

**Mist Netting Survey for the Proposed Smith – West Garrard  
Transmission Line and Substations  
Clark, Madison, and Garrard Counties, KY**

**Prepared for:**

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## **I. INTRODUCTION**

East Kentucky Power Cooperative (EKPC) is in the process of expanding its facilities at the J. K. Smith Power Station (J. K. Smith) in order to accommodate load growth among its member cooperatives. The J. K. Smith site is located in southern Clark County, Kentucky, just west of KY 89 and just north of the Kentucky River in the vicinity of Trapp, Kentucky.

EKPC has proposed to construct a 345 kV transmission line in the area between the cities of Trapp and Lancaster, Kentucky in order to alleviate the aforementioned system growth. Two 345 kV substations would also be associated with this project, the first would be constructed at J. K. Smith and the second would be constructed along US 52 just north of Lancaster, Kentucky. Construction of this project and the subsequent clearing of trees during the summer months raises questions and concerns for the welfare of the Indiana bat and its summer habitat. A mist netting survey was conducted to determine the presence or probable absence of the federally endangered Indiana bat (*Myotis sodalis*) within the proposed project area. The study corridor for this project is located in Clark, Madison, and Garrard Counties, on the Hedges, Palmer, Winchester, Union City, Richmond North, Valley View, Kirksville, Buckeye, and Bryantsville USGS 7.5 minute topographic quadrangles.

A mist netting proposal was submitted to the United States Department of Fish and Wildlife (USFWS), Kentucky Field office located in Frankfort, Kentucky on 17 July 2006. The USFWS reviewed this proposal and in an emailed response stated that the survey plan was adequate to determine presence or probable absences of the Indiana Bat within the proposed project area. A copy of this proposal can be found in appendix VI. The mist netting survey was conducted on 22 May through 2 August 2006. Participants in the survey included EKPC biologists Brian Gasdorf, Chris Carpenter, Jeff Hohman, Joe Settles, Josh Young, Missy Toncray, and Seth Bishop, FMSM Engineer consultants James Kiser, David Bander, and Doug Stephens, along with private contractors Alex Herron, Isaiah Moeller, Jill Baldwin, and Seth Young.

## **II. PROJECT DESCRIPTION AND LOCATION**

The exact location of the proposed 345 kV transmission line and substation project has yet to be determined by EKPC. Project engineers and the Rural Utilities Service are currently analyzing multiple alternatives for this project. However, engineers provided EKPC biologists with a Study Corridor in order to complete bat survey work before the end of the 2006 mist-netting season. The final route of the proposed transmission line and the location of the substations will be within this Study Corridor. The Study Corridor runs in a general northeast to southwest manner; beginning at the proposed J. K. Smith Substation, located on the J. K. Smith site in southern Clark County and ending at the proposed West Garrard Substation site just north of Lancaster, Kentucky along US 52 in Garrard County. The majority of the corridor is located in Madison County, to the north of Richmond, Kentucky and to the south of the Kentucky River. Project maps are located in Appendix II.

This project is approximately 35 miles in length and would require a 150-foot wide right-of-way. A large percentage of the proposed transmission line will be collocated with existing transmission lines wherever possible in an attempt to lessen the impact on the natural

environment and the private landowners in the area. In areas where collocation is possible the additional right-of-way needed for this project will be less than 150 feet.

EKPC biologists conducted preliminary field surveys of the proposed Study Corridor to determine the habitat types in the area. The proposed Smith – West Garrard Transmission Line and Substation project is located in the Inner Blue Grass region of the state, and is characterized by rolling hills and sloping valleys (McGrain and Currens 1978). Land use in the Blue Grass region is typically characterized by the majority of upland areas being used for agricultural purposes, with wooded habitats limited to the more deeply entrenched valleys. Within the Study Corridor for this project, this characterization of the region holds true. The majority of the area, approximately 75%, has been cleared and is being used for agricultural and private purposes. An estimated 3074 acres of trees are located within the Study Corridor; this number was estimated from aerial photos of the project area. The forested areas were also where mist-netting efforts were focused as they contained the most likely bat habitat within the Smith-West Garrard Study Area. Only a small percentage of the total forested area would actually be classified as wooded habitat, with the majority of the trees located in riparian zones, small disjunct clusters, and along fencerows. Dominant tree species within the wooded areas are silver maple (*Acer saccharinum*), sugar maple (*Acer saccharum*), box elder (*Acer negundo*), shellbark hickory (*Carya laciniosa*), hackberry (*Celtis occidentalis*), green ash (*Fraxinus pennsylvanica*), black walnut (*Juglans nigra*), eastern red cedar (*Juniperus virginiana*), and sycamore (*Platanus occidentalis*).

The proposed ROW would be cut through a combination of manual and mechanical means, and would be maintained through a combination of manual and mechanical cutting along with the ground application of approved herbicides. Two and three pole Corten steel structures would support the electrical conductors on the proposed new line. Access for the construction of the proposed transmission line would maximize the use of existing public and private roads in the project area. Some temporary roads would be required for the construction of the proposed line.

### **III. INDIANA BAT SPECIES STATUS**

#### **Distribution**

Miller and Allen (1928) described a new species to science, the Indiana bat (*Myotis sodalis*), in 1928, and this species formally attained endangered species status 11 March 1967. Its distribution is in the eastern United States, from Oklahoma, Iowa, and Wisconsin east to Vermont, and south to northwestern Florida (Barbour and Davis 1969). In Kentucky, the Indiana bat's wintering distribution is fairly well documented and includes several caves throughout the karst regions of the state (Palmer-Ball et al. 1988). Kentucky contains three Priority One hibernacula (Priority One hibernacula are hibernation sites with a recorded population >30,000 bats since 1960) and houses a significant portion of the total population of Indiana bats (USFWS 1999). For the proposed Smith – West Garrard project there are no known hibernacula located within 25 mi (50 km) of the proposed project area. The closest known hibernacula are located in northern Jackson County to the south and western Estill County to the east. The summer distribution of this species in Kentucky is not as well known, but expanded mist netting efforts by numerous biologists are increasing this knowledge base.

## **Life History**

Indiana bats use caves and abandoned mine portals as hibernacula. After hibernation, females leave the hibernacula and typically fly north and northwest to nursery sites to raise their young. Although some males may leave with the females, others stay near or in the hibernacula throughout the summer months (Barbour and Davis 1969). After leaving the hibernacula, Indiana bats are known to roost under the exfoliating bark of dead and live trees (MacGregor et al. 1999), and they have been documented using tree cavities as well (Gardner et al. 1991).

It has also been shown that Indiana bats exhibit fidelity for summer roost trees (Garner and Gardner 1992). Early studies indicated that floodplain forests were the significant habitat for Indiana bats (Humphrey et al. 1977), but recent studies indicate that this species uses both upland and riparian habitats (Gardner et al. 1991 and MacGregor et al. 1999). Most known maternity roosts have been located in wooded areas with a semi-open canopy or along forest edges. Maternity colonies are initially composed of 50-100 females, each of which bears one young in May or June. Maternity colonies typically roost under the exfoliating bark of dead or live trees, but they have also been found to use cavities as temporary roosts (Gardner et al. 1991, Kurta and Williams 1992, and Callahan 1993).

EKPC biologists located the closest maternity record to the proposed Smith-Sideview project area during the summer of 2000 when mist netting for the proposed Blevins Valley substation and tap in Bath County, Kentucky. This maternity record is approximately 35 miles (56 km) to the east of the proposed project area. There are several records for the Indiana bat from the northern portions of Jackson County, approximately 25 miles (50 km) to the south of the project area, but the majority of these are in relation to hibernaculum in the area. The next closest known Indiana Bat records are county occurrences for Jessamine and Fayette Counties, which is recorded in the Kentucky Fish and Wildlife Information System database current to 11 May 2005.

## **IV. GRAY BAT SPECIES STATUS**

### **Distribution**

A. H. Howell (1909) described the gray bat (*Myotis grisescens*) following its discovery in Nickajack Cave, located in central Tennessee. Barbour and Davis (1969) make note of several large populations of gray bats that were thought to have been lost due to disturbance of their cave habitats, and feared a trend toward extinction. Following these losses of habitat and fear of future population declines the gray bat was listed as endangered in the U. S. Federal Register on 28 April 1976 (Decher and Choate 1995). The known distribution of the gray bat includes the limestone karst regions of Missouri, Kentucky, Tennessee, and Alabama, with scattered populations also occurring in adjacent states. Over 95% of the known population of gray bats hibernates in only nine caves throughout the range, over half of this number use Fern Cave, in Alabama, as a hibernacula (USFWS 1982). The gray bat requires the coldest available caves for hibernation, typically characterized by large vertical entrances and areas of trapped cold air, making less than 0.1% of known caves suitable (Decher and Choate 1995). In Kentucky, the

Coach - James Cave System, a priority one hibernacula contains 300,000+ gray bats during the winter hibernation period. This cave's location in the south central portion of Kentucky within the Mammoth Cave system is a focal point of this species in the state. For the proposed Smith – West Garrard project there are no known hibernacula located within 25 mi (50 km) of the proposed project area.

The summer distribution of this species in Kentucky is not as well known, but expanded mist netting efforts by numerous biologists are increasing this knowledge base. Conservation efforts over the past 25 years, including education of the public and continued habitat protection, especially at the Priority 1 hibernacula, has led to a rebound in the gray bat population. The recovery has been so successful that the gray bat is currently being considered for downlisting by the USFWS.

### **Life History**

Gray bats are the largest of the *Myotis* bats found in the eastern United States. They can be distinguished from other bats of the same genus by the long forearm measurement (40 – 46 mm), uniform gray color, calcar not keeled, and wing membrane being attached to the ankle, instead of the base of the toe (Barbour and Davis 1974). *M. grisescens* are one of the few bats, which inhabit caves during the winter as well as during the summer months. Caves are used as hibernacula, as was previously discussed, and caves are also used as summer roosts. Female gray bats congregate in maternity colonies where they will spend the summer raising one young, while males and non-reproductive females gather in “bachelor” colonies in less desirable caves. The females often choose very warm humid caves, with vaulted ceilings where heat is trapped, which helps promote rapid growth of the young (Decher and Choate 1995). Gray bats will often have several roosting caves distributed throughout their summer home range and will move between the caves throughout the summer (USFWS 1982). Besides caves, gray bats are known to use man-made cave-like structures for summer roosts, such as bridges, abandoned mines, and concrete culverts.

Gray bats are known to migrate great distances from their winter hibernacula, up to 325 miles, to their summer roosts (Tuttle 1976a). These summer roosts are widely scattered and often located in close proximity to rivers, streams, or other bodies of water where the gray bat typically forages. Gray bats also use river and stream corridors as primary flight corridors relying on the riparian vegetation to help conceal them from nocturnal predators, such as screech owls. They are known to fly 20+ km each night along suitable stream corridors in search of the aquatic insects on which they feed (USFWS 1982). The closest known maternity caves to the Study Corridor are Overstreet Cave, Christmas Cave, and Daniel Boone's Cave located in Jessamine County and associated with the Kentucky River tributaries of Jessamine Creek and Hickman Creek to the north of the project area. USFWS (1982) list these Jessamine County caves as Priority 1 and 2 maternity sites for the gray bat. Besides the maternity caves, there are also records for the gray bat in Clark, Fayette, and Madison Counties recorded in the Kentucky Fish and Wildlife Information System database current to 11 May 2005.

## IV. METHODS

Twenty-five sites were sampled for bats from 22 May through 2 August 2006, in accordance with the guidelines presented in the 1999 draft version of the Indiana Bat Revised Recovery Plan (USFWS 1999). The mist netting guidelines from the recovery plan are attached in Appendix V. Sampling at each site consisted of a minimum of two net locations, and the nets were tended from dusk until 5 hours after sunset.

Locations for the mist netting sites were determined based on the habitat types in the Study Area and were located in areas that project biologists felt would provide the best survey results. Due to the topography and habitat types found in the Study Area the majority of the net sites were located in stream corridors, with road corridors and an upland pond also netted. The entire Study Corridor is located on private property, thus owner permission had to be obtained prior to mist netting. Every effort was made to speak with property owners and obtain permission, however, this was not possible at all location. Listed below is the general area in which each net site was located. Maps with the exact locations of each net site can be seen in Appendix II, photographs of each net site are included in Appendix III, and the mist netting data sheets with GPS point locations are included in Appendix IV. Beginning at the J. K. Smith site and moving to the southwest the sites were as follows.

- Site 1:** J. K. Smith Site – Wooded road corridor
- Site 2:** Upper Howard’s Creek – Stream corridor
- Site 3:** Brock Cemetery Road – Wooded road corridor
- Site 4:** Cotton Creek – Stream Corridor
- Site 5:** Hoover Property on Black Road – Upland pond
- Site 6:** Muddy Creek – Stream Corridor
- Site 7:** Unnamed Tributary of East Fork Otter Creek – Stream Corridor
- Site 8:** East Fork Otter Creek – Stream Corridor
- Site 9 & 10:** Otter Creek – Stream Corridor
- Site 11:** Shallow Ford – Stream Corridor
- Site 12:** Tate Creek – Stream Corridor
- Site 13:** Haden Heights Road – Wooded road corridor
- Site 14, 15, & 16:** Silver Creek – Stream Corridor
- Site 17:** Trace Branch Road – Wooded road corridor
- Site 18 & 20:** Paint Lick Creek – Stream Corridor
- Site 19:** Dry Branch – Stream Corridor
- Site 21:** Long Branch – Stream Corridor
- Site 22:** Sugar Creek – Stream Corridor
- Site 23:** East Fork of Sugar Creek – Stream Corridor
- Site 24:** Middle Fork of Sugar Creek – Stream Corridor
- Site 25:** Boone Creek – Stream Corridor

Cool weather halted netting activities on 23 May 2006 at Site 1 and 22 May 2006 at Site 2 when air temperatures dropped into the middle to low forties. Data collected on bats captured at these sites before the air temperature became too cool will be included in this report, however these sites were both netted two additional nights when the air temperatures were warmer. Site 1 and Site 2 were netted in May 2006 as part of the EKPC Smith – Sideview transmission line and

substation, and are being included in this mist netting survey due to the close proximity to this project.

