APPENDIX F

Indiana Bat Summer Mist Net Survey

for the

American Electric Power
Mountaineer Commercial Scale
Carbon Capture and Storage Project
Mason County, West Virginia

Contract No. 326849x215
February 2011
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INDIANA BAT SUMMER MIST NET SURVEY
FOR
AMERICAN ELECTRIC POWER’S PROPOSED MOUNTAINEER CCS II
PROJECT: CO₂ PIPELINE AND INJECTION WELL SITES,
MASON COUNTY, WEST VIRGINIA

5 October 2010

Prepared for:

American Electric Power

and

Potomac-Hudson Engineering, Inc.
7830 Old Georgetown Road, Suite 220
Bethesda, MD 20814

Prepared by:
Virgil Brack, Jr., Ph.D.

Environmental Solutions & Innovations, Inc.
Executive Summary

American Electric Power (AEP) and the U.S. Department of Energy (DOE), propose to develop a carbon capture and storage (CCS) project at the AEP Mountaineer Power Plant, Mason County, West Virginia.

A study plan dated 9 June 2010, outlining the survey effort for endangered bats, was submitted to the U.S. Fish and Wildlife Service, West Virginia Field Office (USFWS WVFO). On 28 July 2010, the USFWS WVFO accepted the proposed field efforts in the study plan.

Mist netting was completed from 24 July through 15 August 2010 at 28 sites. No Indiana bats or other endangered bat species were caught. A total of 99 bats representing five species was captured: 21 big brown bats (*Eptesicus fuscus*), 71 eastern red bats (*Lasiurus borealis*), 3 tricolor bats (eastern pipistrelle) (*Perimyotis subflavus*), 3 little brown bats (*Myotis lucifugus*), and 1 hoary bat (*Lasiurus cinereous*). Overall, 19 of 28 sites ranked as low quality for roosting bats and 9 ranked as moderate value.

In a letter dated 30 August 2010, a request was made to the USFWS WVFO to seek approval to install a geologic characterization well on a small (≤5 acre) portion of the project area (Borrow Area 1). The site was selected because it provided no habitat for the endangered Indiana bat. E-mail correspondence from USFWS WVFO on 8 September 2010 and WV DNR on 20 September confirmed that the proposed activities required for this part of the project were approved. The following report is for the balance of the field studies performed for this project.

The overall netting effort provided no evidence that the Indiana bat or other endangered bat species use the project area during summer months. No endangered bats were caught in mist nets and the available roosting habitat is generally of low to moderate quality. Thus, it is unlikely the Indiana bat or other endangered bat species are present or that the project would adversely affect them. We anticipate that the project would have insignificant and discountable effects to the bat, and on behalf of our clients (DOE and AEP) respectfully suggest that a “May Affect – Is Not Likely to Adversely Affect” determination is appropriate for consultation under Section 7 Endangered Species Act (ESA).
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1.0 Introduction

American Electric Power (AEP) and the U.S. Department of Energy (DOE) propose to develop a carbon capture and storage (CCS) project at the AEP Mountaineer Power Plant located in Mason County, West Virginia. It is referred to as the proposed Mountaineer CCS II Project (or simply “Project”) hereafter within this document.

Environmental Solutions & Innovations, Inc. (ESI) was hired by AEP and their prime consultant Potomac-Hudson Engineering, Inc. (PHE) to survey for the federally endangered Indiana Bat (*Myotis sodalis*) along feasible alternative carbon dioxide (CO₂) pipeline corridors and injection well sites (initially characterization wells).

1.1 Project Description

The Project would capture approximately 1.5 million tonnes of CO₂ annually from a slipstream of flue gas, equivalent in quantity to the flue gas emissions of a 235-megawatt power plant, from the existing 1300-megawatt Mountaineer Power Plant located near New Haven, West Virginia. Captured CO₂ would be transported by pipeline to injection sites located within approximately 12 miles of the plant on other AEP properties. Captured CO₂ would be injected into and permanently stored in geologic formations approximately 1.5 miles underground.

