: William Broyles, P.E.
Geotechnical Engineering
Branch Manager
Division of Material

BY: R.T. Wilson, P.G.
Geotechnical Branch

R. T. Wilson

DATE: November 3, 2003

SUBJECT: Hart County
FD04 050 0088 P; Mars No. 73353 01D
KY 88, Munfordville to Nolin Lake
Intermediate Planning Study
Item No. 4-8101.00

At your request, a review of the geologic formations and geotechnical concerns is complete. This project is on the Mississippian plateau, and is situated in two surface drainage basins. The existing KY88 running roughly along the drainage divide. Drainage north of KY 88 flows into the Rough River System; and drainage south of KY 88 flows into the Green River System.

Rock formations along the proposed route are part of the Quaternary, Pennsylvanian, and Mississippian Systems.

Quaternary alluvium is detrital material consisting of clays, silts, sands, gravels and boulders. A thickness of approximately 20 feet is estimated.

Pennsylvanian age Caseyville Sandstone is present on this project along the ridgelines and is found as channel deposits and slump blocks. The Caseyville is a brown, friable, conglomeratic to coarse-grained sandstone often cross-bedded, and not suitable where durable rock is required in construction applications.

Other formations to be encountered on this project are Mississippian age Glen Dean Limestone, Hardinsburg Sandstone, Haney Limestone, Big Clifty Sandstone, Girkin Formation, and Ste. Genevieve Limestone. Glen Dean Limestone is a medium to coarse crystalline limestone 0-65 feet thick and is suitable for all highway uses. Hardinsburg Sandstone is interbedded sandstone and durable shale with a unit thickness of 45-50 feet thick. Golconda Formation is 35 – 45 feet of limestone underlain with 60 –

70 feet of grayish orange sandstone. Girkin Formation consists of 140 feet of coarse crystalline limestone. Ste. Genevieve is 140-160 feet thick, fine to medium grained limestone. Rock from the Ste. Genevieve Formation and Girkin are suitable for all roadway uses.

Numerous solution features in the St. Genevieve Limestone and Girkin Formation are anticipated. In areas where the Big Clifty Sandstone covers these formations; past road building on KY 100 near Rhoda encountered very large caves in the limestones bridged over by the sandstone. To make a stable roadbed, collapsing the sandstone cap in to the caves was required. The potential for similar conditions exists from Munfordville to the Mount Beulah area. However, this solution may not be possible because of down stream impacts in the subsurface. To keep from exposing similar condition, it is likely that either land bridges or embankments will be the preferred solutions.

The subsurface drainage area within the project area from Mount Beulah to Cub Run flows south to resurface at the Blue Spring North on the Green River in the Mammoth Cave National Park. The cave system likely contains endangered species. Therefore, care will need to be used in controlling highway runoff, and not directly inject highway runoff into the cave system. Retention basins, grass line ditches and avoidance of open sinkholes for drainage disposal are potential solutions.

Subsurface drainage from I-65 to Mount Beulah flows south to Corkle Spring on the Green River and while the discharge is not inside the Park similar conditions and construction methods are likely to be required.

Vertical displacement faults trending northwest to southeast generally parallel KY 88. Minimizing cut heights can reduce construction problems associated with these faults.

Springlines can be anticipated at the base of the many limestone units and faults.

Geotechnical Considerations . . .

1. Soil overburden depths may vary from 10' to 30'.
2. The average soil stripping depth is estimated to be 3" and a soil shrinkage factor of 2 percent is suggested in accordance with the Design Guidance Manual Section.
3. Rock Swell Factors for this project are estimated to be as follows: 0% to 10% for Non-Durable Shales; and 15% for Durable Sandstone, Limestone and Durable Shales.
4. A CBR value of 3 is recommended if soil subgrade or nondurable shales are utilized. Therefore, chemical stabilization of the subgrade is likely. If

limestone and sandstone or durable shales are available in sufficient quantities for subgrade, a CBR of 11 – 9 respectfully is anticipated.

5. Cut slopes in the durable shales, limestone, dolomites, and sandstones will be stable on 1:20 – ½:1 presplit slopes with 18' – 20' benches and 10'-15' overburden bench at the bottom of the overburden and rock disintegration depth. Back slopes will be depended on the joint angles and the lift heights depend on lithology. The RDZ extends approximately 10' – 30' below groundline in cut section.
6. Cut slopes in nondurable shales should be 1.5:1 or flatter. Side hill conditions should be avoided in these formations where possible.
7. Cut slopes constructed in highly solutioned limestones may require flatter slopes than typical of limestone cuts.
8. Special shale compaction procedures may be required where nondurable shales are utilized.
9. Limestone, siltstones, or durable sandstones should be placed in bottom of fills to the maximum high water elevation at all streams.
10. Rock flowlines are not anticipated at any of the stream crossings. Therefore, yield foundations will be required.
11. Embankment benches will be necessary in sidehill conditions. Limestone rock or free draining materials (2 feet minimum) should be placed on the benches for drainage.
12. For estimating right of way requirements and quantities an overall 3:1 slope is recommended for embankment slopes and 2:1 for cut slopes.
13. Spring boxes and underdrains will be necessary when springs, caves and water bearing coal seams are encountered in the embankment areas and undercuts.
14. Limestone, Durable Sandstone & Durable Shale are suitable for all roadway uses.
15. Friable Sandstone is suitable for free draining fill & embankments, however it shall be constructed in 1' lifts.
16. Non-Durable Shales are suitable for embankment constructed in 8" lifts and compacted in accordance with shale compaction procedures.

17. This project is in a classified Seismic Risk Zone 2, which is defined as an area of moderate damage due to earthquake activity.

If there are questions or comments, please advise.

Siria, Bruce (KYTC)

From: Palmer-Ball, Brainard (NREPC, KSNPC)
Sent: Thursday, November 06, 2003 10:39 AM
To: Siria, Bruce (KYTC)
Subject: KSNPC response to Planning Study announcement

TO: Bruce Siria/Annette Coffey, KTC/Division of Planning

FROM: Brainard Palmer-Ball, Jr., KSNPC

DATE: November 6, 2003

RE: Planning Study for KY 88 from Munfordville to KY 479 in Hart Co.

KSNPC has reviewed the Planning Study summary. A review of our natural heritage database revealed the presence of several KSNPC-listed species and one unique natural area that we believe could be impacted by implementation of the project. Some preliminary issues of concern relative to these natural resources include 1) the karstic nature of the landscape in this area, which includes an underground basin that supports the Mammoth Cave Shrimp (*Palaemonias ganteri* -- USFWS Endangered) and several caves that harbor rare bats and a species of cave beetle, 2) the potential for Eggert's sunflower (*Helianthus eggertii* -- USFWS Threatened), and 3) minimizing further fragmentation of forested tracts in the area.



NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR NATURAL RESOURCES
DIVISION OF FORESTRY
LEAH W. MACSWORDS, DIRECTOR
627 COMANCHE TRAIL
FRANKFORT, KENTUCKY 40601

November 10, 2003

Annette Coffey, P.E.
Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

2003 NOV 13 A 10:31
DIV OF PLANNING

Dear Ms. Coffey:

Re: Planning Study, Grayson and Hart Counties
KY 88 from KY 479 to Munfordville, Item No. 4-8101.00

We appreciate your request for input from our agency concerning forestland impacted by improvements to KY 88 in Grayson and Hart Counties.

We have based our response on knowledge gained from a long history of fire protection and forest management assistance by the Division of Forestry in that area. We also conducted a limited field reconnaissance in the area on November 5, 2003.

We know of no trees of historical or cultural significance in the study corridor. There are no trees in the corridor listed on the state Big Tree list.

However, in the area shown as Project Limits on your map, there are several hundred acres of productive forestland. We have worked with several landowners in that area to help improve their forestland. We have designated five Stewardship Forests within your Project Limits area. A Stewardship Forest is a tract of forested property where the landowner is practicing proper multi-resource management.

In the future if your plans include routing the highway outside the Study Corridor into the Project Limits area, we would like the opportunity to comment further.

Sincerely,

Leah W. MacSwords
Director

LWM:SG:fap
c Steve Gray



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DIV OF PLANNING

PAUL E. PATTON
GOVERNOR

CABINET FOR WORKFORCE DEVELOPMENT
OFFICE OF THE SECRETARY
CAPITAL PLAZA TOWER, 2ND FLOOR
500 MERO STREET
FRANKFORT, KENTUCKY 40601
PHONE (502) 564-6606 FAX (502) 564-7967

2003 NOV 25 P 2: 28 W. H. LILE
SECRETARY

CONNECTING KENTUCKY TO EMPLOYMENT, WORKFORCE INFORMATION, EDUCATION AND TRAINING.

July 21, 2003

Ms. Annette Coffey, P.E.
Transportation Cabinet
Division of Planning
125 Holmes Street
Frankfort, KY 40622

Dear Ms. Coffey:

Re: Planning Study
Grayson and Hart Counties
KY 88 from KY 479 to Munfordville

Thank you for the opportunity to respond to the Planning Study for KY 88 from KY 479 to Munfordville, Kentucky. As Secretary of the Cabinet for Workforce Development, I believe that a good motor transportation route is of key importance to the goals of this agency. This agency is instrumental in working with the Economic Development Cabinet, the Education Cabinet, the Technical College System and other private and public entities in providing a well-trained workforce, thereby attracting industry and sustaining the state's economy. Such a workforce is now in existence throughout Kentucky and it grows stronger each year. However, the absence of adequate roadways, railways, waterways and air transportation systems is definitely detrimental to industrial growth and the economic development of the Commonwealth.

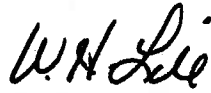
After reviewing the site plan for the construction of a new highway in the area described, I find that the Cabinet for Workforce Development has no objection to the project and I find no negative impact occurring upon the services provided by this agency. An improved roadway would most likely facilitate industrial development, residential development, and promote the growth of educational facilities throughout the region. I fully support the concept of a new roadway and wish you well in completing the project.



EQUAL EDUCATION AND EMPLOYMENT OPPORTUNITIES M/F/D

At this time, other than financial concerns due to the economic downturn and geographical considerations, I see no reason why the project should not be a major success for the citizens of this state. I remain available should you have additional questions. Thank you again for allowing me the opportunity for input.

Sincerely,

A handwritten signature in black ink, appearing to read "W. H. Lile". The signature is written in a cursive style with a prominent initial "W".

W. H. Lile, Secretary
Cabinet for Workforce Development

WL/



DIV OF PLANNING

2003 NOV 26 A 10: 33

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30333

November 14, 2003

Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey:

This is in response to your letter of October 14, 2003 requesting our agency's input and comments on a planning study to determine the need for, and the potential impacts from possible improvements to KY 88 from KY 479 in Grayson County to Munfordville in Hart County, Kentucky. We are responding on behalf of the Department of Health and Human Services (DHHS), U.S. Public Health Service.

While we have no project specific comments to offer at this time, we do recommend that the topics listed below be considered during the NEPA process along with other necessary topics, and addressed if appropriate. Mitigation plans which are protective of the environment and public health should be described in the DEIS wherever warranted.

AREAS OF POTENTIAL PUBLIC HEALTH CONCERN:

I. Air Quality

- dust control measures during project construction, and potential releases of air toxins potential process air emissions after project completion
- compliance with air quality standards

II. Water Quality/Quantity

- special consideration to private and public potable water supply, including ground and surface water resources
- compliance with water quality and waste water treatment standards
- ground and surface water contamination (e.g. runoff and erosion control)
- body contact recreation

III. Wetlands and Flood Plains

- potential contamination of underlying aquifers
- construction within flood plains which may endanger human health
- contamination of the food chain

IV. Hazardous Materials/Wastes

- identification and characterization of hazardous/contaminated sites
- safety plans/procedures, including use of pesticides/herbicides; worker training
- spill prevention, containment, and countermeasures plan

V. Non-Hazardous Solid Waste/Other Materials

- any unusual effects associated with solid waste disposal should be considered

VI. Noise

- identify projected elevated noise levels and sensitive receptors (i.e. residential, schools, hospitals) and appropriate mitigation plans during and after construction

VII. Occupational Health and Safety

- compliance with appropriate criteria and guidelines to ensure worker safety and health

VIII. Land Use and Housing

- special consideration and appropriate mitigation for necessary relocation and other potential adverse impacts to residential areas, community cohesion, community services
- demographic special considerations (e.g. hospitals, nursing homes, day care centers, schools)
- consideration of beneficial and adverse long-term land use impacts, including the potential influx of people into the area as a result of a project and associated impacts
- potential impacts upon vector control should be considered

IX. Environmental Justice

- federal requirements emphasize the issue of environmental justice to ensure equitable environmental protection regardless of race, ethnicity, economic status or community, so that no segment of the population bears a disproportionate share of the consequences of environmental pollution attributable to a proposed project. (Executive Order 12898)

While this is not intended to be an exhaustive list of possible impact topics, it provides a guide for typical areas of potential public health concern which may be applicable to this project. Any health related topic which may be associated with the proposed project should receive consideration when developing the draft and final EISs. Please furnish us with one copy of the draft document when it becomes available for review.

Sincerely yours,



Paul Joe, DO, MPH

Medical Officer

National Center for Environmental Health (F16)

Centers for Disease Control & Prevention

HENRY C. LIST
SECRETARY



PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR SURFACE MINING RECLAMATION & ENFORCEMENT
FRANKFORT, KENTUCKY 40601
CARL E. CAMPBELL
COMMISSIONER

November 17, 2003

Ms. Annette Coffey, P.E., Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

SUBJECT: Planning Study
Grayson and Hart Counties
KY 88 from KY 479 to Munfordville
Item No. 4-8101.00

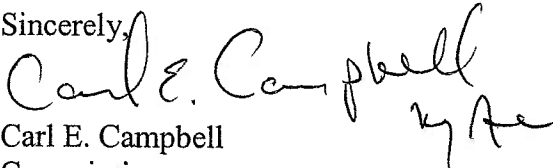
DIV OF PLANNING
2003 NOV 19 A 11:36

Dear Ms. Coffey:

Thank you for the opportunity to review and comment on the above referenced proposed highway construction project.

Personnel from our department's field offices have not identified any specific issues or concerns regarding the proposed project at this time. However, given the dynamic nature of the stone industry and the development of the proposed highway, we will welcome the opportunity to further comment on the project in the future.


If I or my staff may be of any further assistance in this or any other matter, please do not hesitate to contact me at (502) 564-6940.

Sincerely,

Carl E. Campbell
Commissioner

CEC/JM/ksm



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Siria, Bruce (KYTC)

From: Greer, Daryl (KYTC)
Sent: Monday, November 17, 2003 12:03 PM
To: Siria, Bruce (KYTC)
Subject: FW: 04-8101.00 Grayson and Hart Cos.

-----Original Message-----

From: Coffey, Annette (KYTC)
Sent: Monday, November 17, 2003 11:57 AM
To: Greer, Daryl (KYTC)
Subject: FW: 04-8101.00 Grayson and Hart Cos.

-----Original Message-----

From: Hardin, Michael (KYTC)
Sent: Monday, November 17, 2003 10:34 AM
To: Coffey, Annette (KYTC)
Cc: Vinegar, Tony (KYTC); Waldner, David (KYTC); Dawson, Doug (KYTC)
Subject: 04-8101.00 Grayson and Hart Cos.

From a cursory ecological review the following comments are noted on the subject planning study:

- Many of the identified wetlands are in a karst plain with no surface connection or "adjacency" to other "...waters of the United States." As such, it is likely that many will not be considered jurisdictional under the recent SWANCC Supreme Court ruling. Nevertheless, these wetlands should still be reviewed from an ecological perspective in the context of NEPA.
- There will be several endangered species listed for this project. Specifically, the project is located in a region known to have gray bats and Eggert's sunflower. There have been newly discovered gray bat caves in this region within the last 6-7 years.

Thank you for the opportunity to comment.

Mike Hardin

PS: Doug, if you have any additional comments, please send them to Planning. Tx.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
3761 GEORGETOWN ROAD
FRANKFORT, KY 40601

DIV OF PLANNING

2003 NOV 21 A 9:41

November 18, 2003

Ms. Annette Coffey
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Subject: FWS #04-0205; Planning Study: KY 88 from KY 479 to Munfordville, Grayson and Hart Counties, Kentucky
KTC Item No. 4-8101.00

Dear Ms Coffey:

Thank you for your correspondence of October 14, 2003, regarding the Kentucky Transportation Cabinet's (KTC) planning study for possible improvements to KY 88 from KY 479 in Grayson County to Munfordville in Hart County, Kentucky. Fish and Wildlife Service (Service) personnel have reviewed the information submitted and the following comments are provided in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

In general, we are concerned that highway projects frequently accelerate erosion and sedimentation in streams, resulting in adverse effects to the aquatic environment. The use of heavy equipment to move earth and existing vegetation disrupts natural drainage patterns and exposes large areas of disturbed soil to erosion. Excessive sedimentation can clog stream channels and contribute to increased flooding. It can also increase water temperatures and cause oxygen demands that can damage or destroy fish and invertebrate populations. Deposition of sediment on the channel bottom also degrades aquatic habitat by filling in substrate cavities, burying demersal eggs, and smothering bottom organisms. In addition, turbidity, as induced by accelerated erosion and sedimentation, results in further damage to aquatic systems. Increased particulate matter suspended in the water column may drive fish from the polluted area by irritating the gills, concealing forage, and/or destroying vegetation that may be essential for spawning and cover habitat for particular species. Turbidity also degrades water quality by reducing light penetration, pH and oxygen levels, and the buffering capacity of the water. Degraded water quality may continue far downstream from the point where the erosion occurs.

Prevention of excessive sedimentation can occur only through application of Best Management Practices during daily construction activities. Rigid application of your agency's construction

erosion control standards can preclude most sedimentation problems. In some cases, however, additional measures will need to be taken by on-site inspectors and construction representatives that are trained in erosion and sediment control methods. We request that you consider having an inspector on-site during all construction activities to ensure that work areas are stabilized on a daily or regular basis.

According to our records, four federally listed species may occur within the proposed project area. They are listed below:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Federal Status</u>
Indiana bat	<i>Myotis sodalis</i>	endangered
gray bat	<i>Myotis grisescens</i>	endangered
Eggert's sunflower	<i>Helianthus eggertii</i>	threatened
Kentucky cave shrimp	<i>Palaemonias ganteri</i>	endangered

The federally threatened Eggert's sunflower (*Helianthus eggertii*) and Kentucky cave shrimp (*Palaemonias ganteri*) may occur in the vicinity of the project area. Eggert's sunflower occurs in barrens and woodland ecosystems where a mix of grassy, treeless openings lies within a thin overstory of small to medium sized trees, usually oaks. This species has also been found on roadsides and in fields where barrens formerly existed. Kentucky cave shrimp have very specific habitat requirements. They only live in underground streams and typically inhabit large, base level cave streams characterized by slow flow, abundant organic material, coarse to fine grain sand, and coarse silt sediments. You should survey the project area to determine the presence or absence of these species within the project area in an effort to determine if potential impacts to these species are likely. A qualified biologist, and preferably one who holds the appropriate collection permits for these species, must undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If these species are identified, we request written notification of such occurrence(s) and further coordination and consultation with you.

According to our records, summer roost habitat and winter hibernacula for the endangered Indiana bat (*Myotis sodalis*), and gray bat (*Myotis grisescens*) may exist within the proposed project area. Based on this information, we believe that: (1) forested areas in the vicinity of and on the project area may provide potentially suitable summer roosting and foraging habitat for the Indiana bat and potentially suitable foraging habitat for the gray bat (if suitable roosting sites are present); and (2) caves, rockshelters, and abandoned underground mines in the vicinity of and on the project area may provide potentially suitable winter hibernacula habitat for the Indiana bat and/or potentially suitable summer roosting and winter hibernacula habitat for the gray bat. Our belief that potentially suitable habitat may be present, and possibly occupied by one or both of these species, is based on the information provided in your correspondence, the fact that much of the project site and surrounding areas contain forested habitats that are within the natural ranges of these species, and our knowledge of the life history characteristics of these species.

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions

of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 3 inches DBH.

Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula, where they feed and roost until temperatures drop to a point that forces them into hibernation. This "swarming" period lasts, depending on weather conditions in a particular year, from about September 15 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Research has shown that bats exhibiting this "swarming" behavior will range up to five miles from chosen hibernacula during this time. For hibernation, the Indiana bat prefers limestone caves, sandstone rockshelters, and abandoned underground mines with stable temperatures of 39 to 46 degrees F and humidity above 74 percent but below saturation.

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. For hibernation, the roost site must have an average temperature of 42 to 52 degrees F. Most of the caves used by gray bats for hibernation have deep vertical passages with large rooms that function as cold air traps. Summer caves must be warm, between 57 and 77 degrees F, or have small rooms or domes that can trap the body heat of roosting bats. Summer caves are normally located close to rivers or lakes where the bats feed. Gray bats have been known to fly as far as 12 miles from their colony to feed.

Because we have concerns relating to these species on this project and due to the lack of occurrence information available on these species relative to the proposed project area, we have the following recommendations relative to Indiana bats and gray bats.

1. Based on the presence of numerous caves, rockshelters, and underground mines in eastern Kentucky, we believe that it is reasonable to assume that other caves, rockshelters, and/or abandoned underground mines may occur within the project area, and, if they occur, they could provide winter habitat for Indiana bats and/or summer and winter habitat for the gray bat. Therefore, we recommend that you survey the project area for caves, rockshelters, and underground mines, identify any such habitats that may exist on-site, and avoid impacts to those sites pending an analysis of their suitability as Indiana bat habitat by this office.
2. Since known hibernacula for the Indiana bat and gray bat exists less than 10 miles from the project area, we recommend you only remove trees between November 15 and March 31 in order to avoid impacting Indiana bat "swarming" behavior.