At Site 10 the net locations were slightly altered during the second net night on 20 July 2006 after no bats were captured at the site on the first net night, 18 July 2006. At the first location there was a strong odor of raw sewage and no bat activity was seen in the area on this night. Thus, project biologists decided to move the net locations approximately 300 yards downstream to another suitable location in an attempt to capture bats at this site.

Data recorded for bats caught included species, sex, age (adult or juvenile), reproductive condition, forearm length, and weight. Captured bats were banded with numbered aluminum bands (provided by the Kentucky Department of Fish and Wildlife Resources) and released at the capture site.

## **V. RESULTS**

A table with the data recorded for all bats captured during this mist netting survey is included in Appendix I, and copies of the mist netting data sheets are included in appendix IV. Two hundred sixty seven bats of seven species; the big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), gray bat (*Myotis grisescens*), little brown bat (*Myotis lucifugus*), Northern bat (*Myotis septentrionalis*), and eastern pipistrelle (*Pipistrellus subflavus*), were caught during fifty net nights, representing a capture rate of 5.3 bats/net night (Table 1). One hundred and six (106) eastern pipistrelles, 91 red bats, 31 little brown bats, 20 gray bats, 17 big brown bats, 1 Northern bat, and 1 hoary bat were captured at the twenty five net sites (Table 2). Capture activity for the project occurred from 21:00 to 02:05 hours with 85% of the bat activity occurring before 00:00 hours.

## **VI. DISCUSSION**

### **Indiana Bat**

The results of this mist netting survey show that no Indiana bats were captured in the vicinity of the proposed powerline corridor from 22 May through 2 August 2006. Indiana bats are known to forage and roost in large tracts of mature forests with natural roost structures, water sources and ample prey (USFWS 1999). The majority of the proposed project area is currently used for agricultural purposes, with wooded habitat limited to the valleys where the majority of the mist netting was conducted. Therefore, due to the lack of suitable habitat and the removal of a minimal number of trees the proposed powerline corridor should not adversely affect the Indiana bat or its summer habitat.

### **Gray Bat**

Twenty federally endangered gray bats (*Myotis grisescens*) were captured during mist netting activities for this project. Seven males were captured, one adult and six juveniles, while thirteen females were captured, eleven juveniles and two reproductive adults. Gray bats use river and stream corridors as primary feeding and flight corridors. They are known to fly 20+ km each

night along suitable stream corridors in search of the aquatic insects on which they feed (USFWS 1982). All twenty gray bats that were captured during this project were caught in stream corridors. The stream corridors where gray bats were captured and the number captured included Upper Howard Creek (1), Tate Creek (1), Silver Creek (15), Paint Lick Creek (2), and Middle Fork Sugar Creek (1). All of these except the Middle Fork Sugar Creek, which is a tributary of Sugar Creek and the Kentucky River, are all main tributaries of the Kentucky River. It would be expected that the gray bats captured during this project were using the Kentucky River and its tributaries as flight and foraging corridors.

The proposed project would cross a majority of these stream corridors, thus raising concerns regarding the foraging habitat of the gray bat. Within this area of the Kentucky River drainage there are numerous stream corridors that provide foraging habitat for the gray bat. Removal of 150 feet or less of riparian vegetation along a few of these streams is not likely to adversely affect the availability of foraging habitat for the gray bat. These concerns are also addressed below in section VII. Mitigation.

Gray bats had been previously documented along the Kentucky River in Clark, Fayette, and Madison Counties but no maternity caves are known from within five miles of the proposed project area. The three known gray bat maternity caves located in Jessamine County within the Kentucky River drainage are approximately 10 miles to the north of the project area. These maternity sites are close enough that bats roosting there during the day could be using streams within the study corridor. There are undoubtedly other documented and unknown caves and man-made structures within a 15-mile radius of the project area that provide habitat for summer gray bat activity. The project corridor was surveyed for the presence of caves or sinkholes that could serve as roosting habitat for this species. Project biologists walked the entire Study Corridor and there were no caves or sinkholes found by EKPC biologists. We spoke with numerous landowners concerning the possibility of caves in the area, and none of the landowners EKPC personnel spoke with knew of any caves within the project corridor.

## **VII. Mitigation**

Below are measures to further avoid and minimize indirect effects on endangered bat species as a result of the proposed action. They were developed based upon the biology of the gray bat and its habitat requirements to complete its life cycle. Mitigation measure #1 avoids impacting the behavioral patterns of the gray bat while foraging. Mitigation measures #2 through #7 deal specifically with protecting the water quality to ensure productivity of the food source (aquatic invertebrates) that the gray bat feeds upon, thus allowing continuous use the habitat by gray bats during the construction phase of the project. Finally, mitigation measure #8 would monitor the erosion control measures and provide adequate feedback that this method is best for both protection of water quality and the scheduling of ROW construction.

- 1) The majority of construction activities will occur only during daylight hours and cease prior to those times of day (sunset through nighttime hours) when the gray bats are utilizing the stream corridors for foraging.

- 2) The ROW crossings will span streams with no poles placed in the stream corridor. Additionally, there will be no alteration or realignment of the stream channels.
- 3) No equipment will be allowed within or operate in the natural stream channel (i.e., being placed upon the natural substrate of the stream) and no excavation of stream channels will occur.
- 4) Equipment cleaning/staging areas will be located such that runoff from these areas will not enter any streams.
- 5) A Storm Water Pollution Prevention Plan would be developed for this project, and final erosion and sediment control best management practices will be formulated and made a part of the final contract.
- 6) Erosion and sediment controls will include, but are not necessarily limited to, silt fences, straw bales, sediment basins, and rock check dams. These measures will be used singly or in combination to provide the maximum level of erosion control and protection.
- 7) Temporary seeding and mulching of all disturbed areas will be conducted immediately upon work being completed in those areas. Especially, when there are time delays between construction activities due to such things as the weather, scheduling, etc.
- 8) Water quality standards will be maintained throughout the entire stream corridors in accordance with and federal or state agency required permits. The resident foreman will monitor stream crossing on a weekly basis during the appropriate construction phase, and inform the environmental coordinator regarding necessary erosion control measure maintenance.

#### **VIII. Determination of Effects on Indiana Bats**

No effect

Not likely to adversely affect

Likely to adversely affect

No Indiana bats were captured during our mist netting survey, which indicates probable absence of the species.

## **IX. Determination of Effects on Gray Bats**

No effect

Not likely to adversely affect

Likely to adversely affect

There were no caves or sinkholes found within the project area by EKPC biologists that would provide roosting habitat for the gray bat. Foraging habitat for the gray bat is found in the Study Corridor as is evident in the results of the mist netting survey. However, the clearing of 150 feet or less of riparian vegetation along these streams is not likely to adversely affect the availability of foraging habitat for the gray bat. Also, EKPC is committed to implementing mitigation measures, listed above, into its construction process for the above listed project. Therefore, gray bats or their habitat should not be adversely affected by the proposed project.

Table 1. Results of bat mist netting survey conducted 22 May through 2 August 2006, for EKPC's proposed Smith – West Garrard Transmission Line and Substation project in Clark, Madison, and Garrard Counties, Kentucky.

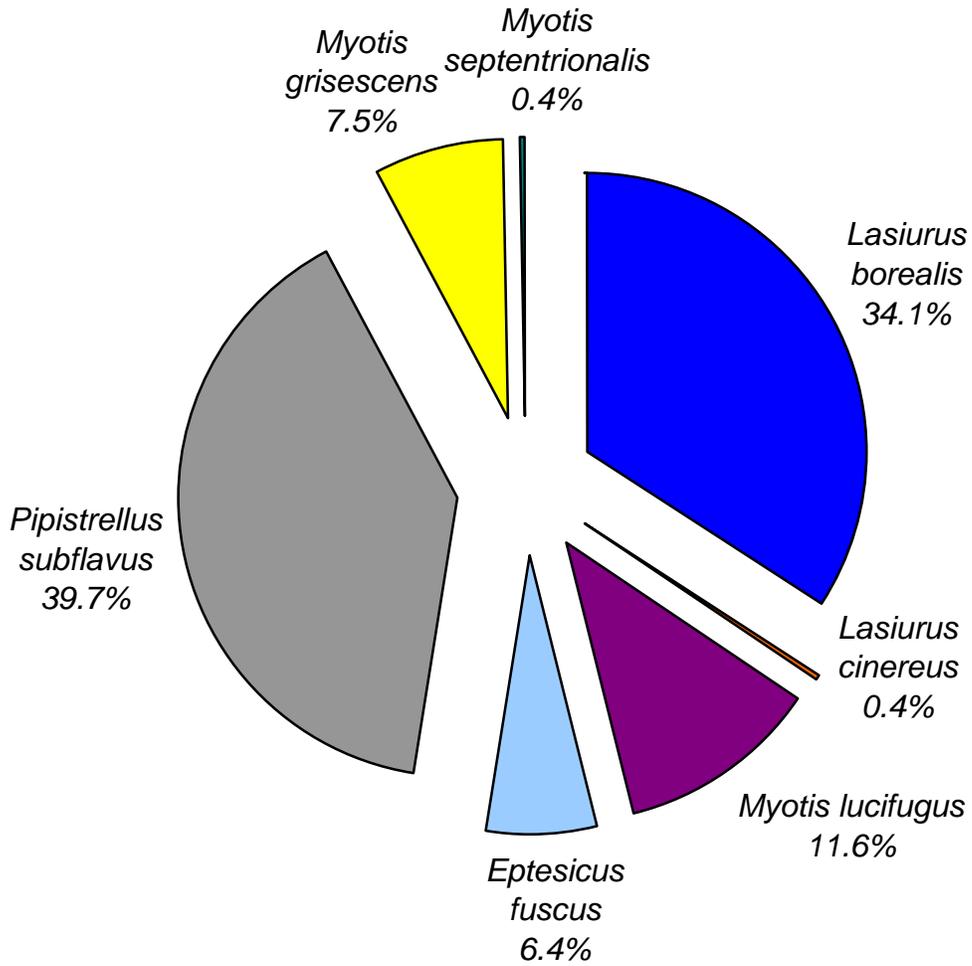


Table 2. Total bats captured at each net site by species during mist netting for EKPC's proposed Smith – West Garrard Transmission Line and Substation project between 22 May and 2 August 2006.

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Site 23	Site 24	Site 25	<b>Tot. Cap. Species.</b>
<i>E. fuscus</i>								4				1			3			1				1		4	3	<b>17</b>
<i>L. bore.</i>	1	1	1		3	9	8	2	3	5		1	3	10	12			2	2	6		6		10	6	<b>91</b>
<i>L. ciner.</i>																						1				<b>1</b>
<i>M. gris.</i>		1										1		9	5	1		2						1		<b>20</b>
<i>M. luci.</i>		8				8	3	1	2	1	1			1	2							2			2	<b>31</b>
<i>M. sept.</i>			1																							<b>1</b>
<i>P. sub.</i>		17	2			9	1	3	3	5	7	4		27	9	2		5		1		5	1	3	2	<b>106</b>
<b><u>Tot. Cap.</u> Site</b>	<b>1</b>	<b>27</b>	<b>4</b>	<b>-</b>	<b>3</b>	<b>26</b>	<b>12</b>	<b>10</b>	<b>8</b>	<b>11</b>	<b>8</b>	<b>7</b>	<b>3</b>	<b>47</b>	<b>31</b>	<b>3</b>	<b>-</b>	<b>10</b>	<b>2</b>	<b>7</b>	<b>-</b>	<b>15</b>	<b>1</b>	<b>18</b>	<b>13</b>	<b>Tot:267</b>