As shown in Figure 1 the following properties are under consideration for potential injection wells. They are listed below in descending order of preference:

- Mountaineer Plant site: 5 acres;
- Borrow Area site: 28 acres;
- Eastern Sporn tract: 400 acres;
- Jordan Tract: 195 acres; and
- Western Sporn tract: 70 acres.

Based on preliminary data, AEP anticipates that the proposed Project will require a minimum of four injection wells located in pairs at two different injection properties (e.g. Mountaineer Plant Site and Borrow Area Site) to a maximum of eight wells, also sited in pairs, but located at four different properties. AEP has identified preferred injection sites on each of the five injection properties, each approximately 5 acres in size. The preferred injection sites, along with preferred locations for Project features,
including access roads and pipelines would be sited based on AEP’s siting criteria, which include the following:

1. Avoid wetlands – to the extent practical, Project features would not be sited in wetlands.

2. Avoid streams and floodplains – to the extent practical, Project features would be sited to avoid streams/floodplains and minimize the number of potential stream crossings.

3. Avoid sensitive habitat – to the extent practical, Project features would not be sited in areas that have been identified as containing sensitive habitat.

4. Avoid cultural resources – to the extent practical, Project features would not be sited in areas that have been identified as containing cultural resources.

5. Proximity to Public Roads – to the extent practical, Project features would be sited, to the extent practicable, near ready access to public roads.

6. Topography – to the extent practical, Project features would be sited in areas that are generally flat to minimize grading requirements.

The final location of injection wells, and associated pipeline corridors, will depend on results of geologic and hydrogeologic characterization studies being conducted by AEP to determine the optimal locations and design for the CO\textsubscript{2} injection wells. AEP anticipates acceptable well locations will be identified within the five injection site properties being considered.

As part of the characterization studies, AEP plans to initially install geologic characterization wells at the Borrow Area Site and the Jordan Tract. If sufficient data is not obtained from these wells to determine placement and design parameters of the injection well placement, then additional characterization wells could be installed at one or all of the remaining properties. Data from the characterization studies will be used to determine the number and optimal placement of the wells required to inject the CO\textsubscript{2}.
Figure 1. Project location of the Mountaineer CCS II Project: CO₂ Pipeline and Injection Well Sites, Mason County, West Virginia.

Potential Injection Well Site
- Eastern Sporn Tract
- Jordan Tract
- Borrow Area
- Western Sporn Tract
- Mountaineer Plant Site

Source: http://www.mapwv.gov

Base Map: USGS Topographic Map

ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC
Project No. 296
To the maximum extent feasible, AEP plans to construct the pipeline within existing electric transmission rights-of-way (ROW) and road corridor ROW. The construction right-of-way (ROW), as currently planned, would be 80 to 120 feet in width. However, to be conservative, the netting effort was completed to address the situation where there was no co-location, and all areas were treated as though the line would be adjacent to and outside of the existing ROW.

At this time, it is anticipated that all access roads, other than the one south of the Jordan Tract, which was identified in the study plan and netted, or other lay down or extra work areas required to support construction activities would be located within the 80 to 120 feet wide construction ROW or would be located on the potential well properties.

1.2 Regulatory Setting

1.2.1 Background

The Federal Endangered Species Act (ESA) [16 U.S.C. 1531 et seq.] was codified in 1973. This law provides for listing, conservation, and recovery of endangered and threatened species of plants and wildlife. Under ESA, the U.S. Fish and Wildlife Service (USFWS) is mandated to monitor and protect listed species. Many states have enacted similar laws.

Section 7(a)(2) of ESA states that each Federal agency shall insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of designated critical habitat. Federal actions include (1) expenditure of Federal funds for roads, buildings, or other construction projects, and (2) approval of a permit or license, and activities resulting from such permit or license. Compliance is required regardless of whether involvement is apparent, such as issuance of a Federal permit, or less direct, such as Federal oversight of a state-operated program.