If these recommendations cannot be accomplished, then you should survey the project area to determine the presence or absence of the species within the project area in an effort to determine if potential impacts to these species are likely. A qualified biologist who holds the appropriate collection permits for these species must undertake such surveys, and we would appreciate the

opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If any Indiana bats and/or gray bats are identified, we request written notification of such occurrence(s) and further coordination and consultation with you. Surveys would not be necessary if sufficient site-specific information was available that showed: (1) that there is no potentially suitable habitat within the project area or its vicinity or (2) that the species would not be present within the project area or its vicinity due to site-specific factors.

Thank you for the opportunity to comment on this proposed action. If you have any questions regarding the information which we have provided, please contact Mindi Brady at (502)/695-0468 (ext.229).

Sincerely,

A handwritten signature in black ink that reads "Virgil Lee Andrews, Jr." The signature is written in a cursive style with a large, sweeping flourish at the end.

Virgil Lee Andrews, Jr.
Field Supervisor

Siria, Bruce (KYTC)

From: Roberts, David C - (DMA) [robertsdc@bngc.dma.state.ky.us]
Sent: Tuesday, November 18, 2003 3:00 PM
To: Siria, Bruce (KYTC)
Subject: Planning studies state wide

Bruce,

After reviewing the following planning studies that were forwarded to this department for input, it has been determined that none of projects would impact The Department of Military Affairs in anyway.

Grayson and Hart Counties item # 4-8101.00
US 60 from Sturgis to Morganfield # 02-8102.00
Lyon and Caldwell Counties US 641 from Eddyville to Fredonia
Hancock County improve connection to Cannelton bridge

David C. Roberts
Assistant Director
Facilities Division
502-607-1543
Fax 502-607-1270

Siria, Bruce (KYTC)

From: Ballard, Kim (NREPC, DEP)
Sent: Tuesday, November 18, 2003 2:01 PM
To: Siria, Bruce (KYTC)
Cc: Hatton, Tony (NREPC, DEP)
Subject: DOT Planning Study-Grayson & Hart Counties

On behalf of Tony Hatton, Acting Director:

**Division of Waste Management's comments on:
Planning Study
Grayson & Hart Counties**

Resource Conservation & Local Assistance Branch (contact Tom Heil):
Request the use of Pulverized Glass Aggregate (PGA) in roadbed construction, where feasible.

Superfund Branch (contact Fazi Sherkat):



Superfund Sites By
County For ...

Underground Storage Tank Branch (contact Lori Terry):



grayson_hart_dot.xls

COUNTY_CODE	COUNTY_NAME	SITE_SEQ_ID	SITE_NAME	NVL(C,STREET_ADDRESS,C,PO_ADDRESS)	CITY	ST	POSTAL_CO
43	GRAYSON	45043	CPS FARM SERVICE CENTER	HWY 62 W 3430 ELIZABETH TOWN RD	CLARKSON	KY	42726
43	GRAYSON	81043	BAILLIE LUMBER CO INC	OLD ELIZABETH TOWN RD	LEITCHFIELD	KY	42754
43	GRAYSON	266043	GRAYSON COUNTY BOARD OF ED	909 BRANDENBURG RD	LEITCHFIELD	KY	42755
43	GRAYSON	267043	CLARKSON ELEMENTARY SCHOOL	HWY 62	CLARKSON	KY	42726
43	GRAYSON	268043	GRAYSON COUNTY HIGH SCHOOL	RTE 5	LEITCHFIELD	KY	42754
43	GRAYSON	269043	CANEYVILLE ELEMENTARY SCHOOL	UNKNOWN	CANEYVILLE	KY	42721
43	GRAYSON	270043	GRAYSON CO OCCUPATIONAL TRAINING	RT 3	CANEYVILLE	KY	42721
43	GRAYSON	370043	ABM 336 0233016 0104	100 CT SQUARE	CLARKSON	KY	42726
43	GRAYSON	481043	CAMPBELL HAUSFELD	EMBURY DRIVE INDUSTRIAL PARK	LEITCHFIELD	KY	42754
43	GRAYSON	490043	HIGDON'S GEN MDSE	4223 PEONIA RD	CLARKSON	KY	42726
43	GRAYSON	504043	KIRBY'S KORNER MARKET	2297 SHREWSBURY RD	LEITCHFIELD	KY	42754
43	GRAYSON	776043	GRAYSON COUNTY/MAINT GARAGE	KY HWY 54	LEITCHFIELD	KY	42754
43	GRAYSON	928043	KEY OIL CO/LEITCHFIELD (INDEPENDENT OIL CO INC)	207 MARION ST	LEITCHFIELD	KY	42754
43	GRAYSON	931043	CRAWFORD'S SERVICE STATION	10533 ELIZABETH TOWN RD	BIG CLIFTY	KY	42712
43	GRAYSON	934043	HICKORY SPRINGS BAIT & GROCERY	8480 BRANDENBURG RD	LEITCHFIELD	KY	42754
43	GRAYSON	935043	ONE STOP SHOP	310 MAIN ST	BIG CLIFTY	KY	42712
43	GRAYSON	936043	TARRENCE GROCERY STORE	1906 BEAVER DAM RD	CANEYVILLE	KY	42721
43	GRAYSON	937043	WILSON'S GROCERY	2662 NEAFUS RD	CANEYVILLE	KY	42721
43	GRAYSON	938043	BAXTERS LAKE STOP (MOORES GROC)	3037 DUFF RD	LEITCHFIELD	KY	42754
43	GRAYSON	941043	DUPLICATE TO 1008-043	179 RABBIT FLAT RD	CANEYVILLE	KY	42721
43	GRAYSON	942043	DECKERS GROCERY	1385 MCGREW CHURCH RD	LEITCHFIELD	KY	42754
43	GRAYSON	946043	SOUTHGATE GAS PARTNERSHIP	SOUTHGATE MALL	LEITCHFIELD	KY	42754
43	GRAYSON	1002043	JOHN ROBERTSON CHEV-OLDS	202 S MAIN	LEITCHFIELD	KY	42754
43	GRAYSON	1003043	289 SERVICE STATION	HWY 259	ANNETA	KY	42754
43	GRAYSON	1004043	TRADING POST	5995 PEONIA RD	CLARKSON	KY	42726
43	GRAYSON	1005043	DUDGEONS GROCERY	59 MT HEBRON RD	LEITCHFIELD	KY	42754
43	GRAYSON	1006043	CROSS ROADS ONE STOP	19 GREEN FARM RD	FALLS OF ROUGH	KY	40119
43	GRAYSON	1007043	GRAYSON CO VOCATIONAL SCHOOL	220 HIGH SCHOOL RD	LEITCHFIELD	KY	42755
43	GRAYSON	1008043	SHREWSBURY MARKET	179 RABBIT FLAT RD	CANEYVILLE	KY	42721
43	GRAYSON	1009043	SOUTH GENERAL STORE	10830 SHREWSBURY RD	LEITCHFIELD	KY	42754
43	GRAYSON	1010043	LEES WELDING SERVICE	217 MAIN ST	CLARKSON	KY	42726
43	GRAYSON	1011043	D G HAYES GRO	970 FLOYD ST	LEITCHFIELD	KY	42754
43	GRAYSON	1012043	PIT ROAD	961 OWENSBORO RD	LEITCHFIELD	KY	42754
43	GRAYSON	1013043	SMITHS GROCERY	6909 YEAMAN RD	CANEYVILLE	KY	42721
43	GRAYSON	1014043	HERB & TIMAS PLACE ON THE LAKE	10608 PEONIA RD	CLARKSON	KY	42726
43	GRAYSON	1015043	S & W SERVICE CENTER	402 MORGANTOWN RD	CANEYVILLE	KY	42721
43	GRAYSON	1016043	YOUNGS AUTO RECYCLERS INC (2)	HWY 62 W	LEITCHFIELD	KY	42754
43	GRAYSON	1017043	HODGES GROCERY	2679 OWENSBORO RD/HWY 54	LEITCHFIELD	KY	42754
43	GRAYSON	1018043	NOLIN FAMILY RESTAURANT	8120 WAX RD	CLARKSON	KY	42726
43	GRAYSON	1044043	HIGDON'S GARAGE	5235 PEONIA RD	CLARKSON	KY	42726
43	GRAYSON	1156043	SHORT CREEK SPECIALIZED SCHOOL	HWY 54	LEITCHFIELD	KY	42754
43	GRAYSON	1226043	ESQUE WOOD PRESERVING INC	164 POST MILLWOOD RD	MILLWOOD	KY	42762
43	GRAYSON	1293043	GRAYSON CO STONE QUARRY	KY 54	LEITCHFIELD	KY	42754
43	GRAYSON	1395043	B & J MARKET	11209 ELIZABETH TOWN RD	BIG CLIFTY	KY	42712
43	GRAYSON	1502043	HIGDON'S HARBOR SIDE	ROUTE 2	CLARKSON	KY	42726
43	GRAYSON	1655043	A & O GAS CO INC	206 E MAIN ST	CLARKSON	KY	42726
43	GRAYSON	1658043	STOP N SAVE STORE	STOP N SAVE STORE	LEITCHFIELD	KY	42754
43	GRAYSON	1939043	READY MART	201 E MAIN ST	CLARKSON	KY	42726
43	GRAYSON	2038043	CANEYVILLE MINI MART	HWY 79 S	CANEYVILLE	KY	42721
43	GRAYSON	2085043	KENS AUTO SERVICE	HWY 62 S	LEITCHFIELD	KY	42754
43	GRAYSON	2133043	NOLIN GENERAL STORE	13587 PEONIA RD	WAX (CLARKSON)	KY	42726
43	GRAYSON	2210043	GRAYSON COUNTY HOSPITAL	910 WALLACE AVE	LEITCHFIELD	KY	42754
43	GRAYSON	2256043	BULLOCKS GROCERY	HWY 259N	LEITCHFIELD	KY	42754
43	GRAYSON	2399043	WARREN RECC	LEE ST	LEITCHFIELD	KY	42754

COUNTY_CODE	COUNTY_NAME	SITE_SEQ_ID	SITE_NAME	NVL(C-STREET_ADDRESS,C-PO_ADDRESS)	CITY	ST	POSTAL_CO
43	GRAYSON	2411043	LEITCHFIELD TRANSFER	BOX 366	LEITCHFIELD	KY	42754
43	GRAYSON	2464043	DUPLICATE TO 1010-043 (FMR CLAR KY)	HWY 62 SERVICE STATION	UNKNOWN	KY	42726
43	GRAYSON	2483043	ROUGH RIVER ST RES PK (AIRPORT)	450 LODGE RD	FALLS OF ROUGH	KY	40119
43	GRAYSON	2578043	GATE STATION 610	312 N MAIN ST	LEITCHFIELD	KY	42754
43	GRAYSON	2625043	MCCUBBIN ENTERPRISE INC	SOUTH GATE MALL S MAIN	LEITCHFIELD	KY	42754
43	GRAYSON	2651043	PARKWAY TRUCK STOP	611 MORGANTOWN RD	CANEYVILLE	KY	42721
43	GRAYSON	2799043	DUPLICATE TO 1005043 DUDGEONS GROCERY (ABM 336 220 0113)	59 MT HEBRON RD	LEITCHFIELD	KY	42754
43	GRAYSON	2828043	TAR HILL JUNCTION GROC	3670 ST PAUL RD	LEITCHFIELD	KY	42754
43	GRAYSON	3125043	LOWES CONCRETE INC	306 N MARION ST	LEITCHFIELD	KY	42754
43	GRAYSON	3128043	HIGGS GULF-BP SERVICE	304 E MAPLE ST	CANEYVILLE	KY	42721
43	GRAYSON	3129043	FASTWAY 14	512 MORGANTOWN ST	CANEYVILLE	KY	42721
43	GRAYSON	3131043	WILLIAM T SIMS DBA SMITTY CITY	7103 ANNETTA RD	LEITCHFIELD	KY	42754
43	GRAYSON	3137043	MAJORS TRANSIT	HWY 79	CANEYVILLE	KY	42721
43	GRAYSON	3153043	FASTWAY #2	308 S MAIN ST	LEITCHFIELD	KY	42754
43	GRAYSON	3168043	GENES SPORTING GOODS	13661 FALLS OF ROUGH	FALLS OF ROUGH	KY	40119
43	GRAYSON	3170043	PARKWAY CHEVRON	108 MORGANTOWN RD	CANEYVILLE	KY	42721
43	GRAYSON	3172043	FASTWAY 9 (FORMERLY PARKSIDE BP)	802 S MAIN ST	LEITCHFIELD	KY	42754
43	GRAYSON	3173043	FASTWAY #7	720 S MAIN ST	LEITCHFIELD	KY	42754
43	GRAYSON	3174043	LEITCHFIELD BP (GULF)	302 N MAIN	LEITCHFIELD	KY	42754
43	GRAYSON	3175043	NORTHSIDE MARATHON (FORMERLY BP)	717 BRANDENBURG RD	LEITCHFIELD	KY	42754
43	GRAYSON	3176043	62 STOP & SHOP	2093 BEAVER DAM RD	LEITCHFIELD	KY	42754
43	GRAYSON	3266043	OLD COUNTRY STORE OF MRS MAHURIN	KY 54 & KY 79 AT SHORT CREEK	CANEYVILLE	KY	42721
43	GRAYSON	3332043	CENTRAL SERVICE STATION INC	HWY 62	CLARKSON	KY	42726
43	GRAYSON	3413043	CLEMENTS MARINE INC	RT 1	FALLS OF ROUGH	KY	40119
43	GRAYSON	3508043	EMBRY'S GROCERY	15768 BEAVER DAM RD	CANEYVILLE	KY	42721
43	GRAYSON	3589043	CLARKSON STATION	ROUTE 2	GRAYSON SPRINGS	KY	42726
43	GRAYSON	3655043	FIRE DEPARTMENT	207 S MAIN ST	LEITCHFIELD	KY	42755
43	GRAYSON	3656043	CITY HALL	314 W WHITE ST	LEITCHFIELD	KY	42755
43	GRAYSON	3807043	DUPLICATE TO 2578-043 (FMR SUPERTEST)	MAIN & MULBERRY	LEITCHFIELD	KY	42754
43	GRAYSON	3856043	ROUGH RIVER ST RES PK (MAINT)	ROUTE 1	FALLS OF ROUGH	KY	40119
43	GRAYSON	4020043	HOME PLATE FOOD & GAS INC	111 LEE AVE	LEITCHFIELD	KY	42754
43	GRAYSON	4115043	RALPHS MARKET	10718 ANNETA RD	LEITCHFIELD	KY	42754
43	GRAYSON	4632043	GRAYSON COUNTY STONE CO	STATE HWY 54	LEITCHFIELD	KY	42754
43	GRAYSON	4847043	WATKINS FUNERAL HOME	301 N MAIN	LEITCHFIELD	KY	42754
43	GRAYSON	4848043	FLOYD STONE SPORT GOODS	LILAC RD HWY 37	LEITCHFIELD	KY	42754
43	GRAYSON	4849043	PONDEROSA BOAT DOCK (FISHING CAMP)	865 PONDEROSA RD	CLARKSON	KY	42726
43	GRAYSON	4884043	WILLIAMS CHEVRON	715 S MAIN	LEITCHFIELD	KY	42754
43	GRAYSON	5015043	MIDWAY GAS	3521 ELIZABETHTOWN RD	CLARKSON	KY	42726
43	GRAYSON	5080043	LOUIS BRAUN	HWY 226	PEONIA	KY	0
43	GRAYSON	5118043	ROBBIES QUICK STOP	10888 OWENSBORO RD HWY 54 & 79	FALLS OF ROUGH	KY	40119
43	GRAYSON	5259043	J & B BAIT SHOP	12673 ANNETA RD	LEITCHFIELD	KY	42754
43	GRAYSON	5510043	CLARKSON HOME IMPROVEMENTS INC	3328 ELIZABETHTOWN RD	CLARKSON	KY	42726
43	GRAYSON	5842043	YOUNGS AUTO RECYCLERS INC (1)	HWY 62 W	LEITCHFIELD	KY	42754
43	GRAYSON	6090043	BELL CHEESE	PO BOX 145	LEITCHFIELD	KY	42754
43	GRAYSON	6398043	WESTERN KY PKWY/TOLL PLAZA (DOT)	800 S MAIN ST	LEITCHFIELD	KY	42754
43	GRAYSON	6651043	HATFIELD FUEL SERVICE INC	313 FLOYD ST	LEITCHFIELD	KY	42754
43	GRAYSON	6653043	JOH S HUCHES & SONS CONSTRUCTION	116 E WALNUT	LEITCHFIELD	KY	42754
43	GRAYSON	6654043	OTIS BRYANT & SON	US 62 E	LEITCHFIELD	KY	42721
43	GRAYSON	6975043	LEITCHFIELD SHELL SERVICE	227 S MAIN ST	LEITCHFIELD	KY	42754
43	GRAYSON	6978043	BROOKS SERVICE STATION	401 E MAPLE	CANEYVILLE	KY	42721
43	GRAYSON	7385043	LEITCHFIELD KY BULK PLANT 336	PO BOX 216	CLARKSON	KY	42726
43	GRAYSON	7386043	ABM 336 0459695 0115	CITY HALL	LEITCHFIELD	KY	42754
43	GRAYSON	7387043	ABM 336 0463402	ROUTE 62 PO BOX 348	LEITCHFIELD	KY	42754
43	GRAYSON	7388043	LEITCHFIELD ASHLAND	200 W WHITE OAK ST	LEITCHFIELD	KY	42754

COUNTY_CODE	COUNTY_NAME	SITE_SEQ_ID	SITE_NAME	NVL(C_STREET_ADDRESS,C_PO_ADDRESS)	CITY	ST	POSTAL_CO
43	GRAYSON	7390043	ABM 336 008 0091	STATE RT 88	WAX	KY	42787
43	GRAYSON	7715043	SERVICE STATION 56 D BP 336	STATE RTE 785	READY	KY	42771
43	GRAYSON	7940043	UNKNOWN	WHITE OAK ST	LEITCHFIELD	KY	42754
43	GRAYSON	7942043	FORMER ASHLAND	KY 259 & WESTERN KY PKWY	LEITCHFIELD	KY	42754
43	GRAYSON	8404043	JR FOOD STORE #607	706 S MAIN ST	LEITCHFIELD	KY	42754
43	GRAYSON	8418043	JR FOOD STORE #631	941 BRANDENBURG RD	LEITCHFIELD	KY	42754
43	GRAYSON	8628043	CHARLES D NEWTON	ROUTE 1	CLARKSON	KY	42726
43	GRAYSON	8853043	MOUTRADIER BOAT DOCK	NOLIN LAKE	LEITCHFIELD	KY	42754
43	GRAYSON	8855043	SONNYS BUS STATION	HWY 259	LEITCHFIELD	KY	42754
43	GRAYSON	8869043	CHEVRON STATION	WHITE OAK & S MAIN	LEITCHFIELD	KY	42754
43	GRAYSON	8875043	BREEZY HILLS ENTERPRISES INC	14005 FALLS OF ROUGH RD	FALLS OF ROUGH	KY	40119
43	GRAYSON	8876043	CANEYVILLE STANDARD	MAIN ST	CANEYVILLE	KY	42721
43	GRAYSON	8877043	CONOLWAY BAIT SHOP	1526 CONOLWAY RD	CLARKSON	KY	42726
43	GRAYSON	8879043	BIG CLIFTY CHEVRON SERVICE STA	HWY 62	BIG CLIFTY	KY	42712
43	GRAYSON	8880043	WHITES STOP & SHOP (VANMETER)	5997 PEONIA RD	CLARKSON	KY	42726
43	GRAYSON	8883043	BEL CHEESE	PO BOX 156	LEITCHFIELD	KY	42754
43	GRAYSON	8885043	IMS MANUFACTURING	UNKNOWN	LEITCHFIELD	KY	42754
43	GRAYSON	8997043	CLARKSON GENERAL STORE	ROUTE 3	CLARKSON	KY	42726
43	GRAYSON	9011043	SAV-A-LOT #135	515 S MAIN ST	LEITCHFIELD	KY	42754
43	GRAYSON	9303043	MIKE & DEBBIE DAY-DAYS PRO BASS SHOP	13587 PEONIA RD #6	CLARKSON	KY	42726
43	GRAYSON	9308043	HENDERSONS SUNOCO	US 62 & MILLERSTOWN RD	CLARKSON	KY	42776
43	GRAYSON	9625043	TONY DARST	1896 ST PAUL RD	LEITCHFIELD	KY	42754
43	GRAYSON	9851043	ST PAUL CHURCH & SCHOOL	1812 ST PAUL RD	LEITCHFIELD	KY	42754
43	GRAYSON	9999161	VANMETERS GROCERY	CEMETARY RD	BIG CLIFTY	KY	42712
43	GRAYSON	10000517	CENTER COURT FOOD MART, INC.	1421 BRANDENBURG RD	LEITCHFIELD	KY	42754
43	GRAYSON	10000531	GRAYSON COUNTY-LEITCHFIELD AIRPORT	695 AIRPORT ROAD	LEITCHFIELD	KY	42754
43	GRAYSON	20022800	BIG CLIFTY GENERAL STORE	OLD ELIZABETHTOWN RD	BIG CLIFTY	KY	42712
43	GRAYSON	20023020	BLANDS 1 STOP	124 WEST MAIN ST	CLARKSON	KY	42726
43	GRAYSON	20077874	BAILEYS ZIP MART	6159 BEAVER DAM RD	LEITCHFIELD	KY	42754
43	GRAYSON	20149105	MURPHY USA #6922	1873 ELIZABETHTOWN RD	LEITCHFIELD	KY	42754
43	GRAYSON	20150112	SMITHS GROCERY	HWY 88	CLARKSON	KY	42726
43	GRAYSON	20150152	ONE STOP SHOP	HWY 62	BIG CLIFTY	KY	42712
43	GRAYSON	20150156	BAREFOOT PROPERTY	932 S ANNETA RD	LEITCHFIELD	KY	42754
43	GRAYSON	20152412	ROCKY RIDGE RACING	1107 FLOYD ST	LEITCHFIELD	KY	42754
50	HART	320050	BONNIEVILLE MOTOR CO INC	RR 1 BOX 181	BONNIEVILLE	KY	42713
50	HART	418050	SUPERTEST (H & W SUPERTEST)	75 MAIN ST	MUNFORDVILLE	KY	42765
50	HART	530050	CROP PRODUCTION SERVICES INC	PO BOX 265	HORSE CAVE	KY	42749
50	HART	532050	CROP PRODUCTION SERVICES	RT 3	HORSE CAVE	KY	42749
50	HART	619050	DUPPLICATE TO 4289-050 (W G VANCE)	UNKNOWN	HARDYVILLE	KY	42746
50	HART	777050	HART COUNTY/MAINT GARAGE (DOT)	US 31 W	MUNFORDVILLE	KY	42765
50	HART	831050	TRAVELERS FOOD MART	166 & US 31 W	MUNFORDVILLE	KY	42725
50	HART	1001050	SMITHS BP FOOD MART	1308 MAIN ST	MUNFORDVILLE	KY	42765
50	HART	1002050	LARRY RIORDAN #2	1227 E MAIN ST #2	HORSE CAVE	KY	42749
50	HART	1003050	HESTERS SUPER SAVER #2	HWY 31 W	BONNIEVILLE	KY	42713
50	HART	1004050	DOBSON PONTIAC-GMC TRUCK	100 M ST	MUNFORDVILLE	KY	42765
50	HART	1006050	LEGRANDE MARKET	HWY 218 & 436	HARDYVILLE	KY	42746
50	HART	1007050	I 65 CHEVRON	1509 MAIN ST	MUNFORDVILLE	KY	42765
50	HART	1008050	CANMER BILLIARD & GAMES	3009 N JACKSON HWY	CANMER	KY	42722
50	HART	1009050	JONESVILLE TEXACO	9918 NEW JACKSON HWY	MAGNOLIA	KY	42767
50	HART	1010050	JUNIOR CLEAN UP SHOP & BODY	601 MAIN ST	MUNFORDVILLE	KY	42765
50	HART	1011050	CENTERS STORE	7030 N JACKSON HWY	LINWOOD	KY	42757
50	HART	1012050	STEWART OIL CO	105 ELK ST	MUNFORDVILLE	KY	42765
50	HART	1013050	PAGES GARAGE	31W N DIXIE	HORSE CAVE	KY	42749
50	HART	1014050	BRYANTS GROCERY	8205 S JACKSON HWY	HORSE CAVE	KY	42749