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**APPENDIX I. BATS CAPTURED DURING MIST NETTING SURVEY**

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 1	5/23/06	22:55	<i>Lasiurus borealis</i>						B	No Band	Got out of Net
Smith-W Garrard Site 1	5/24/06										No bats were captured on this night
Smith-W Garrard Site 1	5/31/06										No bats were captured on this night
Smith-W Garrard Site 2	5/22/06	21:00	<i>Pipistrellus subflavus</i>	P	A	F	5.2	33	B	A11807	
Smith-W Garrard Site 2	5/22/06	21:12	<i>Pipistrellus subflavus</i>	NR	A	F	5.0	34	A	A11803	
Smith-W Garrard Site 2	5/22/06	21:12	<i>Pipistrellus subflavus</i>	NR	A	F	5.1	34	B	A11849	
Smith-W Garrard Site 2	5/22/06	21:15	<i>Pipistrellus subflavus</i>	NR	A	F	5.3	34	B	A11801	
Smith-W Garrard Site 2	5/22/06	21:50	<i>Pipistrellus subflavus</i>	P	A	F	6.3	32	B	A11833	
Smith-W Garrard Site 2	5/22/06	22:30	<i>Pipistrellus subflavus</i>	P	A	F	6.7	34	A	A11776	
Smith-W Garrard Site 2	5/22/06	22:55	<i>Myotis lucifugus</i>	NR	A	F	7.6	36	A	A11797	
Smith-W Garrard Site 2	5/22/06	22:55	<i>Pipistrellus subflavus</i>	P	A	F	7.1	36	A	A11818	
Smith-W Garrard Site 2	5/22/06	23:25	<i>Pipistrellus subflavus</i>	NR	A	M	5.1	34	A	A11811	
Smith-W Garrard Site 2	5/23/06	21:00	<i>Pipistrellus subflavus</i>	NR	A	F	5.9	34	A	A11784	
Smith-W Garrard Site 2	5/23/06	21:15	<i>Pipistrellus subflavus</i>	P	A	F	5.0	34	B	A11817	
Smith-W Garrard Site 2	5/23/06	21:30	<i>Myotis lucifugus</i>	NR	A	M	6.7	38	A	A07218	
Smith-W Garrard Site 2	5/23/06	21:30	<i>Pipistrellus subflavus</i>	P	A	F	5.2	32	A	A11808	
Smith-W Garrard Site 2	5/23/06	21:40	<i>Pipistrellus subflavus</i>	P	A	F	6.8	34	B	A07244	
Smith-W Garrard Site 2	5/23/06	22:10	<i>Pipistrellus subflavus</i>	P	A	F	5.5	34	A	A11810	
Smith-W Garrard Site 2	5/23/06	22:10	<i>Pipistrellus subflavus</i>	P	A	F	6.2	35	B	A07205	
Smith-W Garrard Site 2	5/23/06	22:12	<i>Pipistrellus subflavus</i>	P	A	F	7.0	36	B	A11761	
Smith-W Garrard Site 2	5/23/06	22:30	<i>Myotis lucifugus</i>	P	A	F	9.2	36	B	A07212	
Smith-W Garrard Site 2	5/23/06	22:42	<i>Myotis lucifugus</i>	P	A	F	10.1	37	B	A07210	
Smith-W Garrard Site 2	5/23/06	23:20	<i>Myotis lucifugus</i>	P	A	F	8.5	35	B	A07223	
Smith-W Garrard Site 2	5/30/06	21:05	<i>Lasiurus borealis</i>	P	A	F	18.0	40	B	A11890	
Smith-W Garrard Site 2	5/30/06	22:55	<i>Pipistrellus subflavus</i>	P	A	F	7.9	33	A	A11896	
Smith-W Garrard Site 2	5/30/06	23:00	<i>Myotis lucifugus</i>	P	A	F	9.0	36	A	A11873	
Smith-W Garrard Site 2	5/30/06	23:20	<i>Myotis lucifugus</i>	P	A	F	9.9	38	A	A11891	
Smith-W Garrard Site 2	5/30/06	23:45	<i>Myotis lucifugus</i>	L	A	F	8.6	37	A	A11880	
Smith-W Garrard Site 2	5/30/06	02:05	<i>Pipistrellus subflavus</i>	NR	A	M	4.9	33	B	A11858	
Smith-W Garrard Site 2	5/30/06	02:05	<i>Myotis grisescens</i>	L	A	F	10.9	45	B	A11887	

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 3	7/5/06	22:15	<i>Myotis septentrionalis</i>	NR	A	M	6.6	35	A	A11747	
Smith-W Garrard Site 3	7/5/06	22:30	<i>Pipistrellus subflavus</i>	NR	A	M	7.2	34	B	A11741	
Smith-W Garrard Site 3	7/10/06	21:05	<i>Pipistrellus subflavus</i>	L	A	F	6.0	33	B	A11712	
Smith-W Garrard Site 3	7/10/06	23:45	<i>Lasiurus borealis</i>	L	A	F	16.2	43	B	A11666	
Smith-W Garrard Site 4	7/7/06										No bats were captured on this night
Smith-W Garrard Site 4	7/10/06										No bats were captured on this night
Smith-W Garrard Site 5	7/26/06										No bats were captured on this night
Smith-W Garrard Site 5	7/27/06	21:20	<i>Lasiurus borealis</i>	TD	J	M	9.1	40	B	A11456	
Smith-W Garrard Site 5	7/27/06	21:45	<i>Lasiurus borealis</i>	TD	J	M	10.3	39	A	A11461	
Smith-W Garrard Site 5	7/27/06	24:40	<i>Lasiurus borealis</i>	PL	A	F	15.4	40	A	A11452	
Smith-W Garrard Site 6	7/25/06	21:22	<i>Pipistrellus subflavus</i>	NR	J	M	4.8	35	A	A11623	
Smith-W Garrard Site 6	7/25/06	21:22	<i>Pipistrellus subflavus</i>						A	No Band	Got out of Net
Smith-W Garrard Site 6	7/25/06	21:25	<i>Pipistrellus subflavus</i>	PL	A	F	5.4	34	A	A11647	
Smith-W Garrard Site 6	7/25/06	21:40	<i>Pipistrellus subflavus</i>	L	A	F	6.9	34	B	A11636	
Smith-W Garrard Site 6	7/25/06	22:02	<i>Lasiurus borealis</i>	NR	J	M	9.3	37	A	A11616	
Smith-W Garrard Site 6	7/25/06	23:20	<i>Myotis lucifugus</i>	NR	J	M	6.2	36	A	A11639	
Smith-W Garrard Site 6	7/25/06	23:20	<i>Myotis lucifugus</i>	NR	A	M	7.1	38	A	A11624	
Smith-W Garrard Site 6	7/25/06	23:40	<i>Lasiurus borealis</i>	NR	J	F	12.1	44	A	A11649	
Smith-W Garrard Site 6	7/25/06	23:40	<i>Myotis lucifugus</i>	NR	A	F	8.0	39	A	A11643	
Smith-W Garrard Site 6	7/25/06	23:40	<i>Lasiurus borealis</i>	NR	J	F	9.4	41	A	A11629	
Smith-W Garrard Site 6	7/25/06	24:40	<i>Myotis lucifugus</i>	PL	A	F	7.5	36	A	A11646	
Smith-W Garrard Site 6	7/25/06	24:40	<i>Myotis lucifugus</i>	NR	J	M	7.3	36	A	A11645	
Smith-W Garrard Site 6	7/25/06	24:40	<i>Lasiurus borealis</i>						A	No Band	Got out of Bag
Smith-W Garrard Site 6	7/25/06	01:55	<i>Pipistrellus subflavus</i>	L	A	F	7.5	35	A	A11622	
Smith-W Garrard Site 6	8/1/06	21:15	<i>Myotis lucifugus</i>	NR	J	M	7.1	37	A	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	21:15	<i>Lasiurus borealis</i>	TD	A	M	10.4	41	A	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	21:40	<i>Pipistrellus subflavus</i>	NR	J	M	4.0	32	B	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	22:20	<i>Myotis lucifugus</i>	NR	J	F	8.1	37	A	No Band	Ran out of Bands

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 6	8/1/06	23:10	<i>Pipistrellus subflavus</i>	NR	J	F	6.2	35	A	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	23:45	<i>Pipistrellus subflavus</i>	NR	J	F	7.1	36	A	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	24:30	<i>Pipistrellus subflavus</i>	NR	J	F	5.4	34	A	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	24:30	<i>Myotis lucifugus</i>	NR	A	F	7.2	36	A	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	01:20	<i>Lasiurus borealis</i>	PL	A	F	16.5	41	A	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	01:40	<i>Lasiurus borealis</i>	NR	J	F	11.7	43	B	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	01:40	<i>Lasiurus borealis</i>	NR	J	F	12.7	42	A	No Band	Ran out of Bands
Smith-W Garrard Site 6	8/1/06	01:40	<i>Lasiurus borealis</i>	NR	J	F	12.9	43	A	No Band	Ran out of Bands
Smith-W Garrard Site 7	7/17/06	21:40	<i>Lasiurus borealis</i>	NR	J	F	10.1	42	B	A11894	
Smith-W Garrard Site 7	7/17/06	22:00	<i>Pipistrellus subflavus</i>	NR	J	M	4.6	32	A	A11883	
Smith-W Garrard Site 7	7/17/06	22:00	<i>Lasiurus borealis</i>	TD	J	M	9.3	40	A	A11875	
Smith-W Garrard Site 7	7/17/06	22:40	<i>Lasiurus borealis</i>	L	A	F			B	No Band	Got out of Hand
Smith-W Garrard Site 7	7/17/06	23:30	<i>Myotis lucifugus</i>	PL	A	F	7.7	37	A	A11876	
Smith-W Garrard Site 7	7/17/06	24:20	<i>Eptesicus fuscus</i>	TD	J	M	17.0	45	A	A11854	
Smith-W Garrard Site 7	7/17/06	24:20	<i>Eptesicus fuscus</i>						A	No Band	Got out of Net
Smith-W Garrard Site 7	7/17/06	24:20	<i>Lasiurus borealis</i>						A	No Band	Got out of Net
Smith-W Garrard Site 7	7/17/06	24:30	<i>Lasiurus borealis</i>	NR	J	F	10.8	43	B	A11888	
Smith-W Garrard Site 7	7/19/06	22:30	<i>Lasiurus borealis</i>	TD	J	M	9.3	39	B	A11726	
Smith-W Garrard Site 7	7/19/06	24:40	<i>Lasiurus borealis</i>	NR	J	F	11.9	44	A	A11733	
Smith-W Garrard Site 7	7/19/06	01:40	<i>Lasiurus borealis</i>	TD	J	M	8.9	38	B	A11748	
Smith-W Garrard Site 8	7/24/06	21:00	<i>Pipistrellus subflavus</i>	L	A	F	6.1	35	A	A11391	
Smith-W Garrard Site 8	7/24/06	21:00	<i>Pipistrellus subflavus</i>	L	A	F	6.0	34	A	No Band	Got out of Hand
Smith-W Garrard Site 8	7/24/06	21:20	<i>Pipistrellus subflavus</i>	NR	J	F	3.9	31	A	No Band	Small Juvenile – Not banded
Smith-W Garrard Site 8	7/24/06	21:35	<i>Lasiurus borealis</i>	TD	A	M	9.2	40	A	A11361	
Smith-W Garrard Site 8	7/24/06	21:55	<i>Eptesicus fuscus</i>	TD	A	M	15.6	45	B	A11378	
Smith-W Garrard Site 8	7/24/06	22:50	<i>Eptesicus fuscus</i>	L	A	F	20.7	48	A	A11389	
Smith-W Garrard Site 8	7/24/06	01:40	<i>Myotis lucifugus</i>	PL	A	F	6.5	37	B	A11386	
Smith-W Garrard Site 8	7/27/06	23:15	<i>Eptesicus fuscus</i>	PL	A	F	22.7	48	B	A11400	
Smith-W Garrard Site 8	7/27/06	22:10	<i>Lasiurus borealis</i>	NR	J	F	10.4	42	B	A11379	

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 8	7/27/06	01:05	<i>Eptesicus fuscus</i>	PL	A	F	22.3	48	A	A11398	
Smith-W Garrard Site 9	7/25/06	22:10	<i>Pipistrellus subflavus</i>	L	A	F	7.7	34	B	A11394	
Smith-W Garrard Site 9	7/25/06	22:50	<i>Pipistrellus subflavus</i>	NR	A	M	6.5	34	B	A11365	
Smith-W Garrard Site 9	7/25/06	23:58	<i>Lasiurus borealis</i>	L	A	F	14.2	44	A	A11406	
Smith-W Garrard Site 9	7/25/06	01:07	<i>Myotis lucifugus</i>	PL	A	F	7.7	38	B	A11393	
Smith-W Garrard Site 9	7/25/06	02:05	<i>Myotis lucifugus</i>	PL	A	F	8.6	38	B	A11392	
Smith-W Garrard Site 9	7/26/06	22:05	<i>Pipistrellus subflavus</i>	L	A	F	7.4	34	B	A11544	
Smith-W Garrard Site 9	7/26/06	22:45	<i>Lasiurus borealis</i>	NR	J	F	11.9	42	B	A11501	
Smith-W Garrard Site 9	7/26/06	23:49	<i>Lasiurus borealis</i>	NR	J	F	12.2	42	A	A11511	
Smith-W Garrard Site 10	7/18/06										No bats were captured on this night
Smith-W Garrard Site 10	7/20/06	21:20	<i>Pipistrellus subflavus</i>	NR	J	M	4.4	34	B	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 10	7/20/06	21:20	<i>Pipistrellus subflavus</i>	NR	J	F	4.6	36	B	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 10	7/20/06	21:35	<i>Pipistrellus subflavus</i>						A	No Band	Got out of Net
Smith-W Garrard Site 10	7/20/06	22:20	<i>Lasiurus borealis</i>	NR	J	F	10.5	41	B	A11644	
Smith-W Garrard Site 10	7/20/06	22:20	<i>Pipistrellus subflavus</i>						A	No Band	Got out of Net
Smith-W Garrard Site 10	7/20/06	24:30	<i>Pipistrellus subflavus</i>	PL	A	F	7.4	35	B	A11605	
Smith-W Garrard Site 10	7/20/06	01:10	<i>Lasiurus borealis</i>	NR	J	F	12.0	44	A	A11646	
Smith-W Garrard Site 10	7/20/06	01:10	<i>Lasiurus borealis</i>	TD	J	M	10.8	43	A	A11620	
Smith-W Garrard Site 10	7/20/06	01:10	<i>Myotis lucifugus</i>	TD	A	M	7.3	37	A	A11626	
Smith-W Garrard Site 10	7/20/06	01:30	<i>Lasiurus borealis</i>	NR	J	F	11.0	41	B	A11621	
Smith-W Garrard Site 10	7/20/06	01:30	<i>Lasiurus borealis</i>	NR	A	M	11.7	39	B	A11631	
Smith-W Garrard Site 11	7/19/06	21:23	<i>Pipistrellus subflavus</i>						A	No Band	Got out of Net
Smith-W Garrard Site 11	7/19/06	21:23	<i>Pipistrellus subflavus</i>	L	A	F	5.5	34	A	A11893	
Smith-W Garrard Site 11	7/19/06	21:35	<i>Pipistrellus subflavus</i>	L	A	F	8.0	34	A	A11864	
Smith-W Garrard Site 11	7/19/06	22:05	<i>Pipistrellus subflavus</i>	L	A	F	7.8	35	B	A11856	
Smith-W Garrard Site 11	7/20/06	24:40	<i>Myotis lucifugus</i>	L	A	F	8.4	35	B	A11863	
Smith-W Garrard Site 11	7/20/06	01:30	<i>Pipistrellus subflavus</i>	NR	J	M	4.9	32	B	A11859	
Smith-W Garrard Site 11	7/20/06	01:30	<i>Pipistrellus subflavus</i>	NR	J	M	4.8	33	B	A11886	