Section 9 of ESA prohibits “take” of listed species. “Take” is defined by ESA as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect” [16 U.S.C. 1532(19)]. USFWS further defines “harm” to include significant habitat modification or degradation [50 CFR §17.3]. Actions of Federal agencies that do not result in jeopardy or adverse modification, but that could result in a take, must also be addressed under Section 7.

Involvement of DOE provides a Federal nexus that will require DOE, as the lead Federal agency, to participate in the National Environmental Policy Act (NEPA) process and in consultation under Section 7 of the ESA.
1.2.2 Study Plan

A study plan, dated 9 June 2010, outlining the field effort to survey for endangered bats was submitted to the USFWS, West Virginia Field Office (WVFO). The plan defined the level of effort, at well areas and along the pipeline corridors and access roads, radio telemetry studies to be completed if endangered bats were caught, and the efforts to locate portals that might serve as winter hibernacula (Appendix A). In a phone call on 28 July 2010, Ms. Barbara Douglas from the USFWS WVFO confirmed that the proposed level and types of field efforts defined in the study plan were acceptable.

Initially, as defined in the study plan, netting at 33 nets sites was anticipated: 6 in well areas, 22 along the pipeline ROW, and 1 for an access road. However, the eastern pipeline ROW alternative was dropped from consideration, resulting in the need for netting at 28 sites.

The study plan also detailed efforts for radio telemetry studies if bats were caught and survey for portals that might be used by bats for autumn swarming, winter hibernation, and spring staging.

1.2.3 Characterization Well at Borrow Area 1

In a letter dated 30 August 2010, a request was made to the USFWS WVFO to seek advanced approval to install a geologic characterization well and an associated access road to Borrow Area 1 located at the existing AEP Mountaineer Plant (Appendix B). The total disturbance area was to be <5 acres. The Borrow Area 1 site is an area used to mine for clay for support of landfill operations. The area has previously been denuded of vegetation and modified by extraction and disposal activities. This area was selected for a characterization well because the entire site was previously disturbed and biological values were essentially lacking, including habitat for the endangered Indiana bat and other listed species. The request letter summarized the field survey activities completed, including a lack of capture of any endangered bats.

On 8 September 2010, an e-mail correspondence was received from Ms. Barbara Douglas, at the USFWS WVFO, and on 20 September 2010 an e-mail was received from Ms. Barbara Sargent of West Virginia Department of Natural Resources, confirming that proposed activities for the geologic characterization were approved, per ESA concerns (Appendix C).

1.2.4 Permits

Studies were carried out under ESI’s USFWS Federal Fish and Wildlife Permit (TE02373A-0) and West Virginia Scientific Collections Permits, issued to individual collectors.
1.3 Physiographic Setting

West Virginia is made up of three Physiographic Areas: Mid-Atlantic Ridge and Valley, Northern Cumberland Plateau, and Ohio Hills. The Project is within the Ohio Hills section, which extends north into southern Ohio. Landforms within the Ohio Hills consist primarily of dissected, unglaciated plateaus ranging in elevation from 150 to 450 meters, with some valleys as low as 100 meters and some mountainous areas reaching 1,100 meters. Most of this area was dominated historically by oak-hickory forests and today these cover roughly 4.3 million hectares (10.7 million acres), or 54 percent of the physiographic area. Braun (1950) referred to this as the Cumberland and Allegheny Plateaus section of the Mixed Mesophytic Forest region. The Mixed Mesophytic climax forest is a community where the dominant trees are beech (Fagus grandifolia), tuliptree (Liriodendron tulipifera), American basswood (Tilia americana), sugar maple (Acer saccharum), yellow buckeye (Aesculus octandra), red oak (Quercus rubra), white oak (Q. alba), and hemlock (Tsuga canadensis), in addition to as many as 30 other species (Braun 1950). Because of the large number of dominants of this climax community, the composition and relative abundance of the dominants vary greatly from location to location. Modern-day forests have been impacted by logging and a variety of other human uses.