COUNTY_CODE	COUNTY_NAME	SITE_SEQ_ID	SITE_NAME	NVLC-STREET_ADDRESS,C.PO_ADDRESS	CITY	ST	POSTAL_CO
50	HART	1015050	SUPREME SERVICE CENTER	1047 MAIN ST	MUNFORDVILLE	KY	42765
50	HART	1016050	DISCOUNT SERVICE CENTER	HWY 218 E	HORSE CAVE	KY	42749
50	HART	1017050	GREEN RIVER VALLEY WATER DIST	4665 N JACKSON HWY	MUNFORDVILLE	KY	42765
50	HART	1361050	NALLS CHEVROLET SERVICE	31 W MARY THOMAS AVE	HORSE CAVE	KY	42749
50	HART	1429050	PRICEVILLE MARKET	5201 PRICEVILLE RD	MUNFORDVILLE	KY	42765
50	HART	1789050	SHELDONS COUNTRY FIXENS INC	1237 N MAIN ST	MUNFORDVILLE	KY	42765
50	HART	1790050	J & T GAS CO LLP (ALVEYS MARATHON)	HWY 218 @ I65 EXIT 58	HORSE CAVE	KY	42749
50	HART	1971050	NATIONAL SEATING	212 HART AVE	HORSE CAVE	KY	42749
50	HART	1975050	ROYAL MARINE MFG INC	3105 DIXIE HWY	HORSE CAVE	KY	42749
50	HART	2053050	SEGO FUNERAL HOME	114 W 2ND ST	MUNFORDVILLE	KY	42765
50	HART	2142050	BALE OIL CO INC	225 MAIN ST	HORSE CAVE	KY	42749
50	HART	2159050	RUCKERS UNOCAL (76)	105 S MAIN ST	MUNFORDVILLE	KY	42765
50	HART	2162050	ADWELL GROCERY	1069 FLINT RIDGE RD	HORSE CAVE	KY	42749
50	HART	2320050	CUB RUN STOP & SHOP (BEST STOP MARKET)	12688 CUB RUN HWY	CUB RUN	KY	42729
50	HART	2484050	DOUGS AUTO SERVICE	490 N DIXIE ST	HORSE CAVE	KY	42749
50	HART	2728050	MUNFORDVILLE CENTRAL OFFICE	SECOND & CALDWELL ST	MUNFORDVILLE	KY	42765
50	HART	2728050	HORSE CAVE CENTRAL OFFICE	31W S	HORSE CAVE	KY	42749
50	HART	2801050	MUNFORDVILLE BP 434-000	NATIONAL TPKE	MUNFORDVILLE	KY	42765
50	HART	3249050	NORLEN HENSLEY GGE	RT 2	MUNFORDVILLE	KY	42746
50	HART	3250050	THREE SPRINGS GROCERY	HWY 218	HARDYVILLE	KY	42746
50	HART	3256050	SMITH COUNTRY STORE	HWY 31 E	UNO	KY	42749
50	HART	3257050	HUBERT ATWELL GROCERY	RT 2	HARDYVILLE	KY	42746
50	HART	3258050	E A HIGGASON GROCERY	11599 HARDYVILLE RD	HARDYVILLE	KY	42746
50	HART	3259050	MIDDLETON GROCERY	HWY 88	MUNFORDVILLE	KY	42765
50	HART	3261050	LORA TURNER TRUCKING	HWY 218	HORSE CAVE	KY	42749
50	HART	3262050	CAVELAND GENERAL STORE	1509 MAIN ST	MUNFORDVILLE	KY	42765
50	HART	3264050	AMERICAN BREAD CO	US 31W S	MUNFORDVILLE	KY	42765
50	HART	3265050	BALE TOBACCO WAREHOUSE	US 31 WS	HORSE CAVE	KY	42749
50	HART	3266050	HOMER BARTLEY LUMBER COMPANY	1235 OLD DIXIE HWY	HORSE CAVE	KY	42749
50	HART	3268050	DEE & JAY MOTORS	US 31W N	HORSE CAVE	KY	42749
50	HART	3269050	HART STONE CO	HWY 21B	HORSE CAVE	KY	42749
50	HART	3270050	KY TOBACCO SALES	HWY 21B	HORSE CAVE	KY	42749
50	HART	3273050	HORSE CAVE BULK PLANT	476 S DIXIE ST	HORSE CAVE	KY	42749
50	HART	3274050	CUB RUN SUNOCO	HWY BB	CUB RUN	KY	42729
50	HART	3276050	GRAINS GROCERY	31 E	HARDYVILLE	KY	42746
50	HART	3278050	BRENT OIL CO (BALE OIL CO #2)	1301 MAIN ST	MUNFORDVILLE	KY	42765
50	HART	3279050	CONVENIENT STOP (HORSE CAVE SUNOCO)	100 S DIXIE ST	HORSE CAVE	KY	42749
50	HART	3280050	KEA SUNOCO	165 & 474	HORSE CAVE	KY	42749
50	HART	3281050	BRUMMITT CEE BEE	HWY 21B	HORSE CAVE	KY	42749
50	HART	3293050	DOUGS AUTO SERVICE	31W N	HORSE CAVE	KY	42749
50	HART	3864050	RAIDERS INN CORPORATION	31W S	MUNFORDVILLE	KY	42765
50	HART	3996050	G & H STANDARD SERVICE	US 31 W	MUNFORDVILLE	KY	42765
50	HART	4036050	HORSE CAVE SHELL	HWY 218	HORSE CAVE	KY	42749
50	HART	4230050	TOMPKINSVILLE BLOCK CO	31W SOUTH ST	MUNFORDVILLE	KY	42765
50	HART	4289050	THE KETTLE	1164 N JACKSON HWY	HARDYVILLE	KY	42746
50	HART	4509050	CUB RUN ELEMENTARY SCHOOL	KENTUCKY HWY 728	CUB RUN	KY	42729
50	HART	4510050	LEGRANDE ELEMENTARY SCHOOL	KENTUCKY HWY 218	LEGRAND	KY	42749
50	HART	4511050	MEMORIAL ELEMENTARY SCHOOL	HWY 31 E	HARDYVILLE	KY	42746
50	HART	4512050	BONNIEVILLE ELEMENTARY SCHOOL	HWY 31 W	BONNIEVILLE	KY	42713
50	HART	4513050	MUNFORDVILLE ELEMENTARY SCHOOL	218 N W ST	MUNFORDVILLE	KY	42765
50	HART	4514050	HART COUNTY SCHOOL BUS GARAGE	KY HWY 88 E	MUNFORDVILLE	KY	42765
50	HART	4660050	CANMER DEHYDRATION STATION	DAVIS BEND RD	CANMER	KY	40232
50	HART	4882050	LOG CABIN OIL & STOP & SHOP	42600 I65 & 31W	MUNFORDVILLE	KY	42765
50	HART	5125050	LOG CABIN OIL & STOP & SHOP	170 JACKSON HWY S	HARDYVILLE	KY	42746

COUNTY_CODE	COUNTY_NAME	SITE_SEQ_ID	SITE_NAME	NVL(C-STREET_ADDRESS,C-PO_ADDRESS)	CITY	ST	POSTAL_CO
50	HART	5126050	THREE SPRINGS SERVICE STATION	5805 LEGRAND HWY	HARDYVILLE	KY	42746
50	HART	5127050	ANDERSON FOREST PRODUCTS	N HWY 31 W	MUNFORDVILLE	KY	42765
50	HART	5128050	WIGWAM SERVICE	HWY 31E & 218 7012 N JACKSON HWY	HORSE CAVE	KY	42749
50	HART	5247050	DAIRY MART #194	US 31 W & ALT SHELTER AVE	HORSE CAVE	KY	42749
50	HART	5441050	CANMER STATION	HWY 31E N JACKSON HWY	CANMER	KY	42722
50	HART	5575050	SRYGLE TRUCKING INC	6050 S DIXIE HWY	HORSE CAVE	KY	42749
50	HART	5885050	DUPLICATE TO 1012-050 (JAMES W & JAMES A STEWART)	112 W 5TH ST	MUNFORDVILLE	KY	42765
50	HART	6509050	HORSE CAVE SPUR	US 31 W	HORSE CAVE	KY	42749
50	HART	6736050	HORSE CAVE RADIO RELAY KY 0610	1130 S DIXIE ST	HORSE CAVE	KY	42749
50	HART	7543050	MUNFORDVILLE KY BULK PLANT 434	RURAL ROUTE 1	HORSE CAVE	KY	42749
50	HART	7545050	GREEN RIVER OIL CO (ABM 261 252 0536)	633 MAIN ST	MUNFORDVILLE	KY	42765
50	HART	7546050	RAGLANDS ASHLAND	7610 N DIXIE HWY	BONNIEVILLE	KY	42713
50	HART	8125050	H B ENGLAND	HWY 31 E	HARDYVILLE	KY	42746
50	HART	8126050	GREEN RIVER HILL GROCERY	5685 N JACKSON HWY	MUNFORDVILLE	KY	42765
50	HART	8127050	LEON BENNETT	HWY 218	HORSE CAVE	KY	42749
50	HART	8128050	ARMCO STEEL	HWY 31 W	HORSE CAVE	KY	42749
50	HART	8131050	MIDWAY WHOLESAL	HWY 31 W	HORSE CAVE	KY	42749
50	HART	8403050	JR FOOD STORE #806	1011 E MAIN ST	HORSE CAVE	KY	42749
50	HART	8705050	HODGES MARKET	HWY 728 W	BONNIEVILLE	KY	42713
50	HART	9016050	FASTWAY 17	12725 CUB RUN HWY	CUB RUN	KY	42729
50	HART	9017050	HESTERS SUPER SAVER 2	7609 N DIXIE HWY	BONNIEVILLE	KY	42713
50	HART	9331050	CARROLL ROCK	RFD 2	HARDYVILLE	KY	42746
50	HART	9332050	JOLLYS SHELL	31 E NORTH HORSE CAVE	HORSE CAVE	KY	42749
50	HART	9333050	SHELTONS SHELL	31 E	LINWOOD	KY	42765
50	HART	9334050	WIGWAM GENERAL STORE	7015 S JACKSON HWY	HORSE CAVE	KY	42749
50	HART	9335050	OLE KY COUNTRY STORE	FLINT RIDGE RD	HORSE CAVE	KY	42749
50	HART	9336050	MUNFORDVILLE SHELL FOOD MART	1500 N MAIN ST	MUNFORDVILLE	KY	42765
50	HART	9337050	SANDWICH SHOPPE	HWY 31W S	HORSE CAVE	KY	42749
50	HART	9341050	SPEEDY CAR WASH	31W	MUNFORDVILLE	KY	42765
50	HART	9342050	DUPLICATE TO SITE # 1002-050	HWY 218 E	HORSE CAVE	KY	42749
50	HART	9505050	CALY SIMPSON	3346 LEGRANDE HWY	HORSE CAVE	KY	42749
50	HART	9704050	DRIVERS TRAVEL MART (FFP #400)	HWY 218	HORSE CAVE	KY	42749
50	HART	9865050	DART CONTAINER CORP	975 S DIXIE ST	HORSE CAVE	KY	41749
50	HART	9999164	STEWARTS SERVICE STATION	1206 HWY 88	MUNFORDVILLE	KY	42765
50	HART	10000113	DX SERVICE STATION	103 N DIXIE ST	HORSE CAVE	KY	42749
50	HART	10000114	CARLS USED CARS	1461 E MAIN	HORSE CAVE	KY	42749
50	HART	10000273	BROOKS USED CARS	440 N DIXIE ST	HORSE CAVE	KY	42749
50	HART	20023202	OLD WALTERS GARAGE PROPERTY	2573 DIXIE HWY	BONNIEVILLE	KY	42713
50	HART	20102278	TAYLORS SERVICE & SUPPLY	MAIN ST	MUNFORDVILLE	KY	42765
50	HART	20118614	MOODYS GROCERY	HWY 31 W	BONNIEVILLE	KY	42713
50	HART	20119627	DIE STORE	HWY 1079	BONNIEVILLE	KY	42757
50	HART	20135245	RICHARDSON PROPERTY	31 W	MAGNOLIA	KY	42765
50	HART	20143555	PUCKETTS GROCERY	HWY 218 & HWY 335	ROWLETTS	KY	42749
50	HART	20143558	LAWERS SERVICE CENTER	HWY 88	HORSE CAVE	KY	42729
50	HART	20145769	GOLDSMITH GROCERY	HWY 31 W	MUNFORDVILLE	KY	42765

County Name GRAVES

Incident Id Name	Date Received	Spill Class	Incident Type	Status	Nearest Community	Latitude	Longitude	Section
15503 TODD CORPORATION	01/10/2001			ACTIVE	Mayfield			STATE SUPERFUND
49009 WATER WORLD	06/14/1998	HAZARDOUS SUBSTANCE	ABANDONED DRUMS	CLOSED	MAYFIELD	36.73393	-88.63367	STATE SUPERFUND
44731 WEST VIOLA PAINT	06/02/1997	HAZARDOUS SUBSTANCE	ABANDONED DRUMS	CLOSED	WEST VIOLA	36.85528	-88.66278	STATE SUPERFUND
49595 WHITLOW OIL	04/01/1999	PETROLEUM	FACILITY SPILL	CLOSED	MAYFIELD	36.74167	-88.63667	PETROLEUM

Count of sites in GRAVES County 28

County Name GRAYSON

Incident Id Name	Date Received	Spill Class	Incident Type	Status	Nearest Community	Latitude	Longitude	Section
5912 BEAVER CREEK	04/27/2000		ABANDONED DRUMS	CLOSED	LEITCHFIELD	37.42577	-86.27986	STATE SUPERFUND
32301 BROCK SPRING	02/09/1995	HAZARDOUS SUBSTANCE	FACILITY SPILL	CLOSED	LEITCHFIELD	37.48	-86.29389	STATE SUPERFUND
11453 CLARENCE CARTER - COAST GUARD AID	09/28/2000	POLLUTANT/CONTAMINANT	ILLEGAL HAZWASTE DISPOSAL	ACTIVE	HOLT			STATE SUPERFUND
42729 ELLIS-MAYES FUNERAL HOME	12/04/1996	PETROLEUM	FACILITY SPILL	CLOSED	LEITCHFIELD	37.48	-86.29389	PETROLEUM
15508 ESCUE WOOD PRESERVING	01/10/2001			ACTIVE	Millwood			STATE SUPERFUND
11456 HANCOCK BEND LOWER - COAST GUARD AID	09/28/2000	POLLUTANT/CONTAMINANT	ILLEGAL HAZWASTE DISPOSAL	ACTIVE	HAWESVILLE			STATE SUPERFUND
11460 HIGHLAND ROCKS - COAST GUARD AID	09/28/2000	POLLUTANT/CONTAMINANT	ILLEGAL HAZWASTE DISPOSAL	ACTIVE	UNIONTOWN			STATE SUPERFUND
11454 HUDSON HILL - COAST GUARD AID	09/28/2000	POLLUTANT/CONTAMINANT	ILLEGAL HAZWASTE DISPOSAL	ACTIVE	SUNNY CORNER			STATE SUPERFUND
42596 LEITCHFIELD POST OFFICE	11/20/1996	PETROLEUM	FACILITY SPILL	CLOSED	LEITCHFIELD	37.48	-86.29389	PETROLEUM
11458 LEWISPORT BEND - COAST GUARD AID	09/28/2000	POLLUTANT/CONTAMINANT	ILLEGAL HAZWASTE DISPOSAL	ACTIVE	LEWISPORT			STATE SUPERFUND
11459 LEWISPORT LOWER - COAST GUARD AID	09/28/2000	POLLUTANT/CONTAMINANT	ILLEGAL HAZWASTE DISPOSAL	ACTIVE	LEWISPORT			STATE SUPERFUND
20670 MID-VALLEY PIPELINE	01/12/1994	PETROLEUM	OTHER	CLOSED	LEITCHFIELD	37.48	-86.29389	PETROLEUM
11457 MUSSEL SHOAL - COAST GUARD AID	09/28/2000	POLLUTANT/CONTAMINANT	ILLEGAL HAZWASTE DISPOSAL	ACTIVE	ADAIR			STATE SUPERFUND
14246 NORTHSIDE DISCOUNT GASOLINE ABANDONED DRUM	12/11/2000		ILLEGAL HAZWASTE DISPOSAL	CLOSED	Leitchfield			STATE SUPERFUND
40107 SOUTHERN KY PALLET CO. FIRE	04/12/1996	POLLUTANT/CONTAMINANT	OPEN BURNING	CLOSED	LEITCHFIELD	37.48	-86.29389	STATE SUPERFUND
32300 TUNCILL PROPERTY	11/30/1990	HAZARDOUS SUBSTANCE	OPEN DUMPING	CLOSED	BIG CLIFTY	37.54556	-86.15361	STATE SUPERFUND

Count of sites in GRAYSON County 16

County Name GREEN

Incident Id Name	Date Received	Spill Class	Incident Type	Status	Nearest Community	Latitude	Longitude	Section
15509 ANACONDA IND. INC. MANGET WIRE & CABLE	01/10/2001			ACTIVE	Summersville			STATE SUPERFUND
20328 ANAMAG	01/11/1994	HAZARDOUS SUBSTANCE	UST (EXEMPT)	CLOSED	SUMMERSVILLE	37.32611	-85.54444	STATE SUPERFUND
36081 ASHLAND CHEM. BULK TANKER ACCIDENT (ALLENDALE)	03/17/1995	PETROLEUM	FIRE/EXPLOSION	CLOSED	GREENSBURG	37.3711	-85.5828	STATE SUPERFUND
99993 BLACK GNATT DRUMS	04/23/2002		ABANDONED DRUMS	CLOSED	BLACK GNAT	37.303972	-85.43919	STATE SUPERFUND