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 11	7/20/06	01:30	<i>Pipistrellus subflavus</i>	NR	J	M	5.1	32	B	A11871	
Smith-W Garrard Site 12	7/24/06	22:10	<i>Pipistrellus subflavus</i>	NR	A	M	6.5	36	A	A11637	
Smith-W Garrard Site 12	7/24/06	24:40	<i>Pipistrellus subflavus</i>	PL	A	F	7.0	35	B	A11635	
Smith-W Garrard Site 12	8/2/06	21:15	<i>Pipistrellus subflavus</i>	NR	J	F	7.3	36	A	No Band	Ran out of Bands
Smith-W Garrard Site 12	8/2/06	21:15	<i>Pipistrellus subflavus</i>							No Band	Got out of Hand
Smith-W Garrard Site 12	8/2/06	22:20	<i>Eptesicus fuscus</i>	PL	A	F	23.7	48	A	No Band	Ran out of Bands
Smith-W Garrard Site 12	8/2/06	23:10	<i>Lasiurus borealis</i>	PL	A	F	17.5	43	A	No Band	Ran out of Bands
Smith-W Garrard Site 12	8/2/06	23:45	<i>Myotis grisescens</i>	NR	J	F	10.3	45	B	No Band	Ran out of Bands
Smith-W Garrard Site 13	7/12/06	22:10	<i>Lasiurus borealis</i>	NR	J	M	10.5	40	B	A11699	
Smith-W Garrard Site 13	7/12/06	23:00	<i>Lasiurus borealis</i>	NR	J	F	9.8	41	B	A11734	
Smith-W Garrard Site 13	7/12/06	23:04	<i>Lasiurus borealis</i>	NR	J	F	11.7	41	A	A11714	
Smith-W Garrard Site 13	7/13/06										No bats were captured on this night
Smith-W Garrard Site 14	7/25/06	21:30	<i>Pipistrellus subflavus</i>	NR	J	F	5.7	34	A	A11868	
Smith-W Garrard Site 14	7/25/06	21:30	<i>Pipistrellus subflavus</i>	NR	J	F	5.1	34	A	A11856	
Smith-W Garrard Site 14	7/25/06	21:35	<i>Pipistrellus subflavus</i>	NR	J	F	5.3	35	A	A11898	
Smith-W Garrard Site 14	7/25/06	21:35	<i>Pipistrellus subflavus</i>	NR	J	F	5.6	34	B	A11882	
Smith-W Garrard Site 14	7/25/06	21:40	<i>Pipistrellus subflavus</i>						A	No Band	Got out of Bag
Smith-W Garrard Site 14	7/25/06	21:40	<i>Pipistrellus subflavus</i>	NR	J	F	5.0	34	A	A11879	
Smith-W Garrard Site 14	7/25/06	21:50	<i>Myotis grisescens</i>	NR	J	M	9.9	43	A	A11861	
Smith-W Garrard Site 14	7/25/06	21:50	<i>Pipistrellus subflavus</i>	PL	A	F	7.7	34	A	A11852	
Smith-W Garrard Site 14	7/25/06	21:50	<i>Pipistrellus subflavus</i>	NR	J	F	5.6	33	A	A11892	
Smith-W Garrard Site 14	7/25/06	21:50	<i>Pipistrellus subflavus</i>	PL	A	F	7.5	33	A	A11884	
Smith-W Garrard Site 14	7/25/06	22:00	<i>Pipistrellus subflavus</i>	NR	J	M	4.4	32	A	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 14	7/25/06	22:00	<i>Pipistrellus subflavus</i>	NR	J	F	7.5	35	A	A11885	
Smith-W Garrard Site 14	7/25/06	22:05	<i>Myotis grisescens</i>	NR	J	M	9.7	43	A	A11536	
Smith-W Garrard Site 14	7/25/06	22:05	<i>Lasiurus borealis</i>						A	No Band	Got out of Net
Smith-W Garrard Site 14	7/25/06	22:05	<i>Lasiurus borealis</i>						B	No Band	Got out of Net
Smith-W Garrard Site 14	7/25/06	22:35	<i>Pipistrellus subflavus</i>	PL	A	F	7.9	35	B	A11541	

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 14	7/25/06	23:10	<i>Pipistrellus subflavus</i>	NR	J	F	5.8	35	A	A11524	
Smith-W Garrard Site 14	7/25/06	24:00	<i>Pipistrellus subflavus</i>	NR	J	F	6.9	32	A	A11528	
Smith-W Garrard Site 14	7/25/06	24:00	<i>Myotis lucifugus</i>	NR	J	F	7.3	36	A	A11533	
Smith-W Garrard Site 14	7/25/06	24:00	<i>Myotis grisescens</i>	NR	J	F	8.7	41	A	A11538	
Smith-W Garrard Site 14	7/25/06	24:30	<i>Pipistrellus subflavus</i>	NR	A	M	5.2	33	A	A11889	
Smith-W Garrard Site 14	7/25/06	02:00	<i>Pipistrellus subflavus</i>	NR	J	M	5.9	34	A	A11521	
Smith-W Garrard Site 14	7/27/06	21:30	<i>Pipistrellus subflavus</i>	NR	J	F	5.2	35	A	A11545	
Smith-W Garrard Site 14	7/27/06	21:35	<i>Lasiurus borealis</i>	NR	J	M	10.3	40	A	A11514	
Smith-W Garrard Site 14	7/27/06	21:35	<i>Pipistrellus subflavus</i>	L	A	F	7.1	36	A	A11537	
Smith-W Garrard Site 14	7/27/06	21:40	<i>Lasiurus borealis</i>	NR	J	F	11.0	43	A	A11505	
Smith-W Garrard Site 14	7/27/06	21:45	<i>Pipistrellus subflavus</i>	NR	J	M	5.7	34	A	A11527	
Smith-W Garrard Site 14	7/27/06	21:45	<i>Pipistrellus subflavus</i>	NR	J	F	4.3	35	A	A11548	
Smith-W Garrard Site 14	7/27/06	21:45	<i>Pipistrellus subflavus</i>	NR	J	M	5.9	35	A	A11504	
Smith-W Garrard Site 14	7/27/06	21:55	<i>Pipistrellus subflavus</i>	NR	J	M	5.1	33	A	A11507	
Smith-W Garrard Site 14	7/27/06	22:03	<i>Pipistrellus subflavus</i>	NR	J	F	6.0	34	A	A11503	
Smith-W Garrard Site 14	7/27/06	22:05	<i>Myotis grisescens</i>	NR	J	F	9.1	43	A	A11531	
Smith-W Garrard Site 14	7/27/06	22:15	<i>Pipistrellus subflavus</i>	NR	J	F	5.9	34	A	A11525	
Smith-W Garrard Site 14	7/27/06	22:28	<i>Myotis grisescens</i>	NR	J	F	10.3	44	A	A11523	
Smith-W Garrard Site 14	7/27/06	23:00	<i>Lasiurus borealis</i>	NR	J	F	12.7	42	A	A11518	
Smith-W Garrard Site 14	7/27/06	23:00	<i>Lasiurus borealis</i>	NR	J	F	10.7	39	A	A11508	
Smith-W Garrard Site 14	7/27/06	23:19	<i>Myotis grisescens</i>	NR	J	M	10.6	44	A	A11530	
Smith-W Garrard Site 14	7/27/06	23:40	<i>Lasiurus borealis</i>	NR	J	M	9.5	41	A	A11540	
Smith-W Garrard Site 14	7/27/06	23:43	<i>Myotis grisescens</i>	NR	J	F	9.2	43	A	A11547	
Smith-W Garrard Site 14	7/27/06	23:43	<i>Lasiurus borealis</i>	NR	J	M	9.5	39	A	A11509	
Smith-W Garrard Site 14	7/27/06	24:10	<i>Lasiurus borealis</i>	NR	J	F	10.8	43	A	A11513	
Smith-W Garrard Site 14	7/27/06	24:15	<i>Myotis grisescens</i>	NR	J	F	10.5	44	A	A11539	
Smith-W Garrard Site 14	7/27/06	24:15	<i>Lasiurus borealis</i>							No Band	Got out of Net
Smith-W Garrard Site 14	7/27/06	24:34	<i>Pipistrellus subflavus</i>	NR	J	M	5.4	34	A	A11546	
Smith-W Garrard Site 14	7/27/06	01:00	<i>Pipistrellus subflavus</i>	NR	J	F	5.5	35	A	A11529	
Smith-W Garrard Site 14	7/27/06	01:40	<i>Pipistrellus subflavus</i>	NR	J	F	5.5	35	A	A11515	
Smith-W Garrard Site 14	7/27/06	01:40	<i>Myotis grisescens</i>	NR	J	F	10.0	43	A	A11526	

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 15	7/12/06	21:25	<i>Lasiurus borealis</i>	NR	J	M	9.0	41	B	A11609	
Smith-W Garrard Site 15	7/12/06	21:45	<i>Pipistrellus subflavus</i>	NR	J	F	5.3	33	A	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 15	7/12/06	21:50	<i>Lasiurus borealis</i>	NR	J	M	10.3	43	A	A11604	
Smith-W Garrard Site 15	7/12/06	22:00	<i>Lasiurus borealis</i>	NR	J	M	9.0	40	B	A11615	
Smith-W Garrard Site 15	7/12/06	22:15	<i>Lasiurus borealis</i>	NR	J	M	9.1	40	B	A11618	
Smith-W Garrard Site 15	7/12/06	22:15	<i>Lasiurus borealis</i>	NR	J	M	10.2	40	B	A11642	
Smith-W Garrard Site 15	7/12/06	22:30	<i>Lasiurus borealis</i>	NR	J	M	8.6	38	B	A11606	
Smith-W Garrard Site 15	7/12/06	23:00	<i>Lasiurus borealis</i>	PL	A	F	18.1	42	B	A11603	
Smith-W Garrard Site 15	7/12/06	23:45	<i>Pipistrellus subflavus</i>	NR	J	M	4.8	32	A	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 15	7/12/06	23:45	<i>Myotis grisescens</i>	NR	J	F	10.4	44	A	A11608	
Smith-W Garrard Site 15	7/12/06	24:30	<i>Eptesicus fuscus</i>	NR	J	F	18.3	48	B	A11611	
Smith-W Garrard Site 15	7/12/06	24:45	<i>Eptesicus fuscus</i>	NR	J	F	18.5	47	A	A11638	
Smith-W Garrard Site 15	7/12/06	24:45	<i>Myotis grisescens</i>	NR	J	M	10.4	44	A	A11632	
Smith-W Garrard Site 15	7/20/06	21:10	<i>Lasiurus borealis</i>	NR	J	F	11.3	43	A	A11371	
Smith-W Garrard Site 15	7/20/06	21:10	<i>Pipistrellus subflavus</i>	PL	A	F	6.4	34	B	A11383	
Smith-W Garrard Site 15	7/20/06	21:55	<i>Pipistrellus subflavus</i>	NR	J	F	6.8	33	B	A11363	
Smith-W Garrard Site 15	7/20/06	21:55	<i>Pipistrellus subflavus</i>	NR	J	F	5.5	33	A	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 15	7/20/06	22:10	<i>Pipistrellus subflavus</i>	NR	J	F	4.8	33	B	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 15	7/20/06	22:10	<i>Pipistrellus subflavus</i>	PL	A	F	8.5	34	B	A11413	
Smith-W Garrard Site 15	7/20/06	22:25	<i>Lasiurus borealis</i>	NR	J	F	11.8	42	B	A11395	
Smith-W Garrard Site 15	7/20/06	22:35	<i>Eptesicus fuscus</i>	NR	J	F	17.3	47	B	A11367	
Smith-W Garrard Site 15	7/20/06	22:50	<i>Pipistrellus subflavus</i>	NR	J	M	5.3	33	A	A11380	
Smith-W Garrard Site 15	7/20/06	23:00	<i>Lasiurus borealis</i>	NR	J	F	11.4	43	A	A11385	
Smith-W Garrard Site 15	7/20/06	23:00	<i>Myotis grisescens</i>	NR	J	M	9.0	42	B	A11372	
Smith-W Garrard Site 15	7/20/06	23:00	<i>Myotis grisescens</i>	L	A	F	12.4	44	B	A11364	
Smith-W Garrard Site 15	7/20/06	23:21	<i>Pipistrellus subflavus</i>	NR	J	F	4.1	29	B	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 15	7/20/06	23:21	<i>Myotis lucifugus</i>	NR	J	F	7.4	36	B	A11359	
Smith-W Garrard Site 15	7/20/06	23:41	<i>Myotis grisescens</i>	PL	A	F	11.5	44	B	A11397	
Smith-W Garrard Site 15	7/20/06	01:00	<i>Myotis lucifugus</i>	NR	A	F	8.7	37	B	A11355	
Smith-W Garrard Site 15	7/20/06	01:45	<i>Lasiurus borealis</i>	NR	J	M	11.0	39	B	A11376	
Smith-W Garrard Site 15	7/20/06	02:00	<i>Lasiurus borealis</i>	NR	J	M	10.4	41	B	A11356	