Numerous patches of northern hardwood forest occur on north-facing hillsides, particularly near the edges of the Allegheny Mountains. Historically, oak-hickory and oak-pine regeneration was dependent on fire, and recent policies of fire suppression in the southern Appalachians have had major (often negative) effects on native forest composition and structure.

Human populations are relatively sparse through most the area and often are confined to the larger valleys. Roughly 40 percent of the physiographic area is in agricultural production or urban development, mostly in the northern half (including southern Ohio). Timber extraction has been a major activity throughout the history of this region, and it continues to be important on both public (10% of the area) and privately owned forest lands. Extraction of minerals, oil and gas, and coal are also important land uses throughout this region.

2.0 Ecological Setting

Little is known about the ecology of the Indiana bat in the eastern portion of its range (Watrous et al. 2006) where the current survey was conducted. Despite the fact that the species remains poorly known compared to many other native mammals (Kurta and Kennedy 2002), this species is among the most intensively studied bats in North America (Barclay and Kurta 2007). A review of the bat’s ecology is provided in the
following sections. The review is based on studies conducted across the range of the species, providing an ecological framework for this study and its conclusions.

2.1 Description
The Indiana bat is a medium-sized bat in the genus *Myotis*. The forearm length has a range of 35 to 41 millimeters (1.4 – 1.6 in). The head and body length range from 41 to 49 millimeters (1.6 – 1.9 in). Its appearance most closely resembles that of congeners little brown bat (*M. lucifugus*) and northern bat (*M. septentrionalis*). Indiana bats differ from similar *Myotis* species in that they have a distinctly keeled calcar (cartilage that extends from the ankle to support the tail membrane). Other minor differences include smaller and more delicate hind feet, shorter hairs on the feet that do not extend past the toenails, and a pink nose. The fur lacks luster, and the wing and ear membranes have a dull, flat coloration that does not contrast with the fur (USFWS 2007). Fur on the chest and belly is lighter than fur on the back, but is not as strongly contrasting as that of similar *Myotis* species. Overall color is slightly grayer, while the little brown bat and northern bat are browner. The skull has a crest and tends to be smaller, flatter, and narrower than that of the little brown bat (USFWS 2007).

2.2 Status
The USFWS listed the Indiana bat (*Myotis sodalis*) as endangered on 11 March 1967. The 2009 range-wide estimate of the population was 387,835 individuals (USFWS 2010), which represents about half of the estimated population of 1960. Long-term, detailed documentation of population changes are lacking across most of its range, with the exception of the state of Indiana (Brack et al. 1984, Johnson et al. 2002, Whitaker and Brack 2002, Brack et al. 2003, Sparks et al. 2008), although such information now being acquired in most states. It is probable that habitat loss during summer (USFWS 2007) and winter disturbances during hibernation (Johnson et al. 1998) both contributed to the overall decline of the species.

The only official recovery plan for the species was completed on 14 October 1983. A new draft revised recovery was released in April 2007. Although widely used as a regulatory document, the 2007 version of the recovery plan has not been officially approved.

**Federal Register Documents**

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<th>Description</th>
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<tr>
<td>41</td>
<td>24 Sept 1976</td>
<td>Final Critical Habitat, Critical habitat-mammals</td>
</tr>
<tr>
<td>40</td>
<td>16 Dec 1975</td>
<td>Proposed Critical Habitat, Critical habitat-mammals</td>
</tr>
<tr>
<td>32</td>
<td>11 Mar 1967</td>
<td>Final Listing, Endangered</td>
</tr>
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</table>
Critical habitat was designated on 24 September 1976, and includes 11 caves and 2 abandoned mines in Illinois, Indiana, Kentucky, Missouri, Tennessee, and West Virginia.

2.3 Regional Species Occurrence
The federally endangered Indiana bat is not known to occur in Mason County, West Virginia (Figure 2). The nearest known hibernacula and records of summer maternity are from Lawrence County, Ohio to the southwest of Mason County. There is a summer record from Athens County, Ohio to the north of a nonreproductive Indiana bat.