County Name HARLAN

Incident Id Name	Date Received	Spill Class	Incident Type	Status	Nearest Community	Latitude	Longitude	Section
37612 U.S. ARMY CORP OF ENGINEERS	08/03/1995	PETROLEUM	UST (EXEMPT)	CLOSED	HARLAN	36.84306	-83.32194	PETROLEUM
40501 U.S. ARMY CORP OF ENGINEERS	05/14/1996	PETROLEUM	OTHER	CLOSED	RIO VISTA	36.84389	-83.35944	PETROLEUM
37234 U.S. CORPS OF ENGINEERS	11/10/1995	PETROLEUM	FACILITY SPILL	CLOSED	LOYALL	36.85194	-83.35417	PETROLEUM
39880 US ARMY CORPS OF ENGINEERS	03/21/1996	PETROLEUM	OTHER	CLOSED	LOYALL	36.85194	-83.35417	PETROLEUM
39881 US ARMY CORPS OF ENGINEERS	03/21/1996	PETROLEUM	UST (EXEMPT)	CLOSED	LOYALL	36.85194	-83.35417	PETROLEUM

Count of sites in HARLAN County 46

County Name HARRISON

Incident Id Name	Date Received	Spill Class	Incident Type	Status	Nearest Community	Latitude	Longitude	Section
37871 BUNDY CORPORATION / BUNDY TUBING	08/24/1995	HAZARDOUS SUBSTANCE	LEAD ABATEMENT	ACTIVE	CYNTHIANA	38.39233	-84.31556	STATE SUPERFUND
20539 BUNDY TUBING	01/11/1994	HAZARDOUS SUBSTANCE	FACILITY SPILL	CLOSED	CYNTHIANA	38.39233	-84.31556	STATE SUPERFUND
34946 CITY OF CYNTHIANA	05/09/1995	PETROLEUM	UST (EXEMPT)	CLOSED	CYNTHIANA	38.39028	-84.29417	PETROLEUM
11639 CSX-GREDE PERM CAST RAIL RELEASE	10/04/2000		TRANSSPORTATION ACCIDENT	CLOSED	CYNTHIANA			PETROLEUM
47773 CYNTHIANA NATIONAL GUARD ARMORY	03/03/1998	PETROLEUM	FACILITY SPILL	CLOSED	CYNTHIANA	38.39028	-84.29417	PETROLEUM
15689 CYNTHIANA SCREW CORPORATION	01/12/2001			ACTIVE	Cynthiana			STATE SUPERFUND
42226 ECKLAR PROPERTY	10/14/1996	HAZARDOUS SUBSTANCE	OPEN DUMPING	ACTIVE	CYNTHIANA	38.4251	-84.27346	STATE SUPERFUND
11428 HAMILTON - COAST GUARD AID	09/28/2000	POLLUTANT/CONTAMINANT	ILLEGAL HAZWASTE DISPOSAL	ACTIVE	HAMILTON			STATE SUPERFUND
15691 HARRISON COUNTY SITE	01/12/2001			ACTIVE	Cynthiana			STATE SUPERFUND
11433 JACKSON LANDING - COAST GUARD AID	09/28/2000	POLLUTANT/CONTAMINANT	ILLEGAL HAZWASTE DISPOSAL	ACTIVE	WARSAW			STATE SUPERFUND
37361 LADISH COMPANY INC.	07/11/1995	PETROLEUM	FACILITY SPILL	CLOSED	CYNTHIANA	38.39028	-84.29417	PETROLEUM
15693 LADISH COMPANY KENTUCKY DIVISION	01/12/2001		FACILITY SPILL	CLOSED	Cynthiana	38.378889	-84.30139	STATE SUPERFUND

Count of sites in HARRISON County 12

County Name HART

Incident Id Name	Date Received	Spill Class	Incident Type	Status	Nearest Community	Latitude	Longitude	Section
52353 AVERITT EXPRESS	04/15/1999	HAZARDOUS SUBSTANCE	TRANSPORTATION ACCIDENT	ACTIVE	HORSE CAVE			STATE SUPERFUND
53154 CAVERNA MEMORIAL HOSPITAL	07/06/1999	PETROLEUM	FACILITY SPILL	CLOSED	CAVERNA			PETROLEUM
5921 HART COUNTY ABANDONED DRUMS	04/27/2000		ABANDONED DRUMS	CLOSED	MUNFORDVILLE	37.29752	-85.90405	STATE SUPERFUND
54310 HART COUNTY DRUM	03/06/2001	HAZARDOUS SUBSTANCE	ABANDONED DRUMS	CLOSED	HARDYVILLE	37.2542	-85.786	STATE SUPERFUND
15694 HIDDEN RIVER CAVE EXPLOSION	01/12/2001			ACTIVE	Rowlets			STATE SUPERFUND
20209 HORSE CAVE 1934	02/13/1998	HAZARDOUS SUBSTANCE	GAS PIPELINES	CLOSED	HORSE CAVE	37.17944	-85.90684	PETROLEUM
39865 I-65 SOUTH, MM 66	03/21/1996	PETROLEUM	TRANSPORTATION ACCIDENT	CLOSED	MUNFORDVILLE	37.27222	-85.89111	PETROLEUM
20584 KEN DEC FARM (CHAS INC.) / KEN-DEC, INC.	05/01/1991	HAZARDOUS SUBSTANCE	SOIL CONTAMINATION	CLOSED	HORSE CAVE	37.15111	-85.86708	STATE SUPERFUND

Superfund Information System
Sites by County

County Name HART

Incident Id Name	Date Received	Spill Class	Incident Type	Status	Nearest Community	Latitude	Longitude	Section
34148 KEN-DEC	08/29/1994	HAZARDOUS SUBSTANCE	OPEN DUMPING	CLOSED	HORSE CAVE	37.17944	-85.90694	STATE SUPERFUND
37360 KOA SUNOCO	07/11/1995	PETROLEUM	FACILITY SPILL	CLOSED	HORSE CAVE	37.17944	-85.90694	PETROLEUM
15728 L & N HORSE CAVE TRAIN DERAILMENT	01/16/2001			ACTIVE	Horse Cave			STATE SUPERFUND
20371 L&N HORSE CAVE DERAILMENT	01/11/1994		OTHER	CLOSED	MUNFORDVILLE	37.27222	-85.89111	STATE SUPERFUND
20210 MUNFORDVILLE 1943	02/13/1998	HAZARDOUS SUBSTANCE	GAS PIPELINES	CLOSED	MUNFORDVILLE	37.27222	-85.89111	PETROLEUM
15736 O'CON ENGINEERING SITE	01/16/2001			ACTIVE	Bonnieville			STATE SUPERFUND
15754 ORVILLE NUNN LANDFILL	01/16/2001			CLOSED	Bonnieville			STATE SUPERFUND
54154 ORVILLE NUNN LANDFILL	10/19/1999	HAZARDOUS SUBSTANCE	LANDFILL	ACTIVE	MUNFORDVILLE	37.3467	-85.86	FEDERAL SUPERFUND
15730 PILKINTON ROYCE PROPERTY	01/16/2001			ACTIVE	Munfordville			STATE SUPERFUND

Count of sites in HART County 17

County Name HENDERSON

Incident Id Name	Date Received	Spill Class	Incident Type	Status	Nearest Community	Latitude	Longitude	Section
37208 ACCURIDE CORPORATION	06/28/1995	PETROLEUM	FACILITY SPILL	CLOSED	HENDERSON	37.83611	-87.59	PETROLEUM
41414 ACCURIDE CORPORATION	07/19/1996	OTHER	OTHER	CLOSED	HENDERSON	37.83611	-87.59	FEDERAL SUPERFUND
20495 ADAMS STREET DEVELOPMENT	01/11/1994	HAZARDOUS SUBSTANCE	FACILITY SPILL	ACTIVE	HENDERSON	37.83489	-87.56769	STATE SUPERFUND
52342 AEROQUIP	04/07/1999	POLLUTANT/CONTAMINANT	FACILITY SPILL	CLOSED	HENDERSON	37.83364	-87.56772	STATE SUPERFUND
15757 ALCAN INGOT AND RECYCLING	01/16/2001			ACTIVE	Henderson			STATE SUPERFUND
31973 ALVES PROPERTY	01/27/1994	PETROLEUM	UST (EXEMPT)	CLOSED	HENDERSON	37.83611	-87.59	PETROLEUM
49612 BASKET GROCERY	07/16/1998	PETROLEUM	UST (EXEMPT)	CLOSED	BASKET			PETROLEUM
113310 CENTENNIAL RESOURCES	03/25/2003		OPEN DUMPING	ACTIVE	BLUFF CITY	37.821583	-87.39717	FEDERAL SUPERFUND
7968 CORYDON, CITY OF	07/26/2000	PETROLEUM	UST (EXEMPT)	CLOSED	CORYDON			PETROLEUM
31693 CSX/LES BAR	11/01/1993	PETROLEUM	UST (EXEMPT)	CLOSED	HENDERSON	37.83611	-87.59	STATE SUPERFUND
47783 DAN FRITTS (FORMER DOYLE HARRIS PROPERTY)	05/27/1998	PETROLEUM	SOIL CONTAMINATION	CLOSED	HENDERSON	37.81417	-87.61667	PETROLEUM
51201 DENNIS JONES PROPERTY/PITTSBURG TANK AND TOWER	12/29/1998	HAZARDOUS SUBSTANCE	SOIL CONTAMINATION	CLOSED	HENDERSON	37.731351	-87.53350	STATE SUPERFUND
20271 DIXIE TO STORAGE 4100	02/13/1998	HAZARDOUS SUBSTANCE	GAS PIPELINES	CLOSED	POOLE			PETROLEUM
12075 EFFIE WALKER TRANSFORMERS	10/17/2000		TRANSFORMER SPILL	CLOSED	NIAGARA	37.72542	-87.49511	STATE SUPERFUND
15761 FEGGET (CLEOTUS) RESIDENCE	01/16/2001			ACTIVE	Reed			STATE SUPERFUND
20391 GAMCO / GAMCO PRODUCTS (OLD FACILITY)	01/14/1994	HAZARDOUS SUBSTANCE	GROUNDWATER (NON-POTABLE)	ACTIVE	HENDERSON	37.840278	-87.57722	STATE SUPERFUND
15763 GAMCO PRODUCTS COMPANY	01/16/2001			ACTIVE	Henderson			STATE SUPERFUND
37620 GERTRUDE GIVENS RESIDENCE	08/03/1995	PETROLEUM	UST (EXEMPT)	CLOSED	HENDERSON	37.83611	-87.59	PETROLEUM
29401 GIBBS DIE CASTING ALUMINUM CORP.	01/14/1994	PETROLEUM	FACILITY SPILL	CLOSED	HENDERSON	37.83611	-87.59	STATE SUPERFUND
47365 GREEN RIVER TANK	01/30/1998	PETROLEUM	ABANDONED DRUMS	ACTIVE	HENDERSON			STATE SUPERFUND
53050 H&M LC/HAZEX CONST-MERRITT PLACE	06/24/1999	POLLUTANT/CONTAMINANT	OPEN DUMPING	CLOSED	HENDERSON	37.83611	-87.59	STATE SUPERFUND

Siria, Bruce (KYTC)

From: Gray, Steve (NREPC, DNR)
Sent: Wednesday, November 19, 2003 3:14 PM
To: Siria, Bruce (KYTC)
Cc: MacSwords, Leah (NREPC, DNR)
Subject: STEWARDSHIP FORESTS



STEWARDSHIP
FORESTS IN STUDY A...

Bruce, Enclosed is the Stewardship Forest list for the Hwy 88 study area.

**STEWARDSHIP FORESTS
IN HWY 88 STUDY AREA**

LANDOWNER	LATITUDE	LONGITUDE	ACRES
Noel Johnston	N37.265503	W86.022731	80
David Hawkins	N37.322361	W86.631425	180
David Wright	N37.31940	W86.02971	40
Owen Harp	N37.28015	W85.932987	82
Nancy Hammer	N37.310558	W85.976446	111
Roger & Mildred Kessinger (pending)	N37.302507	W86.051431	196

**STEWARDSHIP FORESTS
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THE SECRETARY FOR HEALTH SERVICES
COMMONWEALTH OF KENTUCKY
275 EAST MAIN STREET
FRANKFORT, KENTUCKY 40621-0001
(502) 564-7042
(502) 564-7091 FAX

PAUL E. PATTON
GOVERNOR

MARCIA R. MORGAN
SECRETARY

November 25, 2003

Annette Coffey, P.E., Director
Division of Planning
Transportation Cabinet
State Office Building
Frankfort, Kentucky 40601

Dear Ms. Coffey:

This is in response to your letter requesting the Cabinet for Health Services' input and comments on a planning study to determine the need for, and potential impacts of, a proposed highway project. The Department for Public Health in conjunction with the Barren River District Health Department reviewed the project, which would involve improvements to KY 88 from KY 479 in Grayson County to Munfordville in Hart County. Both agencies find no issues or problems and support the project.

If we can be of further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Morgan".

Marcia R. Morgan
Secretary

"...promoting and safeguarding the health and wellness of all Kentuckians."



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Siria, Bruce (KYTC)

From: Vinegar, Tony (KYTC)
Sent: Wednesday, November 26, 2003 11:01 AM
To: Siria, Bruce (KYTC)
Subject: FW: Draft environmental overview for KY 88 in Hart County (4-8101)

Bruce, I am not sure if I had sent this to you or not but I would like to add to Carl's comment below:

- There are several potentially eligible/listed cultural historic sites within the project area. A full baseline study is recommended.
- There is a potential for several ust/haz sites to be present within the corridor; a phase one study will be required.
- Ephemeral streams will likely be impacted; if wetland impacts are significant then either a nationwide or individual permit would be required.
- Noise and Air aspects of the project should not cause concern.
- Endangered species will have to be coordinated for with USFWS. They include Both the Indiana and Gray Bats, Eggert's Sunflower, Price' Potato Bean and Mussels.

I apologize for the late info however, I just got the rest of the info last week. I hope that it can be utilized to benefit the project.

-----Original Message-----

From: Shields, Carl (KYTC)
Sent: Wednesday, August 20, 2003 11:50 AM
To: Vinegar, Tony (KYTC)
Cc: Siria, Bruce (KYTC); Rawlings, Paul (KYTC); Schaefer, Jeff (KYTC-D04)
Subject: Draft environmental overview for KY 88 in Hart County (4-8101)

Tony,

I have reviewed archaeology section of the draft environmental overview for KY 88 in Hart County.

The overview indicates the three previously recorded prehistoric sites located within the study area are not eligible for the National Register of Historic Places (NRHP). This is incorrect. Two of the sites, located in Grayson County at the west end of the study area, are listed as inventory sites (on Corps property). This means they have not been assessed for the NRHP. The third site, a rockshelter located southwest of Cub Run, was also not assessed. This site was first reported in 1928 (site no. 15Ht1...the first site recoded in the county). A brief description of the site indicates there is "an abundance of artifacts" found in the rockshelter and in the nearby fields.

The overview should state that NRHP eligibility has not been assessed, and that additional archaeological work will be needed if they are impacted.

The Corps conducted an archaeological survey of the Nolin River reservoir. It does not show up in our GIS database, but it should be added to the list of surveys conducted in the study area (n=8).

In Exhibit 2, the colors for the archaeological sites and surveys in the legend are reversed from what is shown on the map. The north arrow is missing.

I do concur there is a high probability for encountering historic and prehistoric sites within the study area.

If you have questions, let me know,

Carl

Carl R. Shields - Archaeologist

Division of Environmental Analysis
Kentucky Transportation Cabinet
Frankfort, Kentucky
(502) 564-7250
Carl.Shields@mail.state.ky.us

BILLY RAY SMITH
COMMISSIONER



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TTY: (502) 564-2075

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF AGRICULTURE
500 MERO STREET, 7TH FLOOR
FRANKFORT, KY 40601

December 1, 2003

Ms. Annette Coffey, P.E.
Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

SUBJECT: Planning Study
Grayson and Hart County
KY 88 from KY 479 to Munfordville

Ms. Coffey:

In response to the planning study in Hart County, the Department of Agriculture is interested in the impact that the proposed highway project will have on agriculture in Hart County. The agricultural industry is important to all of Kentucky, especially the rural areas such as Hart County.

Changes in agriculture not only affect farmers directly, but they also trickle throughout the entire economy making impacts on many other businesses. This fact makes it sensible to give land that is considered prime and statewide unique special consideration. Alternatives that disrupt the least amount of farmland should be seriously considered since agriculture is vital to the overall well-being of Hart County and its citizens.

Feel free to contact me for any additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Ira Linville".

Ira Linville
Executive Director
Office of Environmental Services



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APPENDIX F
ENVIRONMENTAL OVERVIEW

KENTUCKY 88, HART COUNTY

From Munfordville (mile point 0) to Nolin Lake (mile point 17)

ITEM NUMBER 04-8101.00

ENVIRONMENTAL OVERVIEW

Prepared for:

**KENTUCKY TRANSPORTATION CABINET
DIVISION OF PLANNING**

October 2003

Prepared by:



ENVIRONMENTAL OVERVIEW

KY 88

**From Munfordville (mile point 0) to Nolin Lake (mile point 17)
HART COUNTY, KENTUCKY**

Item No.: 04-8101.00

Prepared for:

**KENTUCKY TRANSPORTATION CABINET
DIVISION OF PLANNING**

Prepared by:

**William C. Crawford
David E. Smith**

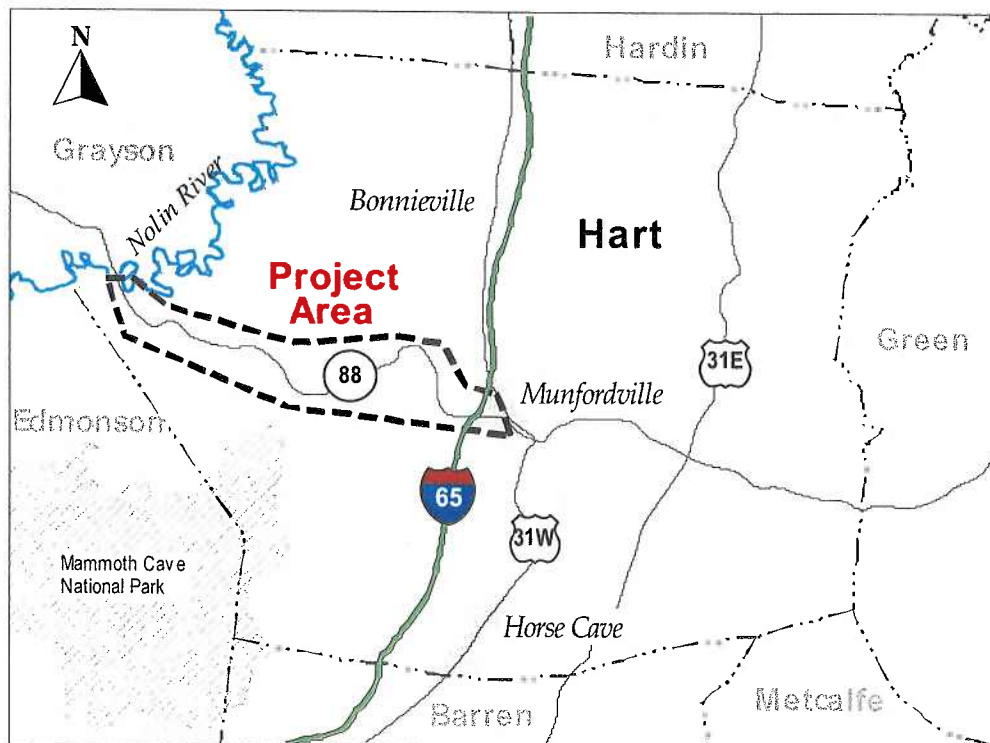


October 2003

ENVIRONMENTAL OVERVIEW

Ideally, a roadway project would avoid any significant environmental impacts. However, if avoidance is not possible, then minimization of those impacts is the next best option. Mitigation of impacts is desirable, and sometimes required, depending upon the specific type of impact. Facility enhancements are possible regardless of whether avoidance, minimization, or mitigation is an appropriate action. A key task in a planning study is to identify those environmental features for which avoidance, minimization, or mitigation may be necessary during any future project development phases.

This environmental overview identifies KY 88 project study area issues likely to require consideration during the KY 88 roadway improvement planning study. It summarizes the results of environmental investigations, based primarily upon literature, archival, known database, and map research. Limited amounts of fieldwork were conducted, consisting mainly of windshield surveys to confirm identified sites, and visually identify previously unknown sites. Additional information was collected through correspondence with other state and federal agencies. This environmental overview does not provide a detailed analysis and assessment of any potential impacts. The KY 88 study area is about 17 miles long, and ranges from about 0.8 to 3.1 miles wide, as indicated in the project area graphic below and the highlighted area on Exhibits 1 and 2. The study area is larger than the project termini, which extend from mile point 0 in Munfordville to mile point 17 near Nolin Lake. It includes the western two-thirds of the city of Munfordville, and the communities of Mount Beulah, Kessinger, Center Point, Winesap, Cub Run, and Big Windy in Hart County, and the Wax Recreation Area in Grayson County. Refer to Exhibits 1 and 2, and the color photographs of existing KY 88 typical sections, for the following discussions concerning the study area.



Environmental Footprint

Topography and Geology. Elevation in the study area ranges from 500 to 920 feet above mean sea level, with greatest relief differences in the eastern portion, near Munfordville. The study area is mostly within the Caseyville Hills Ecoregion of the Interior River Valleys and Hills Ecoregion of western Kentucky. The Interior River Valleys and Hills Ecoregion consists of nearly level, agriculturally dominated lowlands and forested hills underlain by carboniferous sedimentary rock, with wetlands common on lowlands and bottoms. The once common bottomland and swamp forests have been mostly replaced by cropland and pasture, but the hills remain mostly forested. The Caseyville Hills Ecoregion is dominated by forests and pastureland, more highly dissected than other sections of the Interior River Valleys and Hills Ecoregion, and underlain by Pennsylvanian sandstones, siltstones, shales, and coals; as well as Mississippian Chesterian limestones, siltstones, shales, and sandstones.