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 16	7/18/06										No bats were captured on this night
Smith-W Garrard Site 16	7/24/06	21:00	<i>Pipistrellus subflavus</i>	NR	J	F	4.3	33	A	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 16	7/24/06	24:20	<i>Myotis grisescens</i>	PL	A	F	9.7	44	A	A14789	
Smith-W Garrard Site 16	7/24/06	24:45	<i>Pipistrellus subflavus</i>	PL	A	F	5.9	34	A	A14790	
Smith-W Garrard Site 17	7/12/06										No bats were captured on this night
Smith-W Garrard Site 17	7/13/06										No bats were captured on this night
Smith-W Garrard Site 18	7/24/06	21:20	<i>Pipistrellus subflavus</i>	NR	J	F	4.9	33	B	A11862	
Smith-W Garrard Site 18	7/24/06	22:30	<i>Myotis grisescens</i>	NR	A	M	11.1	43	B	A11899	
Smith-W Garrard Site 18	7/25/06	21:45	<i>Pipistrellus subflavus</i>	PL	A	F	6.3	34	A	A14791	
Smith-W Garrard Site 18	7/25/06	22:20	<i>Lasiurus borealis</i>	NR	J	F	11.9	44	A	A14792	
Smith-W Garrard Site 18	7/25/06	22:50	<i>Myotis grisescens</i>	NR	J	M	9.2	44	A	A14793	
Smith-W Garrard Site 18	7/25/06	22:50	<i>Eptesicus fuscus</i>	TD	A	M	17.0	48	A	No Band	
Smith-W Garrard Site 18	7/25/06	23:15	<i>Pipistrellus subflavus</i>	NR	J	F	5.1	33	A	No Band	Small Juvenile – Not Banded
Smith-W Garrard Site 18	7/25/06	24:20	<i>Pipistrellus subflavus</i>						A	No Band	Got out of Net
Smith-W Garrard Site 18	7/25/06	01:15	<i>Pipistrellus subflavus</i>	NR	J	M	5.2	34	A	A14794	
Smith-W Garrard Site 18	7/25/06	01:20	<i>Lasiurus borealis</i>	TD	A	M	9.6	39	A	A14795	
Smith-W Garrard Site 19	7/26/06	24:10	<i>Lasiurus borealis</i>	TD	A	M	9.6	40	B	A14796	
Smith-W Garrard Site 19	7/27/06	01:15	<i>Lasiurus borealis</i>							No Band	Got out of Net
Smith-W Garrard Site 20	7/18/06	21:15	<i>Pipistrellus subflavus</i>	NR	J	M	5.0	34	A	A11715	
Smith-W Garrard Site 20	7/18/06	21:30	<i>Lasiurus borealis</i>	NR	J	M	8.9	41	A	A11724	
Smith-W Garrard Site 20	7/18/06	21:45	<i>Lasiurus borealis</i>						A	No Band	Got out of Net
Smith-W Garrard Site 20	7/18/06	21:45	<i>Lasiurus borealis</i>	PL	A	F	15.8	43	A	A11703	
Smith-W Garrard Site 20	7/18/06	22:50	<i>Lasiurus borealis</i>	NR	J	M	9.8	39	A	A11742	
Smith-W Garrard Site 20	7/18/06	01:45	<i>Lasiurus borealis</i>							No Band	Got out of Net
Smith-W Garrard Site 20	7/20/06	21:35	<i>Lasiurus borealis</i>	TD	J	M	9.2	39	A	A11721	
Smith-W Garrard Site 21	7/19/06										No bats were captured on this night

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 21	7/25/06										No bats were captured on this night
Smith-W Garrard Site 22	7/24/06	21:15	<i>Pipistrellus subflavus</i>	TD	A	M	5.5	34	B	No Band	
Smith-W Garrard Site 22	7/24/06	22:45	<i>Pipistrellus subflavus</i>	L	A	F	7.3	34	B	A11730	
Smith-W Garrard Site 22	7/24/06	23:20	<i>Pipistrellus subflavus</i>	TD	J	M	4.9	34	A	A11701	
Smith-W Garrard Site 22	7/24/06	23:35	<i>Eptesicus fuscus</i>	TD	A	M	16.1	46	B	A11???	Band # not recorded
Smith-W Garrard Site 22	7/24/06	23:35	<i>Myotis lucifugus</i>	TD	A	M	7.3	36	B	A11728	
Smith-W Garrard Site 22	7/24/06	01:20	<i>Myotis lucifugus</i>	PL	A	F	7.7	38	B	A11693	
Smith-W Garrard Site 22	7/24/06	01:50	<i>Lasiurus borealis</i>	PL	A	F	14.9	42	B	A11727	
Smith-W Garrard Site 22	7/26/06	21:15	<i>Pipistrellus subflavus</i>	TD	A	M	5.8	35	B	A11500	
Smith-W Garrard Site 22	7/26/06	21:45	<i>Lasiurus borealis</i>	TD	J	M	8.9	40	B	A11462	
Smith-W Garrard Site 22	7/26/06	21:45	<i>Lasiurus borealis</i>						B	No Band	Got out of Net
Smith-W Garrard Site 22	7/26/06	22:30	<i>Lasiurus borealis</i>						B	No Band	Got out of Net
Smith-W Garrard Site 22	7/26/06	22:30	<i>Lasiurus borealis</i>	TD	J	M	10.4	40	B	No Band	
Smith-W Garrard Site 22	7/26/06	23:00	<i>Lasiurus cinereus</i>	PL	A	F	30+	56	B	A11453	
Smith-W Garrard Site 22	7/26/06	01:00	<i>Lasiurus borealis</i>	NR	J	F	11.2	42	B	A11492	
Smith-W Garrard Site 22	7/26/06	01:55	<i>Pipistrellus subflavus</i>	TD	A	M	6.6	34	B	A11455	
Smith-W Garrard Site 23	7/17/06	22:00	<i>Pipistrellus subflavus</i>	L	A	F	7.7	34	B	A11648	
Smith-W Garrard Site 23	7/19/06										No bats were captured on this night
Smith-W Garrard Site 24	7/17/06	22:20	<i>Lasiurus borealis</i>	NR	J	M	11.5	43	A	A11415	
Smith-W Garrard Site 24	7/17/06	22:47	<i>Eptesicus fuscus</i>	NR	J	M			A	No Band	Got out of Hand
Smith-W Garrard Site 24	7/17/06	23:15	<i>Eptesicus fuscus</i>	NR	A	M	21.9	49	A	A11412	
Smith-W Garrard Site 24	7/17/06	23:26	<i>Lasiurus borealis</i>	NR	J	M	9.4	40	A	A11416	
Smith-W Garrard Site 24	7/17/06	23:26	<i>Myotis grisescens</i>	NR	J	F	9.6	42	A	A11422	
Smith-W Garrard Site 24	7/17/06	23:42	<i>Eptesicus fuscus</i>	NR	J	F	16.4	48	A	A11442	
Smith-W Garrard Site 24	7/17/06	23:55	<i>Lasiurus borealis</i>	NR	J	F	10.4	42	A	A11438	
Smith-W Garrard Site 24	7/17/06	24:20	<i>Pipistrellus subflavus</i>	PL	A	F	6.8	36	A	A11405	
Smith-W Garrard Site 24	7/17/06	24:20	<i>Lasiurus borealis</i>	NR	J	M	9.9	40	A	A11450	
Smith-W Garrard Site 24	7/17/06	24:49	<i>Eptesicus fuscus</i>	NR	A	M	21.0	44	A	A11436	

Site	Date	Time	Species	Reproductive Cond.	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
Smith-W Garrard Site 24	7/17/06	01:12	<i>Pipistrellus subflavus</i>	NR	A	M	6.0	34	B	A11414	
Smith-W Garrard Site 24	7/18/06	21:45	<i>Lasiurus borealis</i>	NR	J	M	8.7	39	A	A11440	
Smith-W Garrard Site 24	7/18/06	22:00	<i>Lasiurus borealis</i>	PL	A	F	16.2	40	A	A11421	
Smith-W Garrard Site 24	7/18/06	23:00	<i>Lasiurus borealis</i>	TD	J	M	11.9	40	A	A11411	
Smith-W Garrard Site 24	7/18/06	23:00	<i>Lasiurus borealis</i>	NR	J	F	11.6	41	A	A11424	
Smith-W Garrard Site 24	7/18/06	23:00	<i>Pipistrellus subflavus</i>	PL	A	F	6.9	34	A	A11167	
Smith-W Garrard Site 24	7/18/06	24:05	<i>Lasiurus borealis</i>	NR	A	M	10.6	39	A	A11439	
Smith-W Garrard Site 24	7/18/06	02:00	<i>Lasiurus borealis</i>	TD	J	M	9.4	40	A	A11357	
Smith-W Garrard Site 25	7/12/06	22:06	<i>Lasiurus borealis</i>						A	No Band	Got out of Net
Smith-W Garrard Site 25	7/12/06	22:06	<i>Eptesicus fuscus</i>	NR	A	M	20.2	48	B	A11870	
Smith-W Garrard Site 25	7/12/06	22:25	<i>Lasiurus borealis</i>	PL	A	F	17.0	40	A	A11872	
Smith-W Garrard Site 25	7/12/06	23:12	<i>Lasiurus borealis</i>	NR	J	F	11.5	41	B	A11867	
Smith-W Garrard Site 25	7/12/06	24:40	<i>Lasiurus borealis</i>	NR	J	F	11.2	40	A	A11881	
Smith-W Garrard Site 25	7/17/06	21:40	<i>Lasiurus borealis</i>	NR	A	M	11.7	40	B	A11738	
Smith-W Garrard Site 25	7/17/06	21:40	<i>Myotis lucifugus</i>	NR	A	M	7.0	36	B	A11731	
Smith-W Garrard Site 25	7/17/06	22:25	<i>Pipistrellus subflavus</i>	L	A	F	7.2	36	A	A11739	
Smith-W Garrard Site 25	7/17/06	22:25	<i>Eptesicus fuscus</i>	NR	J	F	18.5	49	A	A11736	
Smith-W Garrard Site 25	7/17/06	23:00	<i>Eptesicus fuscus</i>	PL	A	F	21.4	49	B	A11691	
Smith-W Garrard Site 25	7/17/06	23:00	<i>Lasiurus borealis</i>						B	No Band	Got out of Hand
Smith-W Garrard Site 25	7/17/06	24:25	<i>Pipistrellus subflavus</i>	PL	A	F	6.9	35	A	A11732	
Smith-W Garrard Site 25	7/17/06	02:00	<i>Myotis lucifugus</i>	NR	J	F	8.1	38	A	No Band	

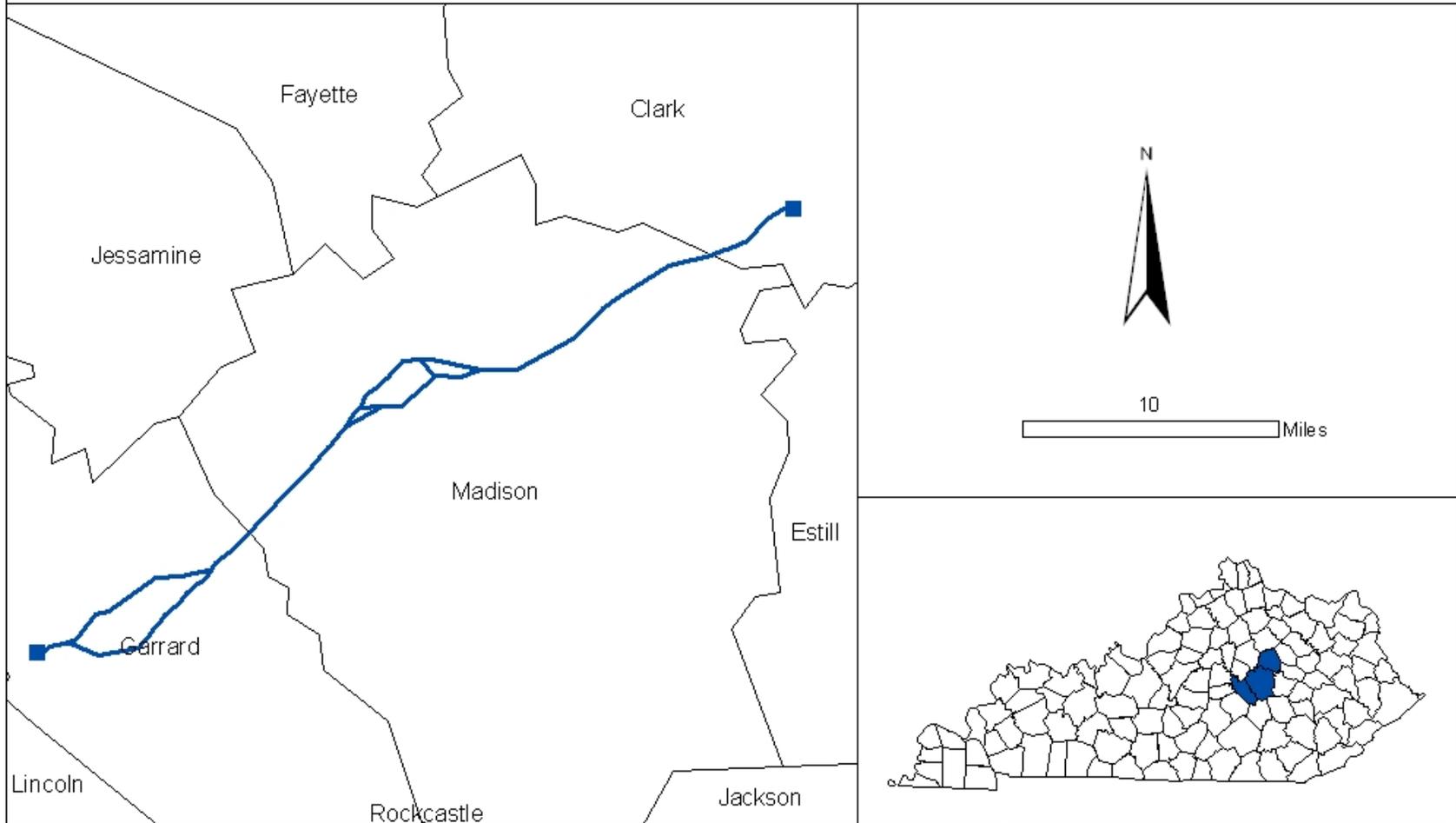
A = Adult  
J = Juvenile  
M = Male

F = Female  
L = Lactating  
P = Pregnant

PL = Post Lactating  
TD = Testes Distended  
NR = Non-reproductive

**APPENDIX II. PROJECT MAPS**

## PROJECT AREA LOCATION MAP



- Proposed Substation Sites
- Proposed Transmission Line Route

**Smith - West Garrard**  
**Proposed 345 kV Double Circuit**  
**Transmission Line and Substation**  
**Garrard, Madison, and Clark Counties, KY**  
**Project No. 21466**