2.4 Ecology
The Indiana bat is a "tree bat" in summer and a "cave bat" in winter. There are four ecologically distinct components of the annual life cycle: winter hibernation, spring staging and autumn swarming, spring and autumn migration, and the summer season of reproduction (Figure 3). The USFWS Recovery Plan (2007) provides a description of the life history.

2.4.1 Summer Roosting Ecology
The summer range of the Indiana bat is large and includes much of the eastern deciduous forestlands between the Appalachian Mountains and Midwest prairies (Figure 4). Distribution throughout the range is not uniform and summer occurrences are more frequent in Indiana, northern Missouri, and southern portions of Iowa, Michigan, and Illinois. Historically, these areas were vegetated in a mix of prairies, forest, and savannas (Küchler 1964). At the eastern end of the distribution tree densities are greater (Brack et al. 2002), but the bat appears to be less abundant. Cooler summer temperatures associated with latitude or altitude likely affect reproductive success and the summer distribution of the species (Brack et al. 2002). Similarly, the warmer, drier climate of the Midwest allows rapid growth of young and short migration to suitable hibernacula.

2.4.1.1 Males
Some males remain near hibernacula throughout summer while others migrate varying distances (Whitaker and Brack 2002). Males can be caught at hibernacula on most nights during summer (Brack 1983, Brack and LaVal 1985), although there may be a large turnover of individuals between nights (Brack 1983).

Structurally, woodland roosts used by males are similar to those used by maternity colonies (Kiser and Elliott 1996, Schultes and Elliott 2002, Brack and Whitaker 2004, Brack et al. 2004). These trees are smaller (Kurta 2004), perhaps because males are often solitary or form small groups and thus need less space or because males may have different thermal requirements than females. Males appear somewhat nomadic; over time, the number of roosts and the size of an area used increases.
Figure 3. Seasonal chronology of Indiana bat activities.
Figure 4. Range-wide distribution of the Indiana bat during summer, showing county records of reproductive (adult female and/or young-of-the-year) and nonreproductive individuals.

Legend:
- Light blue: County with Record of Indiana Bat Reproductive Occurrence
- Red: County with Record of Indiana Bat Summer Non-Reproductive Occurrence
- Purple: County with Record of Indiana Bat Reproductive and Summer Non-Reproductive Occurrence

Activity areas encompass roads of all sizes, from trails to interstate highways. Roosts have also been located near roads of all sizes (Kiser and Elliott 1996, Schultes and Elliott 2002, Brack et al. 2004), including adjacent to an interstate highway (Sparks et al. 1998, Brack et al. 2004, Whitaker and Sparks 2008, Sparks et al. 2009).

2.4.1.2 Females and Maternity Colonies
When female Indiana bats emerge from hibernation, they migrate to maternity colonies that may be located up to several hundred miles from the hibernacula (Kurta and Murray 2002). Females form nursery colonies under exfoliating bark of dead, dying, and living trees in a variety of habitat types, including uplands and riparian habitats. A wide variety of tree species (Kurta 2004), occasionally including pines (Britzke et al. 2003), are used as nursery colonies indicating that it is tree form, not species that is important for roosts. Because many roosts are in dead or dying trees, they are often ephemeral. Roost trees may be habitable for one to several years, depending on the species and condition of the tree (Callahan et al. 1997). Indiana bats exhibit strong site fidelity to summer roosting and foraging areas (Kurta and Murray 2002, Kurta et al. 2002, Sparks et al. 2004, Whitaker et al. 2004, Whitaker and Sparks 2008, Sparks et al. 2009). This fidelity is to a larger landscape which can change over time. Between the discovery of a colony near the Indianapolis International Airport in 1994 and 2008, this colony of bats essentially abandoned foraging areas north of the expanded Interstate 70 and shifted their center of activity into a conservation area that was designed and managed for them (Sparks et al. 2009). This indicates that it is possible to move colonies of Indiana bats across a developing landscape if suitable long-term habitat is available or developed during the move.