Portions of the study area are also located within the Crawford-Mammoth Cave Uplands Ecoregion of the Interior Plateau Ecoregion. The Interior Plateau consists of extensive plains that are occasionally interrupted by dissected uplands and knobs, with large areas of karst landscape. It is underlain by Mississippian through Ordovician aged limestone, calcareous shales, sandstone, siltstone, and shale. The Crawford-Mammoth Cave Uplands Ecoregion is higher in elevation and more rugged than surrounding areas, with Mississippian age sandstones dominating uplands dissected by shale and limestone valleys. Thick, cavernous limestones and sinkholes underlie many valleys, with caverns, springs, and subterranean drainages common.

The study area is part of the Mississippian Plateau physiographic region, underlain at the surface by rocks of the Mississippian and Lower Pennsylvania age. Hart County occupies two plateau areas. The lower plateau is a limestone plain with few surface streams and thousands of sinkholes. Northwest of this region is the Dripping Springs Escarpment, behind which are tablelands dissected by streams. The Green River crosses the middle of the county, south of the study area, flowing west toward the Ohio River. However, no major stream drainages cross the study area except for Nolin River on the western end. Most of the study area's topography is wide rolling ridge tops that are deeply dissected along their margins. The county is known to have a large number of cave sites, as well as numerous sinkholes and springs in the study area.

The study area's predominant land use is agricultural (livestock, row crops, hayfields, pasture), with forested hills and sinkholes. Logging, oil and gas well production, and mining are also present. Residential and commercial areas are scattered throughout the study area, with the more built-up areas in the towns, and some development occurring mainly around the eastern and western ends.

Any roadway improvement could possibly encounter and impact one or more these features. This is especially true for surface and ground water sources, and karst features. Any future project development and/or design studies will need to take these features into consideration.

Culturally Sensitive Locations. This preliminary study identified the following culturally sensitive locations in and around the study area: 15 cemeteries, numerous churches, and the Munfordville Elementary School. Nearby popular tourist and recreation areas include: Nolin River Reservoir and Wildlife Management Areas, Wax Recreational Area, Nolin River Lake State Park, and Mammoth Cave National Park.

These culturally sensitive locations vary from having local community significance, to regional significance with state and/or federal jurisdictional responsibilities. Any future roadway improvements proposed should thoroughly consider potential impacts to these resources.

Historic, Archaeological, and Cultural Resources. The study area contains 3 properties listed on the National Register of Historic Places (NRHP), and all 3 properties are located in Munfordville. Two of the properties (the Presbyterian Church and Munfordville School) are contained within the potential historic district identified on the exhibits as Site B. The third property (Munfordville Baptist Church) is identified on the exhibits as Site C with the suffix "NR" (National Register). A windshield survey identified an additional 19 historic sites, with 4 individual sites and the potential historic district in Munfordville (*i.e.*, Site B) having the potential to meet NRHP criteria. The four individual sites are located in the eastern part of the study area and identified on the exhibits with the suffix "NRP" (National Register Potential) as: Site A (Motel, US 31E), Site D (Mill, KY 88), Site E (Joe Logsdon House, KY 88), and Site F (Summer Lea, KY 88). The potential NRP historic district, designated as Site B on the exhibit, consists of commercial and residential buildings, and extends beyond the study area's eastern most boundaries in Munfordville. It would include sections of Main Street (US 31E), Center Street, Union Street (KY 88), Washington Street, and West Street. No buildings were inspected in detail. This preliminary assessment was based primarily on Criterion C, architecture. The remaining 15 sites (which include Site P, the community of Cub Run) were surveyed only (*i.e.*, no apparent NRHP potential; and identified on the exhibits as "Survey"). NRHP eligibility determination will require additional research, physical examination, evaluation, and consultation with the State Historic Preservation Office (SHPO). *Kentucky's Historic Farms* publication listed two historic farms in Munfordville (The Riverview Farm, and The Apple Hill Farm), which are potentially in the study area vicinity. The farms' exact locations and property boundaries could not be determined without further research; therefore their relationship and proximity to the study area is unknown.

The archaeological overview identified eight previous investigations (includes one investigation by the US Corps of Engineers in Nolin River Reservoir) conducted within the study area, which resulted in the discovery of only three prehistoric archaeological sites. The NHRP eligibility of these three sites has not been assessed; therefore, additional archaeological investigation will be needed for any site impacted by roadway improvements. The archaeological overview revealed the study area to be largely uninvestigated, with virtually no information on the archaeological resources within the study area. The potential for finding prehistoric sites appears high given the topographic setting (*i.e.*, long rolling or flat topped ridges) and streams, and the presence of sinkholes, springs, and caves, all of which are known to have been particularly attractive places for prehistoric occupation. The area in and surrounding the study area appears to contain a large number of historic structures that are still standing or currently in use, with potentially intact archaeological deposits. Historic mapping review indicated approximately 198 potential archaeological resource sites. Based upon the background literature review, the archaeological overview concluded the potential for encountering significant prehistoric and historic archaeological sites within the study area is considered high. If improvements to KY 88 are to be implemented, requiring an environmental document, then the unsurveyed study area portions should be subjected to a Phase I level archaeological investigation (*i.e.*, shovel test probe excavations in accessible areas), and a historic structure survey.

Aquatic Resources. The study area is within the Green River drainage, with 65 surface streams located in the study area, including Cane Run, Sinking Creek, Cub Run, and Little Dog Creek; as well as part of the Nolin River Reservoir. Much of the area's drainage is subterranean, with many streams disappearing into sinkholes (e.g., Sinking Creek), and others disappearing underground for a few hundred feet before resurfacing as surface and jurisdictional waterways. So much subterranean drainage makes it an important groundwater recharge area.

Extensive underground and surface mines have degraded aquatic habitats and water quality. If KY 88 improvements are implemented, then all streams in the study area may be impacted by sedimentation resulting from roadway construction improvements. Soil from exposed and erodible surfaces may directly enter surface water – subsequently entering ground water through sinks – temporarily increasing turbidity levels in both surface and ground waters. Surface and ground water may also experience temporary increases in specific conductance, suspended solids, and nutrients. Study area stream impacts may pose serious subterranean aqua-fauna consequences if stringent erosion control measures are not practiced.

The existing KY 88 roadway is constructed on the ridge for most of its alignment, crossing few streams. Any alignment correcting horizontal and vertical deficiencies will deviate from the ridge top and cross many more streams than the current roadway. Many are first order streams not shown on USGS topographic maps as waterways, and several may disappear underground to resurface again as surface and jurisdictional waterways.

Kentucky Division of Water (KDOW) will require a non-point source pollution control plan, and an effectively implemented erosion control plan. Rigid application of KYTC's *Specific Specifications for Road and Bridge Construction* and the Federal Highway Administration's (FHWA) *Best Management Practices for Erosion and Sediment Control* can be used to alleviate most sedimentation problems.

No nationally listed wild and scenic rivers are located within the study area. However, Mammoth Cave National Park is located just south, and outside, of the study area boundaries. The portion of Green River within the national park boundaries is listed on the Kentucky Wild River System and considered an outstanding resource water. Green River is also situated south of the study area, with one bend adjacent to the study area boundary, but outside the national park boundaries. Given the karst nature and subterranean drainage of the area, and that many streams and sinkholes drain into the Green River, close coordination with Mammoth Cave National Park is recommended to assess potential impacts to the national park and Green River.

One municipal/public surface water intake is located at mile 2.8 of Nolin River, operated by the Edmonson County Water District. No recorded water wells were identified in the study area. The KDOW reported that no wellhead protection areas are located within, or adjacent to, the study area. The KDOW recently implemented a policy change and now regards the location of municipal water supplies and groundwater protection areas as classified information. Therefore, only a limited amount of information is available, and mainly originates from other public information sources.

A limited amount of floodplain information is available for the study area. The Hart County Flood Hazard Boundary Maps (dated July 8, 1977) were converted to Flood Insurance Rate Maps (FIRM) on July 1, 1991, by Letter of Map Change (LOMC). New maps were

not published, and the existing maps are subject to change “after a more detailed study.” According to the maps, only the Nolin River Reservoir portion of the study area includes flood hazard areas, where KY 88 crosses the 100-year flood plain when it crosses the river. The remainder of the study area does not cross any special flood hazard areas (*i.e.*, Zone A), and is located entirely within Zone X (areas outside 500-year floodplain).

Wetlands and Ponds. National Wetland Inventory (NWI) map reconnaissance revealed numerous potential wetlands distributed throughout the study area, with about 65 percent less than or equal to 0.3 acres. The wetlands are identified on the exhibits as “WET #.” Palustrine, emergent wetlands (*i.e.*, dominated by herbaceous vegetation) accounted for 13 sites, ranging in size from about 0.1 to 8.0 acres. Palustrine, forested wetlands numbered 9 sites, ranging in size from about 0.1 to 6.0 acres. Lacustrine littoral unconsolidated shore wetlands numbered 5 areas, ranging in size from about 10 to 30.3 acres, all located in the western end adjoining Nolin River. Riverine intermittent streambeds accounted for 6 areas of undetermined acreage. Palustrine habitats with unconsolidated bottoms accounted for 174 sites, ranging in area from 0.1 to 3.8 acres, most of which are probably created ponds or lakes, while others are naturally occurring sinkhole ponds. The topographical maps identified 171 ponds within the study area. Ponds, and ponded water habitats, may be considered jurisdictional if a jurisdictional stream flows through them. More intensive field surveys would be required to confirm and delineate NWI map wetlands, as well as identify any wetlands not appearing on the map.

A specific roadway design is needed before the type of United States Army Corps of Engineers (USACE) permit required (*i.e.*, Nationwide or Individual) can be determined, however this project could possibly be permitted under *Nationwide Permit 14 Transportation Crossings*, rather than an Individual Permit. The nationwide permit only authorizes activities with minimal adverse effects on the aquatic environment. The KDOW will probably require a Kentucky Pollutant Discharge Elimination System (KPDES) General Stormwater Permit, a Floodplain Construction Permit if filling within the one-hundred-year floodplain (likely only required if filling along the Nolin River Reservoir is necessary), and a Water Quality Certification.

Terrestrial Resources. The plant and animal life is considered typical for the area. Historically, the lowland areas contained wetlands, and bottomland and swampland forests, with upland forests on the hills. Most of the lowlands and bottomlands have been converted to agricultural use (cropland and pasture), while the hill and sinkhole areas remain forested. Potential natural vegetation consists of oak-hickory forests.

Threatened and Endangered Species. Coordination with the United States Fish and Wildlife Service (USFWS) indicated the federally endangered Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*) could potentially use the study area. Records indicate at least two caves containing Indiana bats and/or gray bats are known to occur less than six miles from the study area. Therefore, it is reasonable to assume that other caves, rock shelters, and/or abandoned underground mines in the study area could provide winter habitat for Indiana bats, and/or summer and winter habitat for the gray bat. USFWS recommends a thorough search for caves, underground mines, or rock shelters be conducted in the study area, and their potential use as winter hibernacula for Indiana bats, or summer and/or winter roosting habitat by gray bats, be assessed. Since at least two potential Indiana bat hibernacula are known within 10-miles of the study area, the USFWS recommends trees only be removed between November 15 and March 31 to avoid impacting the species’ “swarming” behavior.

The federally threatened Eggert's sunflower (*Helianthus eggertii*) may occur in the vicinity of the study area. Eggert's sunflower occurs in barrens and woodland ecosystems where a mix of grassy, treeless openings lie within a thin overstory of small to medium trees, usually oaks. The species has also been found along roadsides and in fields where barrens formerly existed. The species is known to occur in the vicinity and, since potentially suitable habitat may exist within the project's boundaries, the USFWS recommended a qualified botanist survey the project site during the growing season to ascertain the presence or absence of the species within the project boundaries.

Coordination with Kentucky Department of Fish and Wildlife Resources (KDFWR) indicated no known records of federally or state protected species in the study area.

Coordination with the Kentucky State Nature Preserves Commission (KSNPC) for records of rare plants, animals, natural communities, or managed areas indicated 8 federally protected species are known to occur within one mile of the study area. All 8 are considered federally endangered species and are listed below. The KSNPC also listed several state species known to occur within one mile of the study area, and they are in the list below. The KSNPC reported two federally endangered aquatic species (*Epioblasma Obliquata Obliquata*, Catspaw, and *Lampsilis abrupta*, Pink mucket) occur in Green River, which is located outside and downstream of the study area, but they could be affected by any watershed disturbances. The KSNPC noted that: "Many other occurrences of the federally listed and state listed aquatic species on the report can also be found downstream, and some of these are extant occurrences while the ones in the project area may be historic." No occurrences of exemplary natural communities monitored by the KSNPC were reported.

Scientific Name	Common Name	Status
<i>Cyprogenia stegaria</i>	fanshell	federally endangered
<i>Epioblasma torulosa rangiana</i>	northern riffleshell	federally endangered
<i>Myotis grisescens</i>	gray bat	federally endangered
<i>Myotis sodalis</i>	Indiana bat	federally endangered
<i>Obovaria obtusa</i>	ring pink	federally endangered
<i>Palaemonias ganteri</i>	Mammoth Cave shrimp	federally endangered
<i>Pleurobema clava</i>	clubshell	federally endangered
<i>Pleurobema plenum</i>	rough pigtoe	federally endangered
<i>Alasmidonta marginata</i>	elktoe	KSNPC threatened
<i>Ammodramus heslowii</i>	Henslow's sparrow	KSNPC special concern
<i>Aureolaria patula</i>	spreading false foxglove	KSNPC special concern
<i>Celithemis verna</i>	double-ringed pennant	KSNPC special concern
<i>Cryptobranchus allegheniensis allegheniensis</i>	eastern hellbender	KSNPC special concern
<i>Cumberlandia monodonta</i>	spectaclecase	KSNPC endangered
<i>Dodecatheon frenchii</i>	French's shooting star	KSNPC special concern
<i>Epioblasma triquetra</i>	snuffbox	KSNPC special concern
<i>Etheostoma maculatum</i>	spotted darter	KSNPC threatened
<i>Fusconaia subrotunda subrotunda</i>	longsolid	KSNPC special concern
<i>Hybopsis amnis</i>	pallid shiner	KSNPC historic
<i>Lampetra appendix</i>	American brook lamprey	KSNPC threatened
<i>Lampsilis ovata</i>	pocketbook	KSNPC endangered
<i>Orconectes inermis inermis</i>	cave crawfish	KSNPC special concern

Scientific Name	Common Name	Status
<i>Phenacobius uranops</i>	stargazing minnow	KSNPC special concern
<i>Pituophis melanoleucus melanoleucus</i>	northern pine snake	KSNPC threatened
<i>Plethobasus cyphus</i>	sheepnose	KSNPC special concern
<i>Pleurobema rubrum</i>	pyramid pigtoe	KSNPC endangered
<i>Pseudanopthalmus simulans</i>	Cub Run cave beetle	KSNPC threatened
<i>Quadrula cylindrica cylindrica</i>	rabbitsfoot	KSNPC threatened
<i>Rhodacme elatior</i>	domed ancyliid	KSNPC special concern
<i>Simpsonaias ambigua</i>	salamander mussel	KSNPC threatened
<i>Tyto alba</i>	barn owl	KSNPC special concern
<i>Villosa fabalis</i>	rayed bean	KSNPC endangered
<i>Villosa lienosa</i>	little spectaclecase	KSNPC special concern
<i>Villosa ortmanni</i>	Kentucky creekshell	KSNPC threatened

Managed Land Areas. Managed land areas are under governmental or private regulatory control, typically to encourage environmental protection or resource procurement. Four managed land areas are located near the study area: Green River Outstanding Resource Water, Mammoth Cave National Park, Nolin River Reservoir, and Nolin River Reservoir Wildlife Management Area. Nolin Lake State Park is located to the west, adjoining the study area. Mammoth Cave National Park and Green River are located to the south.

Farmlands. Coordination with the Union County Natural Resources Conservation Service (NRCS) provided soil survey maps encompassing the study area, and farmland information. The predominant soil type in the study area is Jefferson-Lily-Wellston, generally sloping, with sandstone formation. Prime and Important farmland is not present in the area. The area is not heavily cropped. No major agricultural impacts are anticipated with the project. No agricultural districts would be impacted by the project.

Hazardous Materials Concerns. Land use in the study area is predominantly agricultural, with residential development and commercial facilities scattered throughout. Relevant data was collected from numerous sources, including federal and state databases, and a windshield survey of the area within and near the study area. The survey identified 27 possible contamination sites (see Table 1, *Possible Contamination Sites*). Most of these sites involve fuel distribution, and/or vehicle/heavy equipment and marine maintenance facilities, and have similar potential contamination concerns (e.g., underground storage tanks (UST's), fuel spills/leaks/soil contamination, waste petroleum products, heavy metals, solvents, corrosives, tires, lacquers/paints, 55-gallon drums, miscellaneous debris piles, etc.). The Louisville & Nashville Railroad services Munfordville, located in the study area's eastern end, with potential contaminants including creosote/treated ties, oils and greases, and leakage from cargo and freight. Other sources of contamination include: junk and waste stock piling on residential and commercial properties; junk, wrecked, salvaged vehicles and equipment; machine and engine parts; old appliances (waste materials requiring special handling); agricultural/farm services (pesticides, herbicides, rodenticides, fertilizers); and septic system sewage. Additional, general potential contamination concerns include: pole-mounted electrical transformers (PCB's), aboveground storage tanks (AST's), waste dumping (special waste possible), and pesticide/herbicide use on farms. Construction activities in and near these sites may require special procedures and permits.

Air Quality. Hart County is located within the South Central Kentucky Intrastate Air Quality Control Region. The area is currently designated as an Attainment Area for all transportation-related pollutants, as per the 1990 Clean Air Act Amendments, and transportation control measures would not be required for the project. The project is listed on page 99 of the *Kentucky Statewide Transportation Improvement Program (STIP), Fiscal Years 2003–2008*, approved September 2002. The project is not expected to adversely impact air quality in the region.

Traffic Noise. The study area is predominantly rural in nature, containing several residences, churches, cemeteries, and small businesses along the existing road. However, if KY 88 improvements were implemented, then noise impacts could be minimized due to the sparse development pattern in the area. It is usually unreasonable to construct noise barriers for single, widely-spaced residences, and the need to maintain road access would render any noise barriers ineffective.

Other Concerns. The Munfordville wastewater treatment plant is located outside the study area, however many associated pump stations and package plants are scattered throughout Munfordville. Numerous oil and gas wells are located in and around the study area. A water tank (150,000 gallon capacity) operated by the Edmonson County Water District is located just northeast of the town of Kessinger.

Environmental Justice. The Barren River Area Development District (BRADD) is preparing the environmental justice section and its related issues/concerns.

TABLE 1
Possible Contamination Sites
Hart County, KY 88

Site Number	Site Name or Description	Suspected Contaminant or Area of Concern
1	Louisville & Nashville Railroad	Railroad spur; leakage from cargo & freight, treated rail ties, creosols, oils and greases.
2	Hart County Department of Highways Maintenance Garage	ASTs (1 diesel, 1 gas, 1 not in use), construction debris, and possible hazardous material within structures on site.
3	Larry's Body Shop, Paint & Repair	Lacquers, paints, petroleum products, varnishes, corrosives, combustibles, solvents, oils, greases, and possibly other hazardous material storage on the interior of on-site structure.
4	Russell's Garage	Auto repair activity; ASTs, waste oils, tires, batteries, oils, greases, petroleum products, solvents, corrosives, and a variety of other materials requiring special handling and disposal.
5	Residential Property	Petroleum ASTs, used auto tires, possible auto repair activity, 55-gallon drum containers with unknown contents, and additional hazardous materials within garage structure on site.
6	Vacant Commercial Building	Possible former gas station and suspect UST site (vent pipe in tact adjacent to building).
7	Residential / Farm Property	2 ASTs (1 diesel, 1 gas)
8	K&M Septic Pump Services, and Miles Backhoe Services	2 ASTs, heavy equipment repair operations, possible USTs, waste oils, tires, batteries, oils, greases, petroleum products, solvents, corrosives, possible heavy metal & semi-volatile organic compound contamination in soils, sewage from septic service operations, and possibly a variety of other materials requiring special handling and disposal.
9	Residential Property Auto Salvage Operation	Junk and wrecked vehicles, possible auto repair operations, and suspected soil contamination from leaking fluids from automobiles.
10	Residential Property	Suspected former gasoline station and UST site.
11	Grocery and Deli (going out of business at time of site inspection)	Older model gas dispensers indicative of outdated tank system. Large ASTs in concrete dike containment could be holding tanks for fuel. Possible USTs and associated contamination, refrigerants for large cooler units.
12	Vacant Commercial Property	Former service garage and possible former gasoline outlet, possible USTs and petroleum contamination from site operations, and discarded solid waste materials.
13	Vacant Dilapidated Wood Frame Structure	Possible former gas station (no evidence of USTs), solid waste materials.
14	Danny's Marine Repair and Boat Storage	Boat repair operations with waste oils, tires, batteries, oils, greases, petroleum products, solvents, corrosives, and possible other unknown hazardous materials.

Table 1, cont.