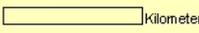


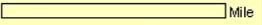
# Smith - West Garrard Proposed 345 kV Transmission Line

 Mist Net Sites

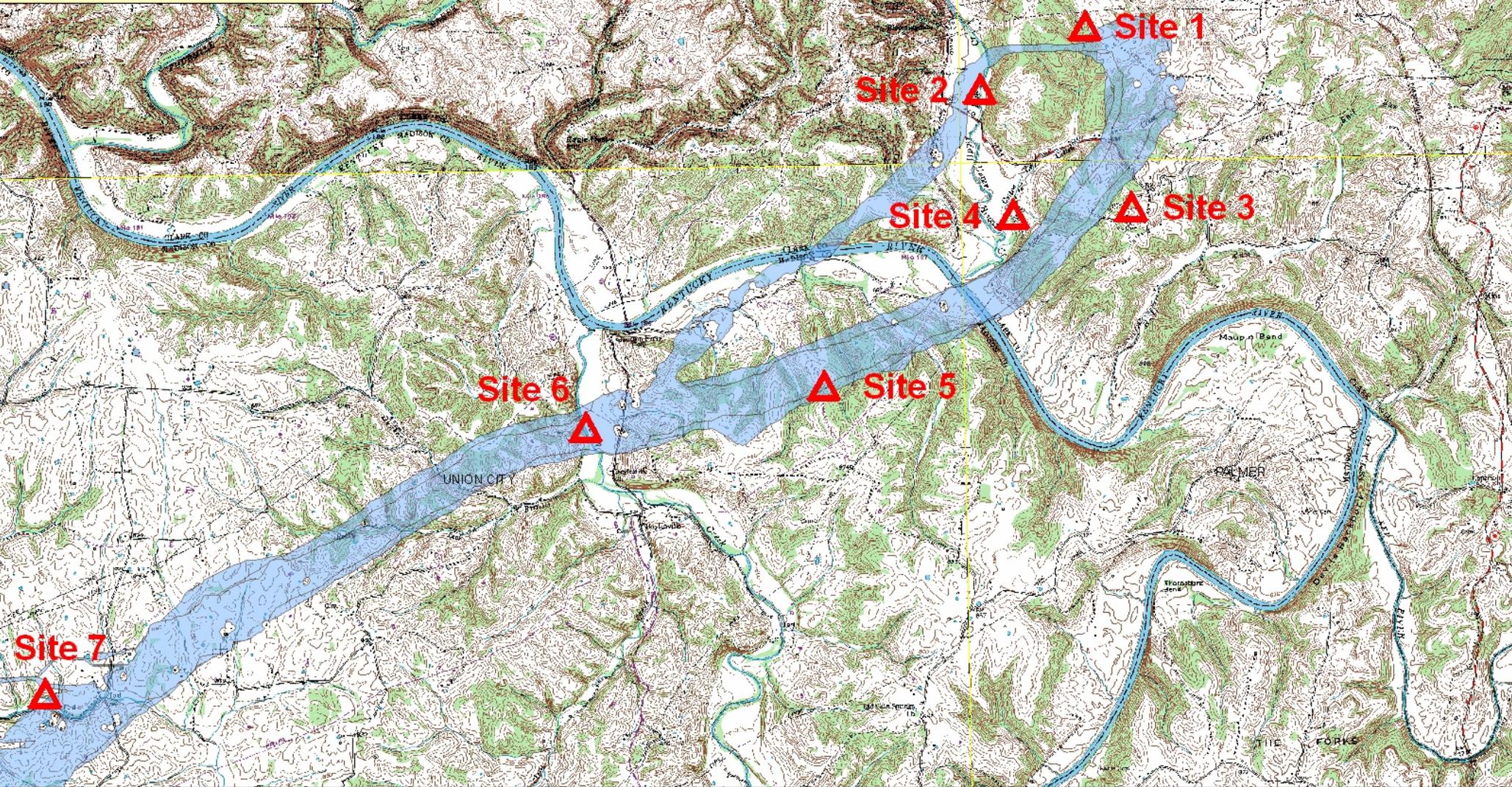
 Alternative Route Study Corridor

 N

 1 Kilometer

 1 Mile

Map 1 of 4



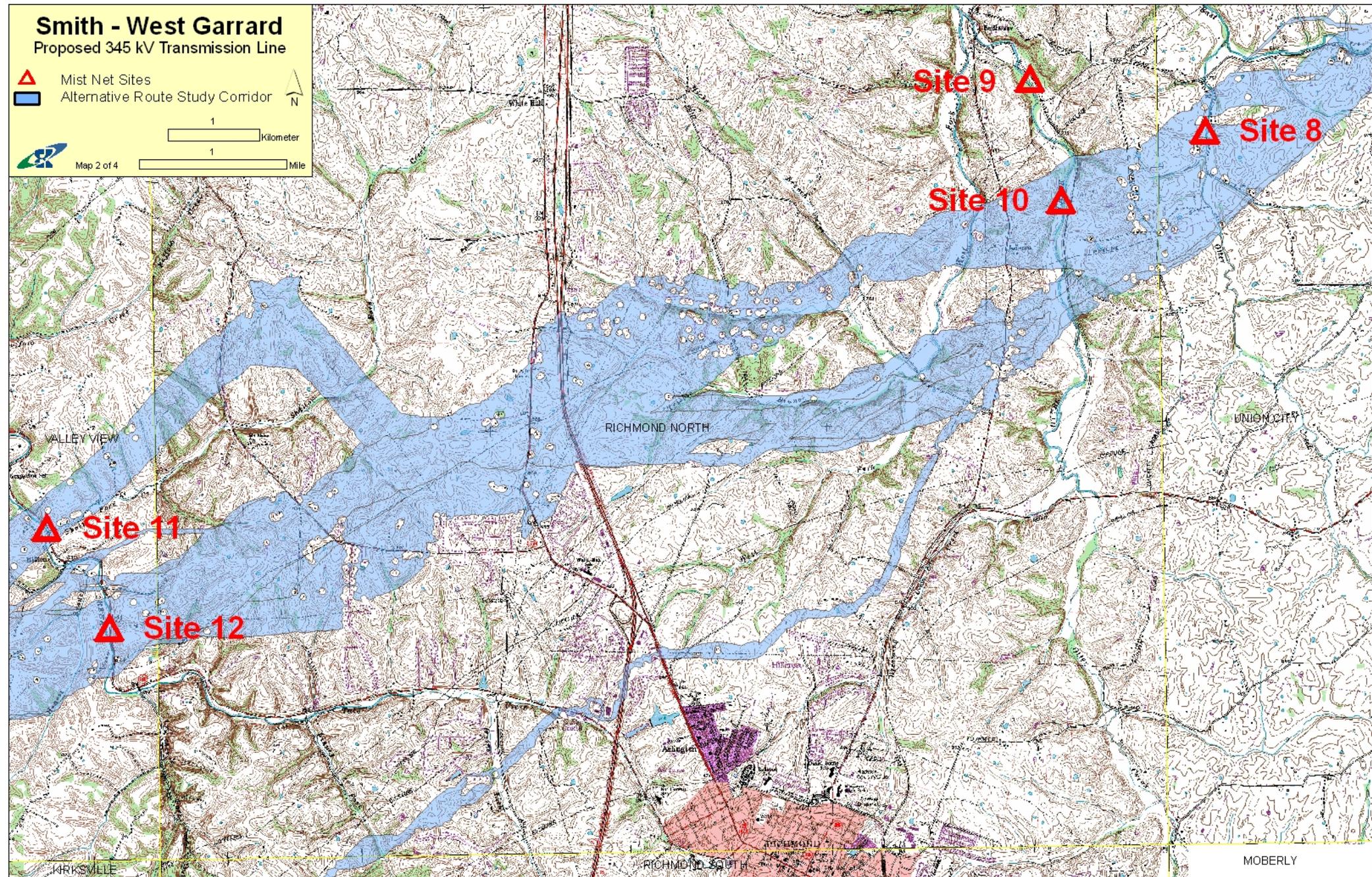
# Smith - West Garrard Proposed 345 kV Transmission Line

 Mist Net Sites  
 Alternative Route Study Corridor

1  
Kilometer

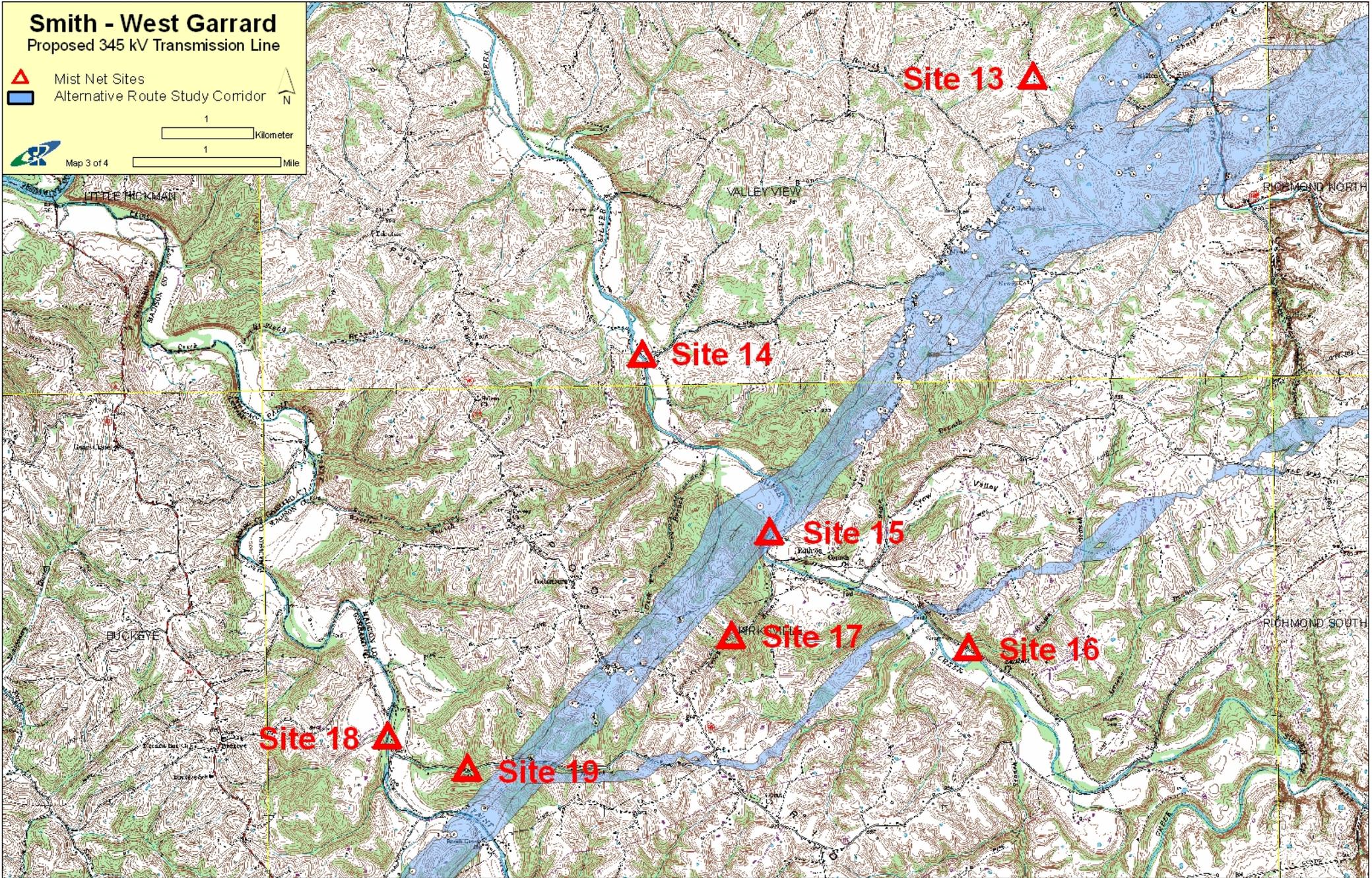
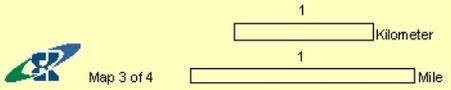
1  
Mile