A maternity colony typically consists of 25 to 325 adult females. Nursery colonies often use several roost trees (Kurta et al. 1993, Foster and Kurta 1999, Kurta and Murray 2002, Whitaker and Sparks 2008), moving among roosts within a season. Most members of a colony coalesce into one or a few roost trees about the time of parturition. Once young are volant, the bats spend less time in these major roosts and more time in minor roosts—often roosting alone under the bark of live trees. Roosts that contain large numbers of bats (more than 20 bats) are often called primary roosts, while secondary roosts hold fewer bats. Primary roost trees are often greater than 46 centimeters (18 in) diameter at breast height (dbh) and secondary roost trees are often greater than 23 centimeters (9 in) dbh (Gardner et al. 1991, Callahan et al. 1997, Kurta et al. 2002, Miller et al. 2002, Carter 2003). Numerous suitable roosts may be needed to support a single nursery colony, possibly about 45 stems per hectare (20/acre) (Gardner et al. 1991, Miller et al. 2002, Carter 2003).

Roost trees often have 10 hours of solar exposure per day, with 20 to 80 percent canopy closure (Humphrey et al. 1977, Gardner et al. 1991, Kurta et al. 1993, Kurta et al. 1996, Kurta et al. 2002, Carter 2003), but the need for solar exposure may vary
with latitude. Although Indiana bats typically roost under the exfoliating bark of dead and dying trees, they have also been found roosting in a variety of cracks and hollows in trees (L. C. Watkins in Humphrey et al. 1977, Kurta et al. 1993, Butchkoski and Hassinger 2002, Kurta et al. 2002, Kurta 2004), utility poles (ESI 2004, Hendricks et al. 2004), buildings (Butchkoski and Hassinger 2002, V. Brack Unpublished data, A. C. Hicks Personal communication), and bat boxes (Butchkoski and Hassinger 2002, Carter 2002, Butchkoski 2005, Ritzi et al. 2005, Whitaker et al. 2006). The colony of bats near the Indianapolis Airport have used a combination of both natural roosts (trees) and bat boxes every year since 2003 (Sparks et al. 2008).

Females are pregnant when they arrive at maternity roosts. Females produce one young per year, typical for the genus *Myotis* (Asdell 1964, Haysnen et al. 1993). Parturition typically occurs between late June and early July. Lactating females have been caught 11 June to 29 July in Indiana, 26 June to 22 July in Iowa, and 11 June to 6 July in Missouri (Humphrey et al. 1977, LaVal and LaVal 1980, Brack 1983, Clark et al. 1987). Juveniles become volant between early July and early August. Reproductive phenology is likely dependent upon seasonal temperatures and the thermal character of the roost (Humphrey et al. 1977, Kurta et al. 1996). Like many microchiropterans, Indiana bats are thermal conformists (Stones and Wiebers 1967), with prenatal, neonatal, and juvenile development are temperature dependent (Racey 1982). Cooler summer temperatures associated with latitude or altitude likely affect reproductive success and therefore the summer distribution of the species (Brack et al. 2002).