Site Number	Site Name or Description	Suspected Contaminant or Area of Concern
15	Tex's Appliance Service and Sales	Older model appliances found on site could contain coolants such as freon and other refrigerants requiring special handling and disposal, auto tire and solid waste stockpiles, 10-12 salvage autos and petroleum AST on ground not elevated or within a containment area could cause ground contamination in the immediate area of the tank and autos.
16	Cub Run Milling Company Fence, Lumber, Farm Equipment Sales and Service	ASTs, possible USTs, waste oils, tires, batteries, oils, greases, petroleum products, solvents, corrosives, possible heavy metal & semi-volatile organic compound contamination in soils, pesticides, herbicides, fertilizers, and possibly a variety of other materials requiring special handling and disposal.
17	Stop & Go Market	Petroleum sales, ASTs, USTs, and possible petroleum contamination from operations on site.
18	Custom Service Shop (closed at time of inspection)	Former auto repair facility, suspected former gas station and possible petroleum contamination, small stockpiles of auto batteries, used auto tires, oils and greases in various size containers, unidentified liquid storage in various size containers (no labels), three stored autos, additional unidentified materials could be found within structure on site.
19	BP Gas Station & Food Mart/Deli	Possible former auto repair garage, USTs, petroleum products, possible heavy metals, semi-volatile organic compounds, and soil contamination.
20	Vacant Commercial Property	Suspect former gas station & auto repair shop, possible petroleum contamination, additional unidentified materials could be found within large structure on site.
21	Residential Property	Possible former service station or auto repair shop, 55-gallon drums, various size containers with unidentified waste materials, gas tanks, motor parts, abandoned school bus, junk and waste stockpiling, additional unidentified waste materials beneath rubbish or within structures on site.
22	Residential Property	Junk and waste stockpiling, large used auto tire stockpile, farm equipment, abandoned autos, machine and engine parts, buckets, canisters and drums, additional unidentified hazardous and special waste materials could be present within structures and among waste stockpiles.
23	Residential Property	Junk stockpiling, auto and farm equipment repair operations, engine parts, ASTs, gas tanks, construction materials, and possible petroleum contamination.
24	Wax Recreation Area	Petroleum AST in dike containment (no evidence of related contamination).
25	Nolin General Store (closed)	UST site, petroleum products, heavy metals, semi-volatile organic compounds, and possible soil contamination.
26	CITGO Food Mart	Petroleum products, USTs, possible soil contamination from heavy metals, semi-volatile organic compounds and other petroleum constituents.
27	Higdon County Store	Operating retail gasoline outlet with multiple ASTs.



KY 88 curve in Munfordville

**KY 88, Existing
Typical Sections**



KY 88 typical ridge top section

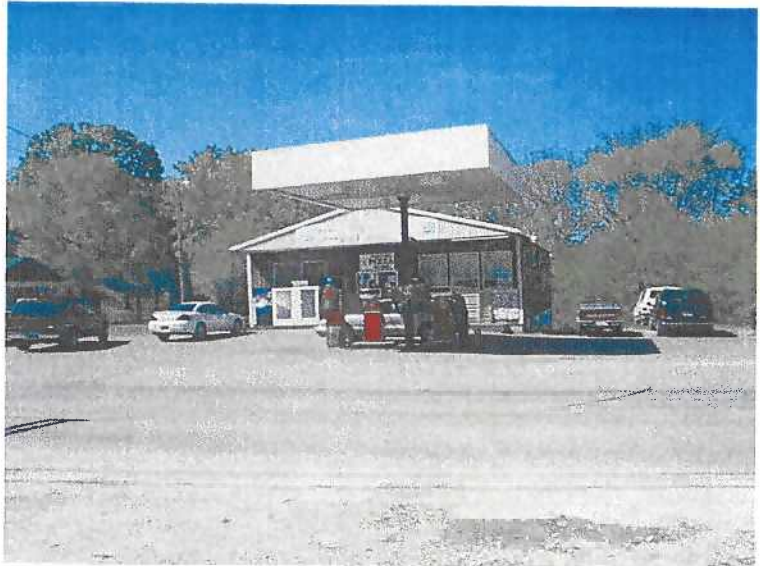


KY 88 typical cut on hill



KY 88, Possible Contamination Site Examples

Site 19, with typical KY 88 intersection



Site 17, Cub Run Stop & Go Market



Site 9, salvage vehicles, wastes, possible repair and sales



United States Department of the Interior
FISH AND WILDLIFE SERVICE
3761 GEORGETOWN ROAD
FRANKFORT, KY 40601

June 2, 2003

Mr. Eric Spencer
Eco-Tech
P.O. Box 8
Frankfort, Kentucky 40602-0008

Subject:	FWS #03-2130	Graves County	KTC Item No. 1-2100.00
	FWS #03-2131	Hart County	KTC Item No. 4-8101.00
	FWS #03-2132	Union County	KTC Item No. 2-8102.00

Dear Mr. Spencer:

Thank you for your correspondence of April 22, 2003, regarding the proposed reconstructions of KY 121 in Graves County (KTC Item No. 1-8100.00), KY 88 in Hart County (KTC Item No. 4-8101.00), and US 60 in Union County (KTC Item No. 2-8102.00). Fish and Wildlife Service (Service) personnel have reviewed the information submitted and the following comments are provided in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

In general, we are concerned that highway projects frequently accelerate erosion and sedimentation in streams, resulting in adverse effects to the aquatic environment. The use of heavy equipment to move earth and existing vegetation disrupts natural drainage patterns and exposes large areas of disturbed soil to erosion. Excessive sedimentation can clog stream channels and contribute to increased flooding. It can also increase water temperatures and cause oxygen demands that can damage or destroy fish and invertebrate populations. Deposition of sediment on the channel bottom also degrades aquatic habitat by filling in substrate cavities, burying demersal eggs, and smothering bottom organisms. In addition, turbidity, as induced by accelerated erosion and sedimentation, results in further damage to aquatic systems. Increased particulate matter suspended in the water column may drive fish from the polluted area by irritating the gills, concealing forage, and/or destroying vegetation that may be essential for spawning and cover habitat for particular species. Turbidity also degrades water quality by reducing light penetration, pH and oxygen levels, and the buffering capacity of the water. Degraded water quality may continue far downstream from the point where the erosion occurs.

Prevention of excessive sedimentation can occur only through application of Best Management Practices during daily construction activities. Rigid application of construction erosion control standards can preclude most sedimentation problems. In some cases, however, additional

measures will need to be taken by on-site inspectors and construction representatives that are trained in erosion and sediment control methods. We request that you consider having an inspector on-site during all construction activities to ensure that work areas are stabilized on a daily or regular basis.

Upon review of the proposed projects, we find that the information provided is insufficient to determine if the proposed actions will require U.S. Army Corps of Engineers' permits. Since permit applications could more thoroughly reveal the extent of construction activities affecting aquatic resources, we will provide additional comments during the 404 review process should the project necessitate Corps of Engineers permits. However, we would likely have no objection to the issuance of permits if any necessary stream channel work is held to a minimum and Best Management Practices are utilized and enforced, effectively controlling erosion, sedimentation, and other potential hazards. The following conditions are specifically recommended:

1. Erosion and sediment control measures, including but not limited to the following, should be implemented on all vegetatively denuded areas:
 - a. Preventive planning: A well-developed erosion control plan which entails a preliminary investigation, detailed contract plans and specifications, and final erosion and sediment control contingency measures should be formulated and made a part of the contract.
 - b. Diversion channels: Channels should be constructed around the construction site to keep the work site free of flow-through water.
 - c. Silt barriers: Appropriate use should be made of silt fences, hay bale and brush barriers, and silt basins in areas susceptible to erosion.
 - d. Temporary seeding and mulching: All cuts and fill slopes, including those in waste sites and borrow pits, should be seeded as soon as possible.
 - e. Limitation of in-stream activities: In-stream activities, including temporary fills and equipment crossings, should be limited to those absolutely necessary.
2. Channel excavations required for pier placement should be restricted to the minimum necessary for that purpose. Overflow channel excavations should be confined to one side of the channel, leaving the opposite bank and its riparian vegetation intact.
3. All fill should be stabilized immediately upon placement.
4. Streambanks should be stabilized with riprap or other accepted bioengineering technique(s).

5. Existing transportation corridors should be used in lieu of temporary crossings where possible.
6. Good water quality should be maintained during construction.

Efficient management practices can minimize adverse impacts associated with construction. It is important that these and other measures be monitored and stringently enforced. This will aid in preserving the quality of the natural environment.

Three federally listed species may occur within the proposed project areas and are listed below:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Federal Status</u>
Eggert's sunflower	<i>Helianthus eggertii</i>	threatened
Indiana bat	<i>Myotis sodalis</i>	endangered
gray bat	<i>Myotis grisescens</i>	endangered

The federally-threatened Eggert's sunflower (*Helianthus eggertii*) may occur in the vicinity of the Hart County project (KTC Item No. 4-8101.00). Eggert's sunflower occurs in barrens and woodland ecosystems where a mix of grassy, treeless openings lies within a thin overstory of small to medium sized trees, usually oaks. This species has also been found on roadsides and in fields where barrens formerly existed. Because this species is known to occur in the vicinity and due to the fact that potentially suitable habitat for this species may exist with the project's boundaries, we suggest that a qualified botanist survey the project site during the growing season to determine the presence or absence of this species within the project's boundaries. If the species is identified within the project's boundaries, you will need to coordinate with us further on this project in order to determine the adequacy of measures to protect it.

According to our records, summer roost habitat and winter hibernacula for the endangered Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*) may exist within the proposed project sites in Union and Hart counties. Based on this information, we believe that: (1) forested areas in the vicinity of and on these project areas may provide potentially suitable summer roosting and foraging habitat for the Indiana bat and potentially suitable foraging habitat for the gray bat (if suitable roosting sites are present); and (2) caves, rockshelters, and abandoned underground mines in the vicinity of and on the project area may provide potentially suitable winter hibernacula habitat for the Indiana bat and/or potentially suitable summer roosting and winter hibernacula habitat for the gray bat. Our belief that potentially suitable habitat may be present, and possibly occupied by one or both of these species, is based on the information provided in your correspondence, the fact that much of the project site and surrounding areas contain forested habitats that are within the natural ranges of these species, and our knowledge of the life history characteristics of these species.

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered

optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 3 inches DBH.

Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula, where they feed and roost until temperatures drop to a point that forces them into hibernation. This "swarming" period lasts, depending on weather conditions in a particular year, from about September 15 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Research has shown that bats exhibiting this "swarming" behavior will range up to five miles from chosen hibernacula during this time. For hibernation, the Indiana bat prefers limestone caves, sandstone rockshelters, and abandoned underground mines with stable temperatures of 39 to 46 degrees F and humidity above 74 percent but below saturation.

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. For hibernation, the roost site must have an average temperature of 42 to 52 degrees F. Most of the caves used by gray bats for hibernation have deep vertical passages with large rooms that function as cold air traps. Summer caves must be warm, between 57 and 77 degrees F, or have small rooms or domes that can trap the body heat of roosting bats. Summer caves are normally located close to rivers or lakes where the bats feed. Gray bats have been known to fly as far as 12 miles from their colony to feed. Additional, habitat and life history information on these species is available on the Service's national website at www.fws.gov.

Because we have concerns relating to these species on this project and due to the lack of occurrence information available on these species relative to the proposed project areas in Union and Hart counties, we have the following recommendations relative to Indiana bats and gray bats on those projects.

- 1) Since at least two caves containing Indiana bats and/or gray bats are known to occur less than six miles from the project location in Hart County and since a number of maternity records for Indiana bats are known to occur within the Sloughs Wildlife Management Area, which is just north of the proposed project area in Union County, we believe that it is reasonable to assume that other caves, rockshelters, and/or abandoned underground mines may occur within the project areas, and, if they occur, they could provide winter habitat for Indiana bats and/or summer and winter habitat for the gray bat. Therefore, we recommend that you survey the project area for caves, rockshelters, and underground mines, identify any such habitats that may exist on-site, and avoid impacts to those sites pending an analysis of their suitability as Indiana bat and/or gray bat habitat by this office.
- 2) We also recommend that you only remove trees within the proposed project area in Union County between October 15 and March 31 in order to avoid impacting summer roosting Indiana bats. However, if any Indiana bat hibernacula are identified on the

project area or are known to occur within 10 miles of the project area, we recommend that you only remove trees between November 15 and March 31 in order to avoid impacting Indiana bat "swarming" behavior.

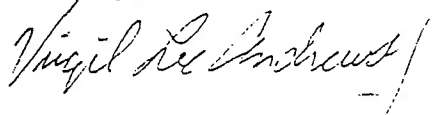
- 3) For the Hart County project, we recommend that you only remove trees between November 15 and March 31 in order to avoid impacting Indiana bat "swarming" behavior. At least two potential hibernacula for the species are known from within 10 miles of the proposed project site.

We request written acceptance of these recommendations. However, if these recommendations cannot be accomplished, you should survey the project area to determine the presence or absence of the species within the project area in an effort to determine if potential impacts to these species are likely. A qualified biologist who holds the appropriate collection permits for these species must undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If any Indiana bats and/or gray bats are identified, we request written notification of such occurrence(s) and further coordination and consultation with you. Surveys would not be necessary if sufficient site-specific information was available that showed: (1) that there is no potentially suitable habitat within the project area or its vicinity or (2) that the species would not be present within the project area or its vicinity due to site-specific factors.

According to our records, no federally-listed species are known to occur in the vicinity of the project in Graves County (KTC Item No. 1-2100.00). In view of this, we believe that the requirements of section 7 have been fulfilled for this project. However, obligations under section 7 must be reconsidered, however, if: (1) new information reveals that the proposed project may affect listed species in a manner or to an extent not previously considered, (2) the proposed project is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed project.

Thank you for the opportunity to comment on this proposed action. If you have any questions regarding the information which we have provided, please contact Mindi Brady at (502)/695-0468 (ext.229).

Sincerely,



Virgil Lee Andrews, Jr.
Field Supervisor

FISH & WILDLIFE COMMISSION
Mike Boatwright, Paducah
Tom Baker, Bowling Green
Allen K. Gailor, Louisville
Ron Southall, Elizabethtown
Dr. James R. Rich, Taylor Mill, Chairman
Ben Frank Brown, Richmond
Doug Hensley, Hazard
Dr. Robert C. Webb, Grayson
David H. Godby, Somerset



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

April 30, 2003

Eric Spencer
Eco-Tech, Inc.
PO Box 8
Frankfort, KY 40602-0008

Re: Threatened/Endangered Species Review for Environmental Overviews for proposed reconstruction of KY 121, KY 88, and US 60, Graves, Hart, and Union Counties, Kentucky

Dear Mr. Spencer:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for the above referenced information. The Kentucky Fish and Wildlife Information System indicates that federally threatened or endangered copperbelly water snakes are known to occur in the Hickory 7.5 minute USGS quadrangle. There are no threatened or endangered species listed for the Cub Run, Morganfield, Munsfordville, or Sturgis USGS quadrangles. Please be aware that our database system is a dynamic one that only reflects our current knowledge of species distributions.

The KDFWR recommends the following for the portions of the project that cross intermittent and perennial streams:

1. Development/excavation during a low flow period to minimize disturbance;
2. Proper placement of erosion control structures below highly disturbed areas to minimize entry of silt to the stream;
3. Replanting of disturbed areas after construction, including stream banks and right-of-ways, with native vegetation for soil stabilization and enhancement of fish and wildlife populations;
4. Return all disturbed instream habitat to its original condition upon completion of construction in the area, and;
5. Preservation of tree canopy overhanging the stream.

Also, KDFWR recommends the following for the copperbelly watersnake:

The copperbelly water snake (*Nerodia erythrogaster neglecta*) is found within the project area. KDFWR recommends the 1998 Kingsbury report "The Copperbelly Water Snake in Kentucky" be used for information and mitigation of habitat. It is a comprehensive work on the subject and should prove valuable to you as a resource. While specific recommendations will vary depending upon the design of the road, a main goal within this area should be to allow free passage of copperbellies beneath the roadway while minimizing bottlenecks that would force snakes to cross the paved road directly. KDFWR requests that the mitigative plans specific to this area of the project be submitted for review by this agency.

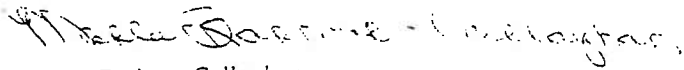


Arnold L. Mitchell Bldg. #1 Game Farm Road Frankfort, Ky 40601
An Equal Opportunity Employer M/F/D

Page Two
Mr. Spencer
April 30, 2003

I hope this information will prove useful to you. If you have any questions or require additional comment, please call me at (502) 564-7109, ext. 367

Sincerely,



Marla Barbour-Callaghan
Fisheries Biologist III

cc: Environmental Section File

DONALD S. DOTT, JR.
DIRECTOR



PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
KENTUCKY STATE NATURE PRESERVES COMMISSION

801 SCHENKEL LANE
FRANKFORT, KENTUCKY 40601-1403
(502) 573-2886 VOICE
(502) 573-2355 FAX

May 19, 2003

Eric Spencer
Eco-Tech, Inc.
1003 East Main Street
Frankfort, KY 40601

Data Request 03-137

Dear Mr. Spencer:

This letter is in response to your data request of May 1, 2003 for the proposed reconstruction of KY 88 (Hart County) environmental overview project. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants and animals or exemplary natural communities monitored by the Kentucky State Nature Preserves Commission occur within a one mile buffer of the project area on the map provided by Eco-Tech. Based on our most current information, we have determined that 63 occurrences of the plants or animals and no occurrences of the exemplary natural communities that are monitored by KSNPC are reported as occurring in the specified area.

Cyprogenia stegaria (Fanshell, federally listed endangered, KSNPC endangered), *Epioblasma Torulosa Rangiana* (Northern Riffleshell, federally listed endangered, KSNPC endangered), *Obovaria retusa* (Ring pink, federally listed endangered, KSNPC endangered), *Pleurobema clava* (Clubshell, federally listed endangered, KSNPC endangered) and *Pleurobema plenum* (Rough pigtoe, federally listed endangered, KSNPC endangered) are all federally listed bivalves for which we have records within the 1-mile buffer of the project area.

Palaemonias ganteri (Mammoth Cave shrimp, federally listed endangered, KSNPC endangered) is known to occur in the project area as well as other state-listed cave species. The site is located within a karst landscape characterized by numerous sinkholes, underground conduits, or caves. Construction disturbance or release of pollutants within the specified area could easily cause contamination of groundwater. Caves are often associated with sensitive



AN EQUAL OPPORTUNITY EMPLOYER M/F/D

Data Request 03-137

May 19, 2003

Page 2

ecosystems and may provide habitat for a number of rare or endangered species. Cave organisms are heavily dependent on water quality, and steps should be taken to avoid introducing contaminants into the water system.

Myotis grisescens (Gray myotis, federally listed endangered, KSNPC endangered) is known to occur within the project area, and *Myotis sodalis* (Indiana myotis, federally listed endangered, KSNPC endangered) is known to occur in Hart County. A thorough survey for these species should be conducted by a qualified biologist. The survey should include a search for potential roost and winter sites, and a mistnetting census at numerous points within the proposed corridor, particularly in preferred summer habitat. Summer foraging habitats include upland forests, bottomland forests and riparian corridors. Suitable roost and winter sites include sandstone and limestone caves, rockhouses, clifflines, auger holes, and abandoned mines. In order to avoid impacts to bats, bottomland forests and riparian corridors, particularly near caves, should not be disturbed.

In addition to the species known to occur within the 1-mile buffer of the project area, two additional federally listed aquatic species occur in the Green River within a few miles downstream of the project which could be affected by disturbance in the watershed. Many other occurrences of the federally listed and state listed aquatic species on the report can also be found downstream, and some of these are extant occurrences while the ones in the project area may be historic. The additional species are *Epioblasma Obliquata Obliquata* (Catspaw, federally listed endangered, KSNPC endangered), *Lampsilis abrupta* (Pink mucket, federally listed endangered, KSNPC endangered).

Please see the attached managed area report for the four managed areas that we know to be near the project area.

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

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In

Data Request 03-137

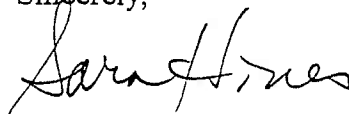
May 19, 2003

Page 3

most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed, and new plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. We would greatly appreciate receiving any pertinent information obtained as a result of on-site surveys.