Map 2 of 4



# Smith - West Garrard Proposed 345 kV Transmission Line

-  Mist Net Sites
-  Alternative Route Study Corridor



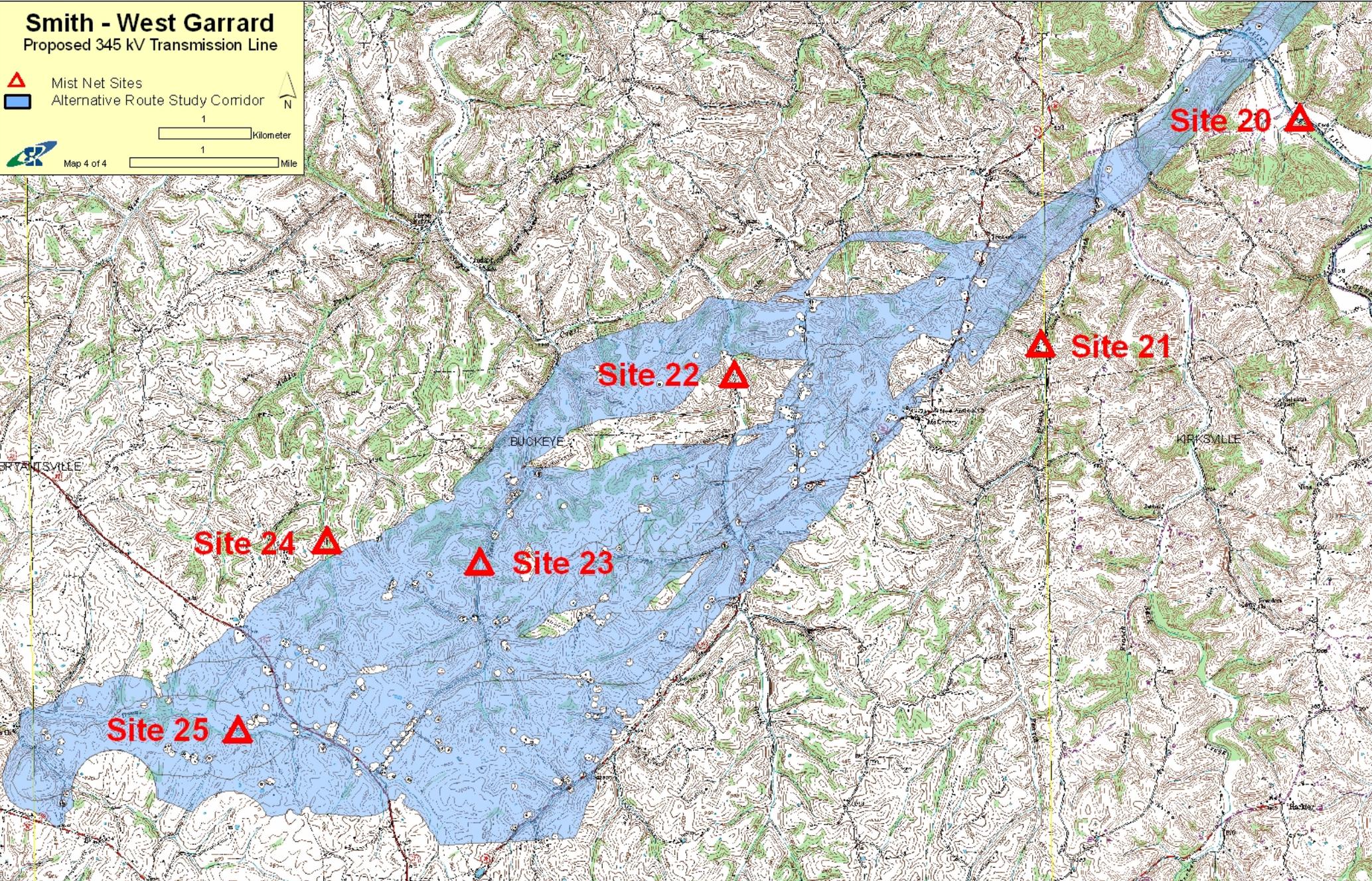
# Smith - West Garrard Proposed 345 kV Transmission Line

 Mist Net Sites  
 Alternative Route Study Corridor

1  
Kilometer

1  
Mile

Map 4 of 4



**APPENDIX III. PHOTOGRAPHS OF NET SITES**

**Site 1. J. K. Smith site-wooded road corridor leading from open field to pond**

Net A: Wooded road corridor where it runs into head of pond and stream corridor.



Net B: Wooded road corridor looking uphill from pond.

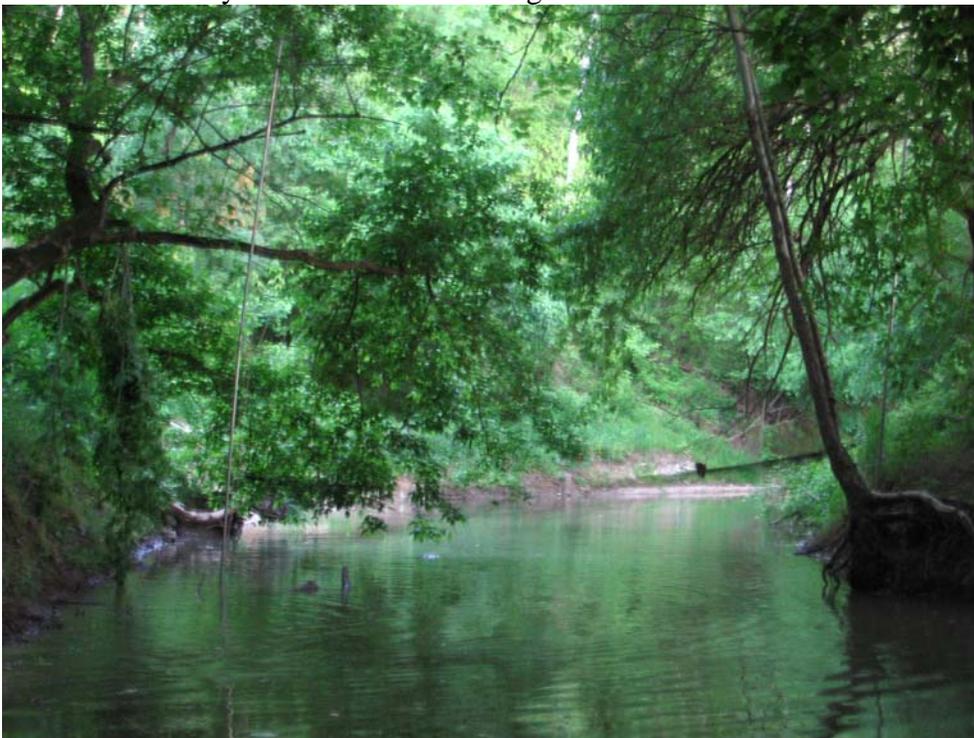


**Site 2. Upper Howard's Creek at junction with Red River Road**

Net A: Stream corridor looking downstream (south) toward Red River Rd.



Net B: Secondary stream channel looking toward main creek channel.



### Site 3. Brock Cemetery Road south of Red River Road

Net A: Brock Cemetery road looking uphill toward Net B.



Net B: Brock Cemetery road looking uphill toward Brock Cemetery opening.



## Site 4. Cotton Creek and associated riparian zone south of Red River Road

Net A: Riparian zone of Cotton Creek with wooded road corridor.



Net B: Cotton Creek looking downstream (south) from net site.



**Site 5. Hoover property on Black Road south of the Kentucky River**

Nets A & B: Woodland pond located on ridgetop.



**Site 6. Muddy Creek approx. 0.25 mi northwest of Doylesville Church**

Net A: Muddy Creek looking upstream (north) toward net site.



Net B: Muddy Creek looking downstream (south) toward net site.



**Site 7. Unnamed tributary of East Fork Otter Creek along Peacock Road**

Net A: Stream corridor looking upstream (east) toward net site.



Net B: Stream corridor looking downstream (west) toward net site.



**Site 8. East Fork Otter Creek along Campbell Branch, 0.5 mi S Peacock Road**

Nets A & B: Stream corridor looking upstream (south) toward both net locations.



**Site 9. Otter Creek 0.5 mi south KY 388 (Redhouse, KY)**

Nets A & B: Otter Creek looking downstream (south) toward both net locations.



**Site 10. Otter Creek along RR tracks, approx. 1.25 mi south of Redhouse, KY**

Nets A & B: Otter Creek looking upstream (north) toward both net locations. (1<sup>st</sup> night)



Nets A & B: Otter Creek looking downstream (south) toward both net locations. (2<sup>nd</sup> night)

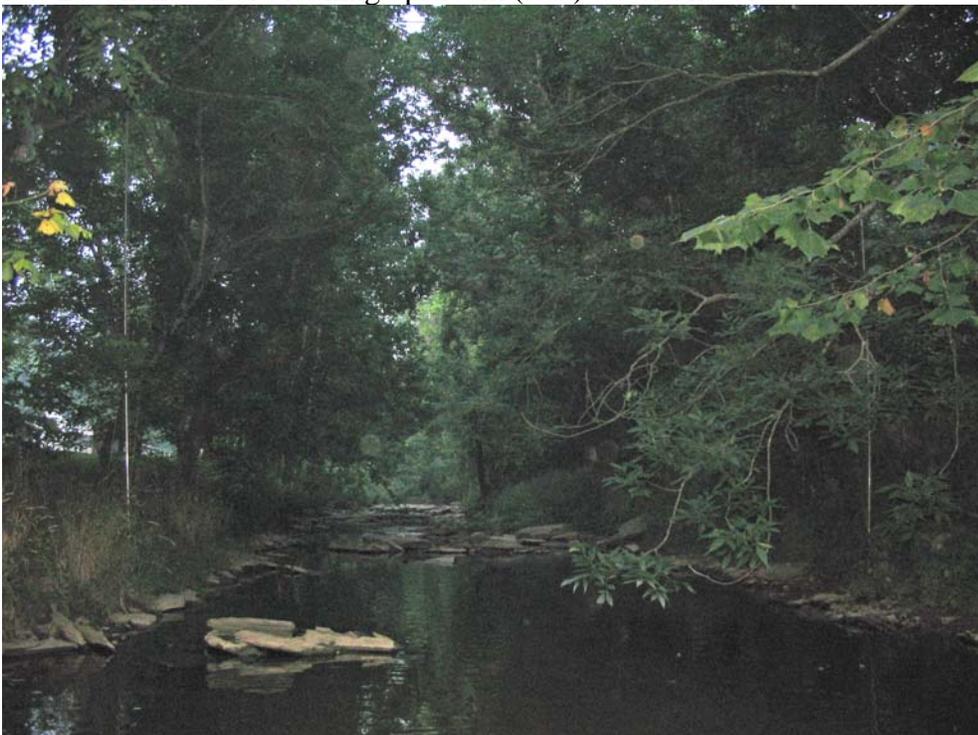


**Site 11. Junction Shallow Ford and Tate Creek at KY 169 bridge**

Net A: Shallow Ford looking downstream (west) toward KY 169 bridge and Tate Creek.



Net B: Shallow Ford looking upstream (east) toward net site.



**Site 12. Tate Creek along KY 169, 0.75 mi south of Million Bible Church**

Net A: Tate Creek looking downstream (south) toward net location.



Net B: Tate Creek looking upstream (north) toward net location.



**Site 13. Haden Heights Rd approx. 0.75 north of KY 1984**

Nets A & B: Haden Heights Rd looking north at net site locations.



## Site 14. Silver Creek at the end of Jigg Water Road

Nets A & B: Silver Creek looking upstream (south) toward net locations.

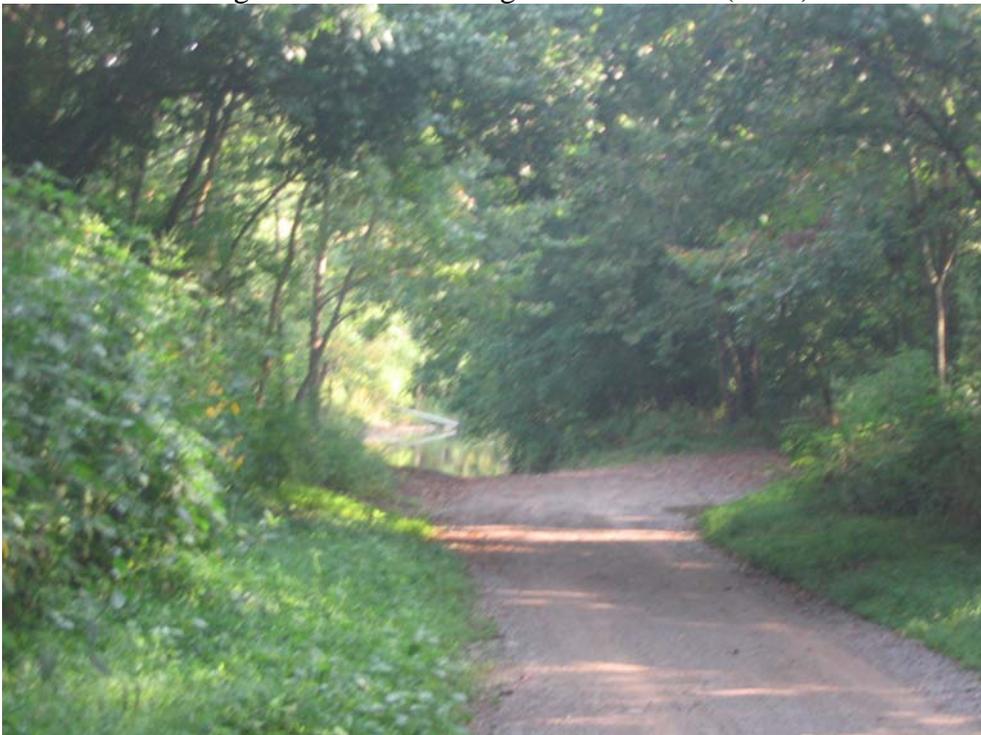


**Site 15. Silver Creek at the end of Bogie Mill Road**

Net A: Silver Creek looking downstream (north) toward net location.