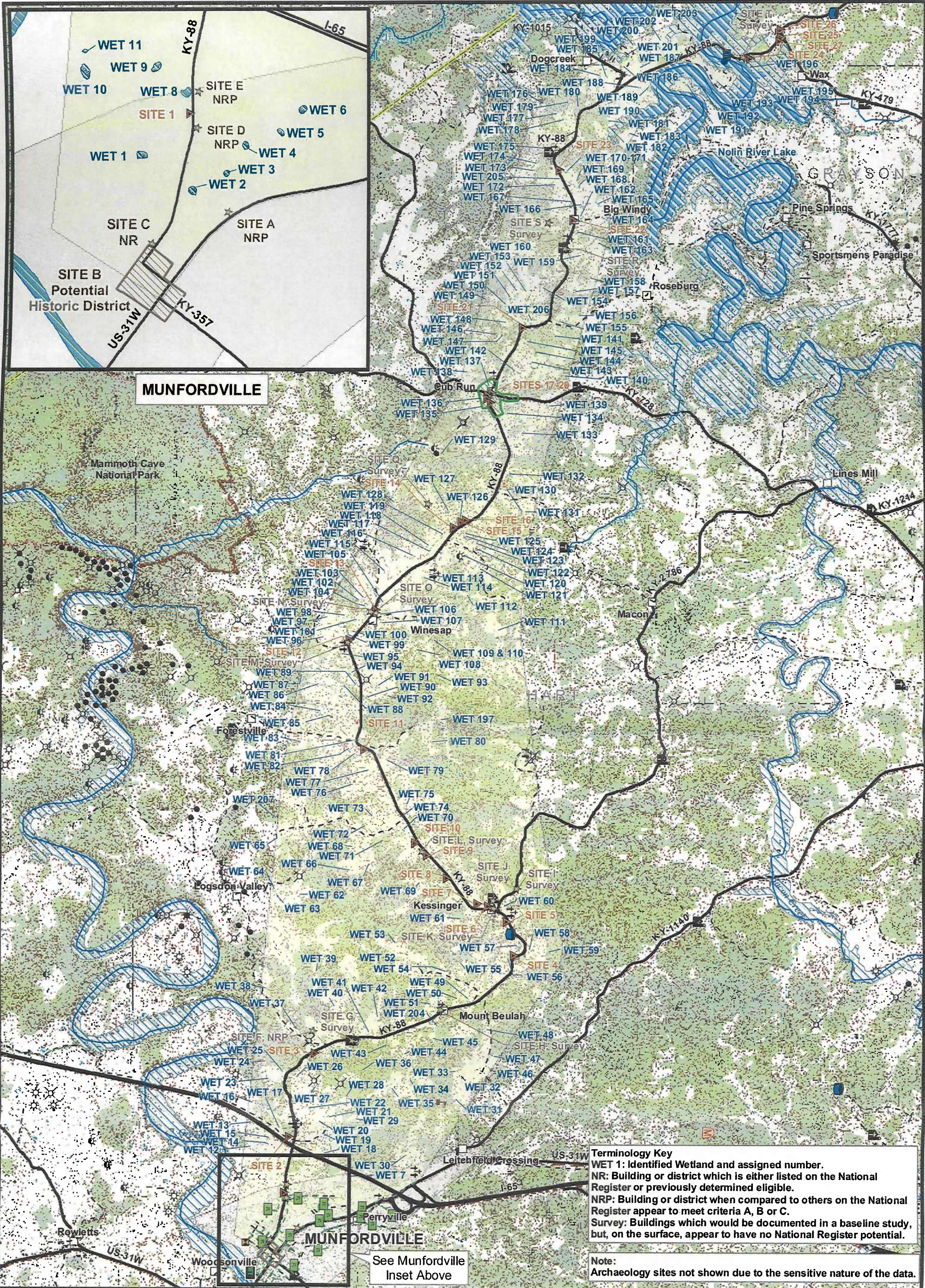
If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Sara Hines". The signature is written in black ink and is positioned below the word "Sincerely,".

Sara Hines
Data Manager

Enclosures: Data Report and Interpretation Key



Terminology Key
 WET 1: Identified Wetland and assigned number.
 NR: Building or district which is either listed on the National Register or previously determined eligible.
 NRP: Building or district when compared to others on the National Register appear to meet criteria A, B or C.
 Survey: Buildings which would be documented in a baseline study, but, on the surface, appear to have no National Register potential.

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

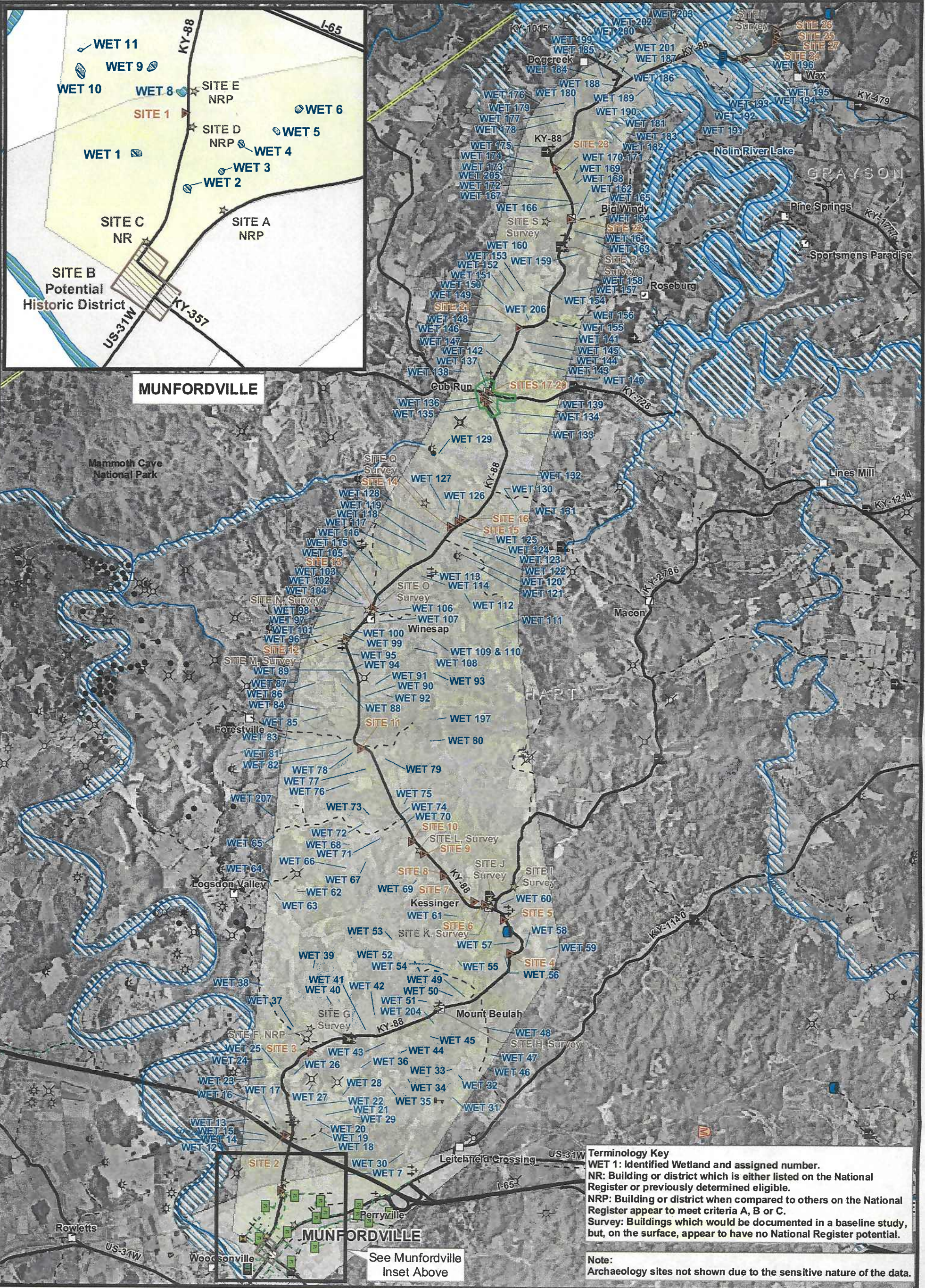
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|-------------------|-------------------------------|------------------------------|-----------------------------|
| ✈ Airport | ★ Potential Historic Location | — Waterline | ▨ Potential Flood Risk |
| ⛪ Church | ▨ Potential Historic District | ● Public Water Source | 🌳 State Park |
| P Park | ▨ Historic Survey Area | 🛢 Water Tank | 🌿 Conservation/Natural Area |
| 🏠 Populated Place | ● Oil Well | 🏭 Water Treatment Plant | 🟡 PROJECT STUDY AREA |
| ⚰ Cemetery | ⚡ Gas Well | 🗑 Sewers | |
| 🎓 School | ⚡ Combined Oil and Gas | 📦 Package Plant | |
| 🏥 Hospital | ⚡ Newly Permitted Well | 🗑 Wastewater Pump Station | |
| ⚠ HAZMAT Site | ⚡ Dry and Abandoned Well | 🏭 Wastewater Treatment Plant | |
| 🗑 Landfill | ⚡ Miscellaneous Well | 🌊 Stream | |
| | | 🟦 Wetlands | |



Exhibit 1 Sheet 1 of 1

USGS Topographic Environmental Footprint
 KY 88
 Munfordville to Nolin Lake
 Hart County
 KYTC Item No. 4-8101.00





MUNFORDVILLE

Terminology Key
 WET 1: Identified Wetland and assigned number.
 NR: Building or district which is either listed on the National Register or previously determined eligible.
 NRP: Building or district when compared to others on the National Register appear to meet criteria A, B or C.
 Survey: Buildings which would be documented in a baseline study, but, on the surface, appear to have no National Register potential.

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

Airport Church Park Populated Place Cemetery School Hospital HAZMAT Site Landfill	Potential Historic Location Potential Historic District Historic Survey Area Oil Well Gas Well Combined Oil and Gas Newly Permitted Well Dry and Abandoned Well Miscellaneous Well	Waterline Public Water Source Water Tank Water Treatment Plant Sewers Package Plant Wastewater Pump Station Wastewater Treatment Plant Stream Wetlands	Potential Flood Risk State Park Conservation/Natural Area PROJECT STUDY AREA
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APPENDIX G

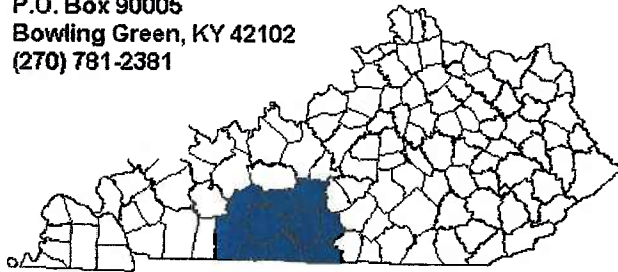
ENVIRONMENTAL JUSTICE AND COMMUNITY IMPACT REPORT

Environmental Justice and Community Impact Report

KY 88 from US 31W in Munfordville to KY 479 in
Grayson County

April 2003

Barren River Area Development District
P.O. Box 90005
Bowling Green, KY 42102
(270) 781-2381



Study Findings

This Environmental Justice and Community Impacts Report is to be used as a component of a Programming Planning Study for highway transportation improvements along KY 88 extending from US 31W in Munfordville to KY 479 in Grayson County. The project description contained in the Commonwealth of Kentucky's Six Year Highway Plan reads, "Planning study for KY 88 from Munfordville to Nolin Lake to determine scope and priorities for future improvements." Currently, no other phases of funding besides this programming planning study are contained in the Six Year Highway Plan. Map 1 shows the study area for this project.

The study is intended to help define the location and purpose of the project and better meet federal requirements regarding consideration of environmental issues as defined in the National Environmental Policy Act (NEPA).

The Hart County Transportation Committee, the Barren River Area Development District's Regional Transportation Council, and the District 4 Department of Highways has recently given this project a priority rating of Medium during the 2003 prioritization; however on some levels, it has been ranked High in past prioritization cycles.

The 2000 Census identifies 5 census tracts in Hart County and 7 census tracts in Grayson County. For the purposes of this project, Tract 9703 including Block Groups 003, 004, and 005 in Hart County and Tract 9501 including Block Group 003 in Grayson County are considered to be the project study area and are illustrated on Map 2.

POPULATION BY RACE – HART COUNTY

Comparing the figures in Table 1A to those in Table 1B does not show a significant difference in population composition according to race within the project area in Hart County. The minority percentages are comparable or lower than state and national levels.

Various members of the community and county were contacted to confirm this conclusion about the study area (see Figure 1). No additional concentrations of minorities were located in the study area; therefore, it appears that this project would have little impact on minority communities in Hart County.

POPULATION BY RACE – GRAYSON COUNTY

Comparing the figures in Table 2A to those in Table 2B does not show a significant difference in population composition according to race within the project area in Grayson County. The minority percentages are all lower than state and national levels.

Various members of the community and county were contacted to confirm this conclusion about the study area (see Figure 1). No additional concentrations of minorities were located in the study area; therefore, it appears that this project would have little impact on minority communities in Grayson County.

POPULATION BY POVERTY LEVEL – HART COUNTY

Table 3A shows that the percentage of population considered below the poverty level in Hart County is above the state and national levels. When comparing the figures in Table 3B to Table 3A, one can see that the percentage within Tract 9703 of the project area is comparable to the county percentage; however, when broken down to block groups, Block Group 9703-005 shows a significantly higher percentage of the population below the poverty level, approximately 8 percent above the county level and nearly double the state and national levels. Most of the poverty level population within this block group located along the southern side of KY 88 consists of children up to the age of 17.

Comparing other figures in Table 3B to state and national percentages consistently show a higher poverty level percentage in the tract and most of the block groups in the study area according to age range, although these percentages are comparable to the county percentages.

Several community members also confirmed that there is a possible low-income community located around the Kessinger area within the KY 88 study area. Map 3 shows the location of the community along KY 88. With sidewalks (or an urban section of roadway) in this community being a component of this project, the improved highway and sidewalks may benefit the residents of the community. Other than the area around Kessinger, these citizens also confirmed that high and low income individuals are distributed throughout the study area in Hart County. There is not necessarily a large concentration of low-income individuals in one area. It appears that there would be little impact on low-income concentrations in Hart County, and that the project may benefit the residents of the Kessinger community.

POPULATION BY POVERTY LEVEL – GRAYSON COUNTY

When examining low-income status within the project area in Grayson County, Table 4A and Table 4B confirm that the percentages within the tract and block group are comparable to state and national levels.

Community members identified no additional low-income concentrations. These members confirmed that high and low income individuals are distributed throughout the study area in Grayson County. It appears that there would be little impact on low-income concentrations in Grayson County.

POPULATION BY AGE GROUP – HART COUNTY

Age distribution in the county is similar to the state and national levels; however, examining Table 5B shows that the tract and block groups in the study area show a varying age distribution. The percentage of individuals 0-17 is higher in the tract and two block groups in the study area, especially Block Group 9703-005 at 34.1 percent. Block Group 9703-003 also has a significantly higher percentage (23.6 percent) of individuals 65 and over.

The area of Block Group 9703-003 is a rather large area and straddles the existing highway. Block Group 9703-003 is located within the Munfordville city limits and is an older portion of

the city with houses and buildings relatively close to the roadway. Very little can be done within this project's scope to improve this portion of KY 88 in this area of Munfordville. Community members felt that there was no significant concentration of individuals of a particular age group in either block group. Accordingly, varying age groups are located throughout the study area. If little is done to the existing highway east of Interstate 65, then, it appears that there would not be any significant concentrations of age groups impacted along the corridor.

POPULATION BY AGE GROUP – GRAYSON COUNTY

Table 6A and Table 6B show the age group populations for Grayson County. The percentages for the Tract 9501 and Block Group 9501-003 show lower concentrations of each group when compared to state and national levels except with age group 65 and over in Block Group 9501-003.

The existing land use on KY 88 in Grayson County is largely for recreational purposes. There are very few residences along this portion of the highway. The Wax Recreational Area maintained by the Corps of Engineers is the significant landowner in this area. Although the Census information indicates a higher percentage of individuals age 65 and over in this portion of Grayson County compared to state and national levels, little impact would be upon this population because of the vast size of the Block Group and the existing land use predominantly being recreational instead of residential in this area of KY 88. Community members also confirmed that they felt there were no specific concentrations of age group populations in the study area of Grayson County.

OTHER POPULATIONS

Another issue important to this project area that cannot be confirmed with census information is the concentration of Amish families throughout the KY 88 corridor. Many of these families migrated from Ohio into this area of Kentucky. This trend started in 1988 and continues in this portion of Hart County.

Map 4 shows concentrations of Amish families near the study area. Community members confirmed that the highest concentration of Amish families and businesses were along Logsdon Valley Road and the Forestville area. KY 88 itself was not considered to be a significant concentration of this community; however, there is an Amish school (Cedar Lane School) along the highway (see Map 4). Portions of KY 88 are used for horse and buggy traffic, with peak travel times on Sundays and Thursdays according to members of the community. Much of this traffic is concentrated from the Logsdon Valley and Forestville areas into the city of Munfordville.

COMMUNITY IMPACTS

This portion of KY 88 from Munfordville to KY 479 has varying existing land uses along the corridor. The main issues identified with the existing corridor by local leaders, residents, other community members, and the Hart County Transportation Committee include the following:

1. The geometrics of the roadway with respect to horizontal and vertical alignments, as well as land and shoulder width, are not up to Kentucky Transportation Cabinet standards because of narrow cross sections and short sight distances.
2. The highway has two 90-degree turns in Munfordville and the narrow cross section causes congestion in the small residential community along the corridor.
3. The corridor has a unique traffic issue with horse and buggy travel by the Amish communities.
4. The roadway geometrics create difficulty for seasonal recreational vehicles traveling to Nolin River Lake. This traffic may increase on KY 88 if a lodge is built at Nolin State Park.

These issues that were identified show a particular need for improvement along this corridor. One important benefit of this highway project would be the improved safety of traffic along this corridor. Improved vertical and horizontal alignments would likely provide larger areas for passing of slow moving vehicles, especially recreational vehicles and horse and buggies. Wider shoulders would also be more accommodating to horse and buggy traffic along KY 88, therefore, improving safety for residents of Hart County and particularly those residents within the Amish communities around the KY 88 corridor.

This highway corridor travels through the heart of two significant communities located in the study area, Cub Run and Kessinger. With the inclusion of an urban section-type roadway in these communities, it will likely enhance the safety and benefit the residents of those two communities to have sidewalks. Cub Run Elementary School, located just south of the KY 88 corridor on KY 728, would also benefit from the improved roadway because of the accommodation of pedestrian traffic.

Two other emergency-type services are located along the corridor. The Hart County Rescue Squad is located on KY 88 near the Interstate 65 overpass, and the Wax Volunteer Fire Department is located near the intersection of KY 88 and KY 479 in Grayson County. Both of these emergency departments would likely see benefits from an improved highway with easier access into western portions of Hart County and eastern portions of Grayson County.

There is also significant residential development around Nolin Lake. Several new subdivisions selling lakefront homes are under development in Hart County. With these new communities developing, improved access from Munfordville to western Hart County will continue to be an important issue for community members.

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**Figure 1:
Community Members Contact List**

The following individuals were consulted to gather information about the study area and issues with existing KY 88:

Hart County Transportation Committee Members including:

Elmore Larimore
P.O. Box 103
Horse Cave, KY 42749

Mayor Joanne Smith
P.O. Box 326
Horse Cave, KY 42749

Mayor John Johnson
P.O. Box 85
Munfordville, KY 42765

Mayor Rose Bostic
347 Campground Road
Bonnieville, KY 42713

Mary Coalsley
P.O. Box 65
Munfordville, KY 42765

Tom Buchanon
P.O. Box 65
Munfordville, KY 42765

Bill Hack
Solid Waster Coordinator
P.O. Box 490
Munfordville, KY 42765

David Petersen
Caveland Sanitation Authority
201 Hubbard Lane
Cave City, KY 42127

Kimmy Cook
105 Elliot Avenue
Bonnieville, KY 42713

Glenn Thomas
P.O. Box 465
Munfordville, KY 42765

David Paige
Green River Valley Water District
P.O. Box 399
Cave City, KY 42127

Other local leaders, residents, and community members:

Judge/Executive Terry Shelton
P.O. Box 490
Munfordville, KY 42765

Bonita Schalaska
Resident of KY 88

Albert Miller
Plain Communities of Kentucky
Safety Committee
120 Winesap Road
Munfordville, KY 42765

Mary W. Branstetter
Hart County Historical Society/
Hart County Museum
P.O. Box 606
Munfordville, KY 42765

Virginia Davis
Executive Director
Hart County Chamber of Commerce
P.O. Box 688
Munfordville, KY 42765

Johnny Meredith
Transportation Manager
Hart County Board of Education
511 West Union Street
Munfordville, KY 42765

Table 1A - Comparison Table for 2000 Population by Race - Hart County

Political/Census Division	White	Percent of Population	Black	Percent of Population	American Indian	Percent of Population	Asian	Percent of Population	Hispanic*	Percent of Population	Other	Percent of Population	Total Population
United States	211,460,626	75.1	34,658,190	12.3	2,475,956	0.9	10,242,998	3.6	35,305,818	12.5	22,584,136	8.0	281,421,906
Kentucky	3,640,889	90.1	295,994	7.3	8,616	0.2	29,744	0.7	59,939	1.5	66,526	1.6	4,041,769
Hart County	16,150	92.6	1,081	6.2	38	0.2	19	0.1	150	0.9	157	0.9	17,445
Tract 9702	2,488	96.3	64	2.5	8	0.3	1	0.0	11	0.4	22	0.9	2,583
Block Group 9703-001	818	93.9	46	5.3	0	0.0	0	0.0	6	0.7	7	0.8	871

The above table indicates Census data for the state, county, a nearby census tract, and a nearby census block group.

Table 1B - 2000 Population by Race - Hart County Census Tract and Block Groups in Project Area

Census Block Group	White	Percent of Population	Black	Percent of Population	American Indian	Percent of Population	Asian	Percent of Population	Hispanic*	Percent of Population	Other	Percent of Population	Total Population
Tract 9703	4,742	94.3	235	4.7	9	0.2	3	0.1	43	0.9	37	0.7	5,026
Block Group 003	841	93.7	45	5.0	0	0.0	2	0.2	8	0.9	10	1.1	898
Block Group 004	1,189	98.6	4	0.3	4	0.3	0	0.0	14	1.2	9	0.7	1,206
Block Group 005	1,344	99.3	0	0.0	5	0.4	1	0.1	9	0.7	4	0.3	1,354

Table 2A - Comparison Table for 2000 Population by Race - Grayson County

Political/Census Division	White	Percent of Population	Black	Percent of Population	American Indian	Percent of Population	Asian	Percent of Population	Hispanic*	Percent of Population	Other	Percent of Population	Total Population
United States	211,460,626	75.1	34,658,190	12.3	2,475,956	0.9	10,242,998	3.6	35,305,818	12.5	22,584,136	8.0	281,421,906
Kentucky	3,640,889	90.1	295,994	7.3	8,616	0.2	29,744	0.7	59,939	1.5	66,526	1.6	4,041,769
Grayson County	23,634	98.3	120	0.5	40	0.2	34	0.1	186	0.8	225	0.9	24,053
Tract 9505	2,554	98.5	3	0.1	10	0.4	3	0.1	19	0.7	22	0.8	2,592
Block Group 9501-002	787	98.4	0	0.0	2	0.3	0	0.0	11	1.4	11	1.4	800

The above table indicates Census data for the state, county, a nearby census tract, and a nearby census block group.

Table 2B - 2000 Population by Race - Grayson County Census Tract and Block Group in Project Area

Census Block Group	White	Percent of Population	Black	Percent of Population	American Indian	Percent of Population	Asian	Percent of Population	Hispanic*	Percent of Population	Other	Percent of Population	Total Population
Tract 9501	2,591	98.9	1	0.0	5	0.2	1	0.0	29	1.1	21	0.8	2,619
Block Group 003	877	99.0	1	0.1	2	0.2	1	0.1	9	1.0	5	0.6	886

* Population of Hispanic Origin is included as White.
Source: 2000 U.S. Census

Table 3A - Comparison Table for 1999 Population by Poverty Level - Hart County

Political/Census Division	Population Below Poverty Level	% of Total Population	Age 0-17	% of Total Population	Age 18-64	% of Total Population	Age 65 +	% of Total Population
United States	33,899,812	12.0	11,746,858	4.2	18,865,180	6.7	3,287,774	1.2
Kentucky	621,096	15.4	203,547	5.0	350,072	8.7	67,477	1.7
Hart County	3,852	22.1	1,276	7.3	2,077	11.9	499	2.9
Tract 9702	545	21.1	175	6.8	260	10.1	110	4.3
Block Group 9703-001	36	4.1	0	0.0	23	2.6	13	1.5

The above table indicates Census data for the state, county, a nearby census tract, and a nearby census block group.

Table 3B - 1999 Population by Poverty Level - Hart County Census Tract and Block Groups in Project Area

Census Block Group	Population Below Poverty Level	% of Total Population	Age 0-17	% of Total Population	Age 18-64	% of Total Population	Age 65 +	% of Total Population
Tract 9703	1,046	20.8	393	7.8	523	10.4	130	2.6
Block Group 003	175	19.5	41	4.6	92	10.2	42	4.7
Block Group 004	166	13.8	56	4.6	95	7.9	15	1.2
Block Group 005	409	30.2	209	15.4	190	14.0	10	0.7

Table 4A - Comparison Table for 1999 Population by Poverty Level - Grayson County

Political/Census Division	Population Below Poverty Level	% of Total Population	Age 0-17	% of Total Population	Age 18-64	% of Total Population	Age 65 +	% of Total Population
United States	33,899,812	12.0	11,746,858	4.2	18,865,180	6.7	3,287,774	1.2
Kentucky	621,096	15.4	203,547	5.0	350,072	8.7	67,477	1.7
Grayson County	3,852	16.0	1,276	5.3	2,077	8.6	499	2.1
Tract 9505	472	18.2	149	5.7	270	10.4	53	2.0
Block Group 9501-002	141	17.6	45	5.6	88	11.0	8	1.0

The above table indicates Census data for the state, county, a nearby census tract, and a nearby census block group.

Table 4B - 1999 Population by Poverty Level - Grayson County Census Tract and Block Group in Project Area

Census Block Group	Population Below Poverty Level	% of Total Population	Age 0-17	% of Total Population	Age 18-64	% of Total Population	Age 65 +	% of Total Population
Tract 9501	332	12.7	63	2.4	213	8.1	56	2.1
Block Group 003	98	11.1	18	2.0	72	8.1	8	0.9

Source: 2000 U.S. Census

Table 5A - Comparison Table for 2000 Population by Age Group - Hart County

Political/Census Division	Age 0-17	Percent of Total	Age 18-64	Percent of Total	Age 65 +	Percent of Total	Total
United States	72,293,812	25.7	174,136,341	61.9	34,991,753	12.4	281,421,906
Kentucky	993,841	24.6	2,544,260	62.9	503,668	12.5	4,041,769
Hart County	4,478	25.7	10,559	60.5	2,408	13.8	17,445
Tract 9702	694	26.9	1,554	60.2	335	13.0	2,583
Block Group 9703-001	211	23.9	558	63.2	114	12.9	883

The above table indicates Census data for the state, county, a nearby census tract, and a nearby census block group.

Table 5B - 2000 Population by Age Group - Hart County Census Tract and Block Groups in Project Area

Census Block Group	Age 0-17	Percent of Total	Age 18-64	Percent of Total	Age 65 +	Percent of Total	Total
Tract 9703	1,361	27.1	2,917	58.0	748	14.9	5,026
Block Group 003	182	20.3	504	56.1	212	23.6	898
Block Group 004	289	26.5	638	58.6	162	14.9	1,089
Block Group 005	501	34.1	835	56.8	135	9.2	1,471

Table 6A - Comparison Table for 2000 Population by Age Group - Grayson County

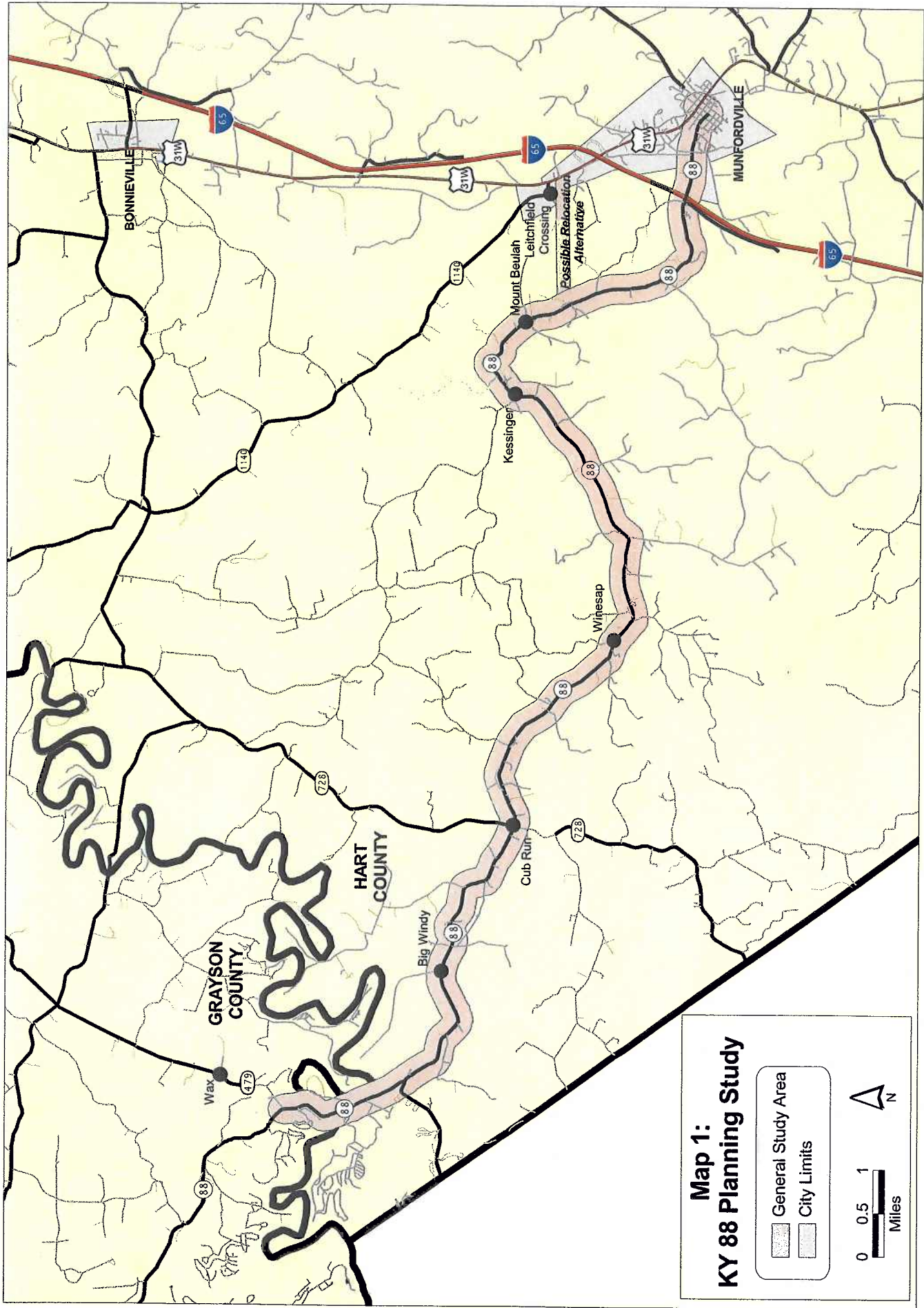
Political/Census Division	Age 0-17	Percent of Total	Age 18-64	Percent of Total	Age 65 +	Percent of Total	Total
United States	72,293,812	25.7	174,136,341	61.9	34,991,753	12.4	281,421,906
Kentucky	993,841	24.6	2,544,260	62.9	503,668	12.5	4,041,769
Grayson County	5,922	24.6	14,771	61.4	3,360	14.0	24,053
Tract 9505	698	26.9	1,587	61.2	307	11.8	2,592
Block Group 9501-002	172	22.1	514	66.1	92	11.8	778

The above table indicates Census data for the state, county, a nearby census tract, and a nearby census block group.

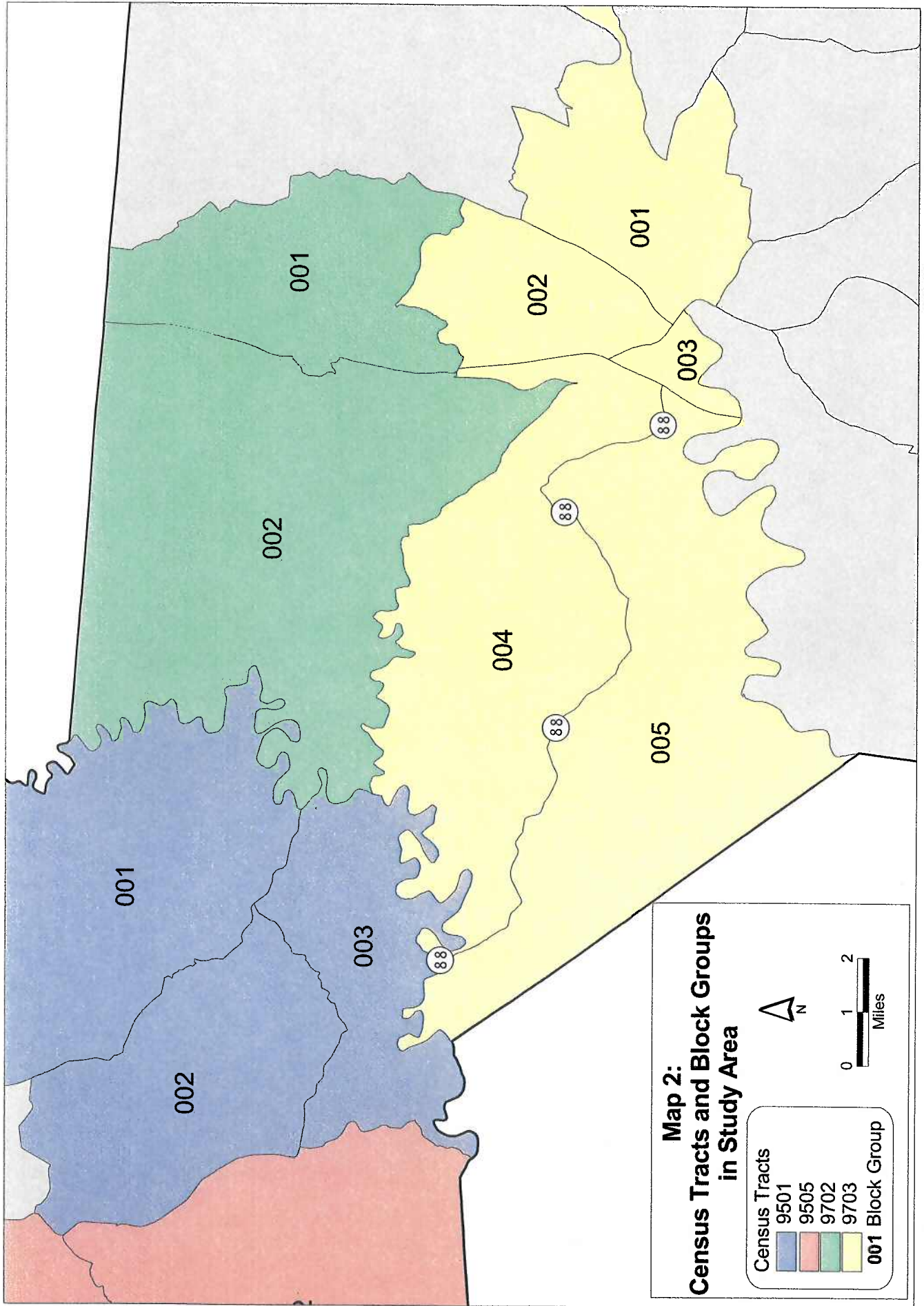
Table 6B - 2000 Population by Age Group - Grayson County Census Tract and Block Group in Project Area

Census Block Group	Age 0-17	Percent of Total	Age 18-64	Percent of Total	Age 65 +	Percent of Total	Total
Tract 9501	478	18.4	1,668	64.3	447	17.2	2,593
Block Group 003	112	12.7	586	66.5	183	20.8	881

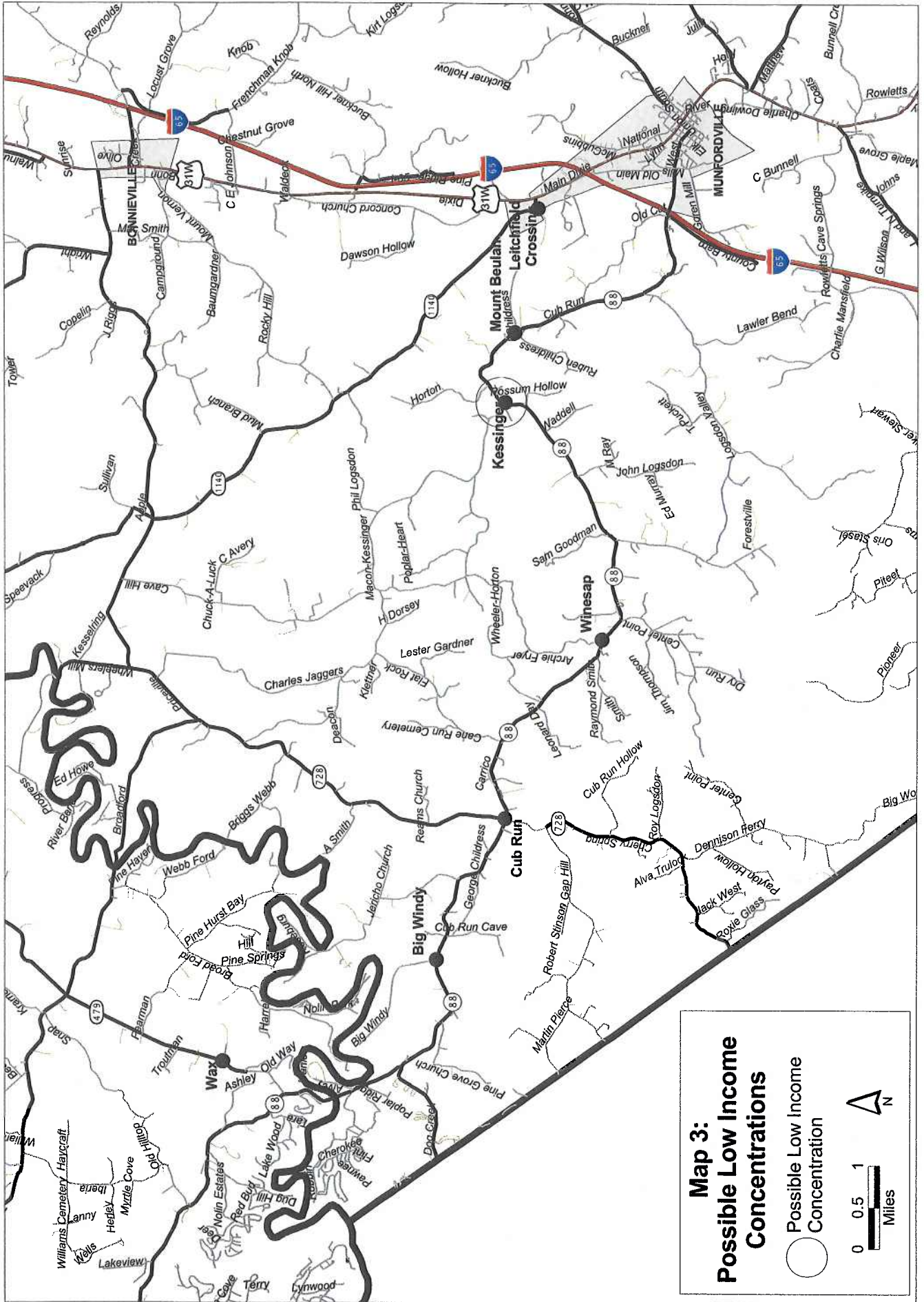
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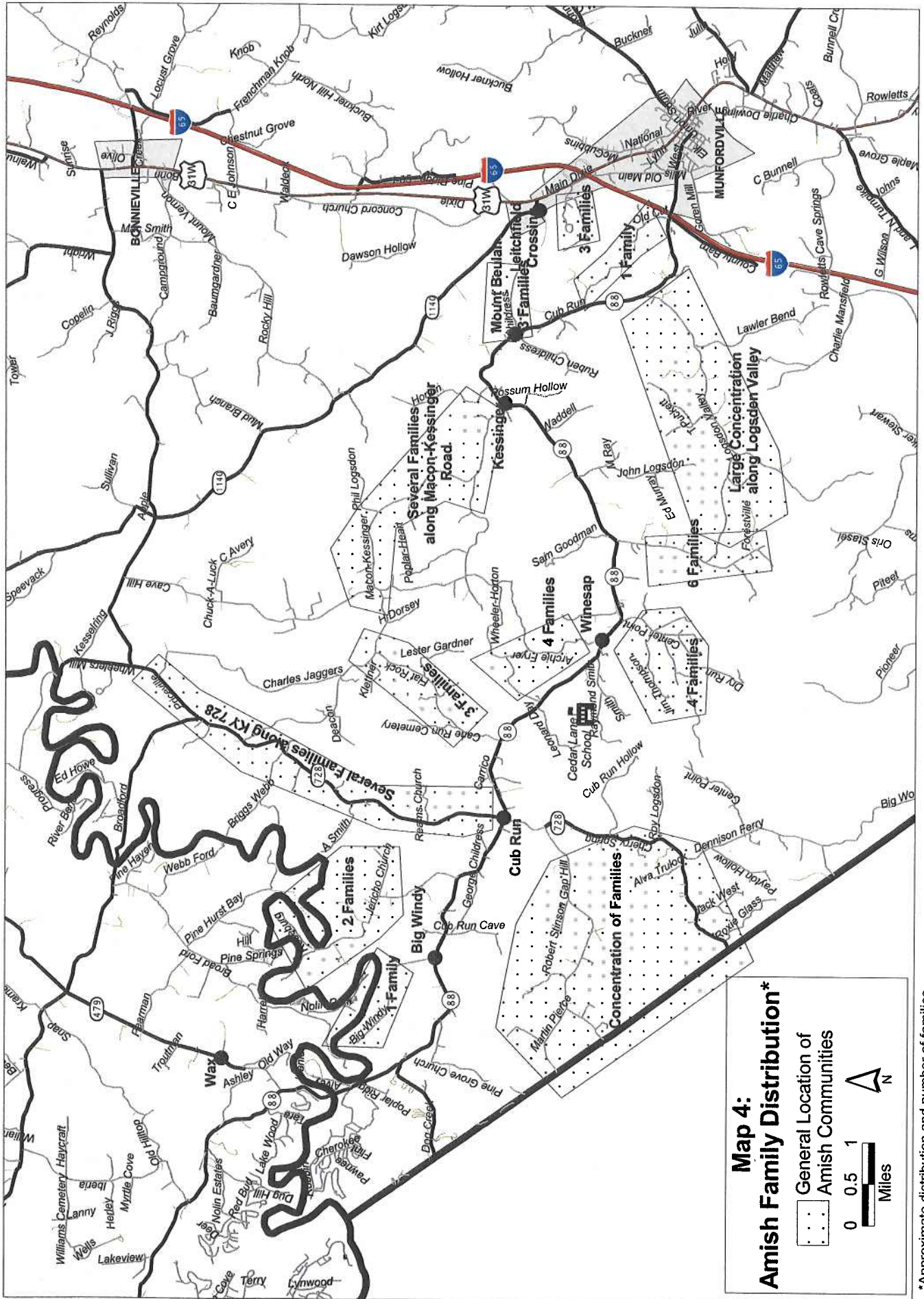


This map was created by the BRADD Transportation Department, April 2003.



This map was created by the BRADD Transportation Department, April 2003.





*Approximate distribution and number of families