Net B: End of Bogie Mill Road looking at Silver Creek (north).



**Site 16. Junction of Silver Creek and Brown Brach at Bogie Mill Road**

Net A: Wooded road corridor looking west toward Silver Creek.



Net B: Junction of Brown Branch and Silver Creek, looking out into Silver Creek.



**Site 17. Trace Branch approx. 1.0 mi south of Bogie Mill Road**

Net A: Trace Branch corridor at large road rut, looking north along Trace Branch.



Net B: Trace Branch corridor looking south toward Bogie Mill Road.



**Site 18. Paint Lick Creek 0.2 mi north Dry Branch**

Net A: Wooded OHV trail leading out to Paint Lick Creek.



Net B: Paint Lick Creek looking downstream (north) toward net location.



**Site 19. Dry Branch approx. 0.5 mi east of Paint Lick Creek**

Nets A & B: Dry Branch looking upstream (east) toward net site locations.



**Site 20. Road corridor parallel to Paint Lick Creek approx. 0.5 mi south of Beech Grove Church**

Net A: Large road rut in road corridor looking north toward Beech Grove Church.



Net B: Road corridor looking north toward Net Site A.



**Site 21. Long Branch along Long Branch Rd approx. 1.0 mi north of KY 39**

Net A: Long Branch looking downstream (north) toward net location.



Net B: Long Branch looking upstream (south) toward net location.



**Site 22. Sugar Creek along Jack Black Road approx. 1.5 mi north of KY 39**

Net A: Sugar Creek looking upstream (south) toward net location.



Net B: Sugar Creek looking downstream (north) toward net location.



**Site 23. East Fork of Sugar Creek at KY 1355 junction**

Net A: East Fork of Sugar Creek looking downstream (north) toward KY 1355.



Net B: East Fork Sugar Creek looking downstream (north) toward net site location.

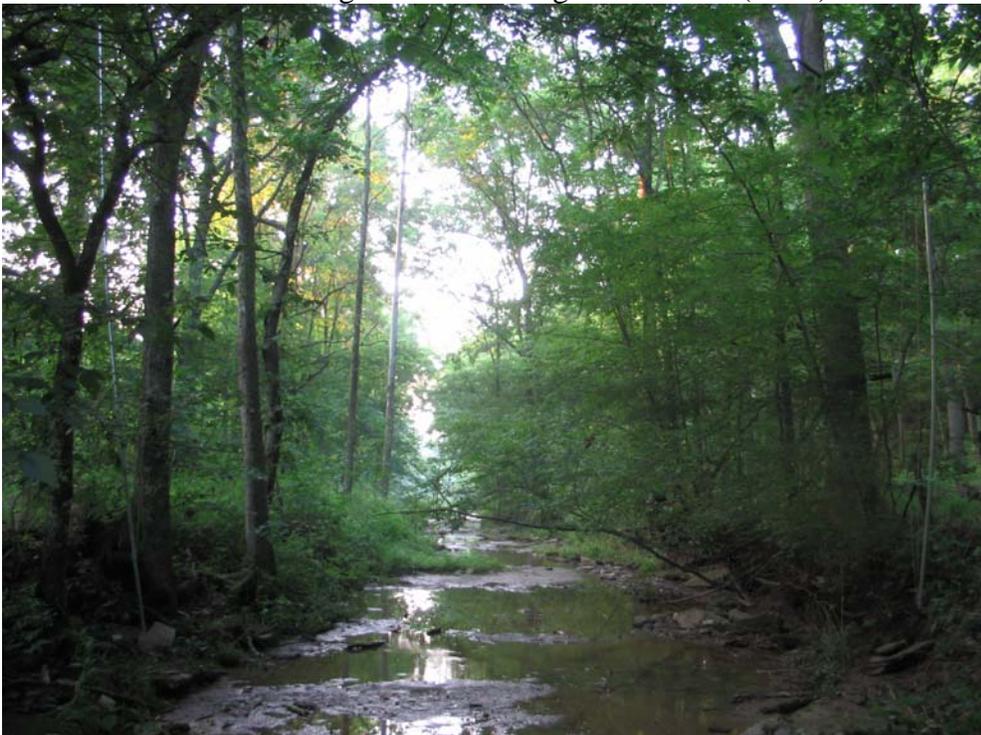


**Site 24. Middle Fork of Sugar Creek 0.75 mi northeast of US 27**

Net A: Middle Fork of Sugar Creek looking upstream (south) toward net location.



Net B: Middle Fork of Sugar Creek looking downstream (north) toward net location.



**Site 25. Boone Creek approx. 0.5 mi west of US 27**

Net A: Boone Creek looking downstream (west) toward net location.



Net B: Boone Creek looking upstream (east) toward net location.



## **APPENDIX IV. MISTNETTING GUIDELINES**

## MIST NETTING GUIDELINES FROM INDIANA BAT RECOVERY PLAN

Agency Draft - March 1999

### RATIONALE

A typical mist net survey is an attempt to determine presence or probable absence of the species; it does not provide sufficient data to determine population size or structure. Following these guidelines will standardize procedures for mist netting. It will help maximize the potential for capture of Indiana bats at a minimum acceptable level of effort. Although the capture of bats confirms their presence, failure to catch bats does not absolutely confirm their absence. Netting effort as extensive as outlined below usually is sufficient to capture Indiana bats. However, there have been instances in which additional effort was necessary to detect the presence of the species.

### NETTING SEASON

May 15—August 15

These dates define acceptable limits for documenting the presence of summer populations of Indiana bats, especially maternity colonies. Several captures, including adult females and young of the year, indicate that a nursery colony is active in the area. Outside these dates, even when Indiana bats are caught, data should be carefully interpreted: If only a single bat is captured, it may be a transient or migratory individual.

### EQUIPMENT

Mist nets - Use the finest, lowest visibility mesh commercially available:

1. In the past, this is 1 ply, 40 denier monofilament—denoted 40/1
2. Currently, monofilament is not available and the finest on the market is 2 ply, 50 denier nylon—denoted 50/2
3. Mesh of approximately 1 1/4 - 1 3/4 in (~38 mm)

Hardware - No specific hardware is required. There are many suitable systems of ropes and/or poles to hold the nets. See NET PLACEMENT below for minimum net heights, habitats, and other netting requirements that affect the choice of hardware. The system of Gardner, et al. (1989) has met the test of time.

NET PLACEMENT Potential travel corridors such as streams or logging trails typically are the most effective places to net. Place the nets approximately perpendicular across the corridor. Nets should fill the corridor from side to side and from stream (or ground) level up to the overhanging canopy. A typical set is seven meters high consisting of three or more nets “stacked” on top one another and up to 20 m wide. (Different width nets may be purchased and used as the situation dictates.)

Agency Draft - March 1999

Occasionally it may be desirable to net where there is no good corridor. Take caution to get the nets up into the canopy. The typical equipment described in the section above may be inadequate for these situations, requiring innovation on the part of the observers.

#### RECOMMENDED NET SITE SPACING:

Stream corridors—one net site per km of stream.

Non-corridor land tracts—two net sites per square km of forested habitat.

#### MINIMUM LEVEL OF EFFORT

Netting at each site should consist of:

At least three net nights (unless bats are caught sooner) (one net set up for one night = one net night)

A minimum of two net locations at each site (at least 30 m apart, especially in linear habitat such as a stream corridor)

A minimum of two nights of netting

Sample Period: begin at sunset; net for at least 5 hr

Each net should be checked approximately every 20 min

No disturbance near the nets, other than to check nets and remove bats

#### WEATHER CONDITIONS

Severe weather adversely affects capture of bats. If Indiana bats are caught during weather extremes, it is probably because they are at the site and active despite inclement weather. On the other hand, if bats are not caught, it may be that there are bats at the site but they may be inactive due to the weather. Negative results combined with any of the following weather conditions throughout all or most of a sampling period are likely to require additional netting:

Precipitation

Temperatures below 10°C

Strong winds (Use good judgment: moving nets are more likely to be detected by bats.)

#### MOONLIGHT

There is some evidence that small myotine bats avoid brightly lit areas, perhaps as predator avoidance. It is typically best to set nets under the canopy where they are out of the moon light, particularly when the moon is half-full or greater.

**APPENDIX V. MIST NETTING PROPOSAL**



July 17, 2006

Mr. Lee Andrews  
U.S. Fish and Wildlife Service  
Frankfort Field Office  
3761 Georgetown Rd.  
Frankfort, KY 40601

Dear Lee,

Enclosed is information concerning the Indiana bat (*Myotis sodalis*) mist-netting survey plan for the following project being considered by East Kentucky Power Cooperative (EKPC):

**Smith – West Garrard 345 kV Transmission Line and Substation**

Currently, there is a Study Area for the proposed project that includes parts of Clark, Madison, and Garrard Counties. On July 11, 2006 the Rural Utility Service (RUS) and EKPC held a scoping meeting concerning this project to help identify sensitive areas within this Study Area, and begin determining alternative routes for the project. EKPC engineers are now in the process of determining alternate routes for this project, and they have provided a Study Corridor for this project, which encompasses the most likely alternate routes to be chosen. This step has been taken to help ensure that bat mist netting can be completed for this project before the end of the 2006-netting season. The corridor would begin at EKPC's J. K. Smith Power Station located in southern Clark County and travel approximately 35 miles to the southwest where a proposed 345 kV substation would be built along US 27 just north of Lancaster, Kentucky (See enclosed maps). Project engineers plan to collocate the new powerline with existing power lines wherever possible to help lessen the impact on the natural environment and the private landowners in the area. You can also refer to the Macro-Corridor Study that was sent to your office on June 29, 2006 for more detailed information on the routing of this Study Corridor.

The proposed transmission line will require a 150-ft. wide right-of-way (ROW) and trees will need to be cleared within the project area. The clearing of trees during the summer months raises questions and concerns for the welfare of the federally endangered Indiana bat and its summer habitat. Therefore, a mist-netting survey plan is being created to address this issue.

EKPC biologists conducted a preliminary field survey of the Study Corridor to determine the habitat types in the area. The proposed Smith – West Garrard Substation and Transmission Line project is located in the Inner Blue Grass region of the state, and is

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P.O. Box 707, Winchester,    Fax: (859) 744-6008  
Kentucky 40392-0707        <http://www.ekpc.com>

A Touchstone Energy Cooperative 

characterized by rolling hills and sloping valleys. Land use in the Blue Grass region is typically characterized by the majority of upland areas being used for agricultural purposes, with wooded habitats limited to the more deeply entrenched valleys. Within the Study Corridor for this project this characterization of the region holds true. The majority of the area, approximately 75%, is being used for agricultural and private purposes. An estimated 3074 acres of trees are located within the Study Corridor; this number was estimated from aerial photos of the project area (See enclosed maps). The forested areas are also where mist netting efforts will be focused as they contain the most likely bat habitat within the Smith-West Garrard Project area. Only a small percentage of the total forested area would actually be classified as wooded habitat, with the majority of the trees located in riparian zones, small disjunct clusters, and along fencerows. Dominant tree species within the wooded areas are silver maple (*Acer saccharinum*), sugar maple (*Acer saccharum*), box elder (*Acer negundo*), shagbark hickory (*Carya ovata*), hackberry (*Celtis occidentalis*), green ash (*Fraxinus pennsylvanica*), black walnut (*Juglans nigra*), eastern red cedar (*Juniperus virginiana*), and sycamore (*Platanus occidentalis*).

Based on the field survey, we propose 25 mist-netting sites within the Study Corridor. Exact mist netting locations are still being determined and property owner permission obtained, but general areas for proposed mist-netting sites include:

**Clark County:**

- Brock Cemetery Road
- Cotton Creek
- Upper Howard Creek
- J. K. Smith Power Station Property

**Madison County:**

- Muddy Creek
- Dunbar Branch
- Rocky Lick Branch
- Peacock Road
- Campbell Branch Road
- Otter Creek
- Tate Creek
- Haden Heights Road
- Silver Creek
- Tracy Branch
- Paint Lick Creek

**Garrard County:**

- Long Branch
- Jack Black Road
- East Fork
- Boone Creek



Because some of these areas have been highly disturbed, some sites may be altered or moved if no bats are captured or observed during the first night of mist netting. Additional sites may also be added to ensure a thorough survey of the study area.

Please review this proposal of a mist netting survey for the Indiana bat. After surveying the project area, we feel this proposal is adequate to determine the presence/probable absence of this species in the project area. Once the survey has been completed, a detailed report of our results will be submitted to your office.

I would appreciate your comments on this mist-netting proposal as soon as possible. If you have any questions concerning this or any of our projects, please feel free to contact me at your convenience. Thank you for taking the time to address our concerns.

Sincerely,



Joe Settles

Supervisor

Natural Resources and Environmental Communications