Nightly non-foraging behavior of Indiana bats is poorly documented. In Michigan, pregnant bats from a maternity colony foraged most of the night, but lactating females returned two to four times to feed young. Both pregnant and lactating females roosted up to six times per night for 14 minutes (SD = 1) each (Murray and Kurta 2004). Foraging areas were 0.5 to 4.2 kilometers (0.3 – 2.5 mi) from diurnal roosts. Kiser et al. (2002) found 82 bats under three bridges over a 6-night period in late July and August. Temperatures under the bridges were warmer and less variable than ambient, apparently providing a location to roost and digest food between foraging bouts. These bridges were 1.0 to 1.9 kilometers (0.6 – 1.2 mi) from diurnal roost trees. Additional unpublished information about night roosting is available from the long-term study of a colony near the Indianapolis International Airport (D.W. Sparks Unpublished data). These bats regularly night roosted within wooded areas. When biologists entered woodlots to locate tagged bats to a specific tree, the bats moved to new roosts; this behavior was greatly reduced when human activity in the woodlot was restricted. When bats were located to a specific tree, they were hanging exposed on the tree rather than under bark. More rarely, individual bats night roosted in bat boxes. In one case, an Indiana bat night roosted in a prairie, apparently on big bluestem (*Andropogon gerardii*) or evening primrose (*Oenothera* sp.).
Indiana bats live on anthropogenic landscapes and recent research indicates females include roads in their active area. Although bats do cross roads, the studies that document this behavior were typically not designed to gauge a graded response. On Camp Atterbury, Indiana, female and juvenile Indiana bats routinely night roosted under bridges on 2-lane paved roads (Kiser et al. 2002). Activity areas of nursery colonies in Illinois (Gardner et al. 1991) and Michigan (Kurta et al. 2002) included paved roads. On the campus of Wright State University, Ohio, a roost tree was at the edge of a large parking lot, and about 20 meters (60 ft) from a moderately traveled road. Emerging bats crossed the parking lot and radio-tagged bats crossed highway 444, a four-lane divided highway, to forage in a 73-hectare (180 ac) woodlot (Brown et al. 2001). In eastern Indiana, adjacent to Newport Chemical Depot, a reproductive female Indiana bat was radio-tracked across a 4-lane divided highway to a maternity colony in a small, 0.7-hectare (1.7 ac) isolated woodlot (Brack and Whitaker 2006). The roost tree was on the western edge of the woodlot (adjacent to the highway) and the woodlot was surrounded on other sides by open, farmed agricultural lands. Based on Euclidean distance analysis, small, unimproved roads were the most preferred foraging habitat at Fishhook Creek Watershed in Illinois (Menzel et al. 2005).

Several unpublished data sets describe the response of Indiana bats to roads in finer detail. Indiana bats foraging near the Indianapolis airport cross roads ranging from unimproved tire paths to Interstate highways an average of 11.97 times per night, but most of this activity (11.54 crossings per night) is restricted to small rural roads, and this pattern holds when corrected for the much greater abundance of smaller roads (M. McGuire Unpublished data). Similarly, bats at this site were much more likely to abort attempts to cross a roadway when vehicles were present (Zurcher et al. Unpublished data). By combining species-specific patterns of movement with these observations, it is possible to mathematically model the impacts of roadways on bats. The willingness of a bat to cross a roadway is in part determined by three factors: value of the habitat on the opposite side of the road, size of the road, and intensity of traffic (V. J. Bennett Personal communication). These results suggest that utility corridors are less of a barrier than roadways because they lack traffic. In addition, Indiana bats have been observed using such corridors as both commuting and foraging habitat (Brack and Whitaker 2006). As such, reasonable efforts to avoid and minimize effects of utility corridors include the sharing of a corridor by multiple lines.

2.4.2 Food Habits and Foraging Ecology
The diet of Indiana bats varies substantially among bats of different ages and genders, and in relation to the availability of insects within different habitat types. Based on diets of males, Brack and LaVal (1985) considered the species selective opportunists. In Indiana, aquatic-based insects were more common in the diet of a maternity colony than in the diet of males collected at caves (Brack 1983). The maternity colony was located along the Big Blue River, where only about 11 percent of the land within 3.2 kilometers (2 mi) of the roost was forested (most was riparian),
whereas males were caught at a cave where 42 percent of the area within 3.2 kilometers (2 mi) was forested and only a small portion was riparian. In late summer, the diets of males, females, and juveniles captured at caves were similar to one another and to males’ summer diets. Diets reported by Belwood (1979) from a colony along a stream and by Kurta and Whitaker (1998) from a colony within a wooded wetland contained more aquatic-based insects than diets of males foraging in an upland habitat (Brack and LaVal 1985). The repeated seasonal occurrence of the Asiatic oak weevil (Cyrtcephistomus castaneus) and sporadic abundance of hymenopterans in the diet (Brack 1983, Brack and LaVal 1985, Brack and Whitaker 2004, Tuttle et al. 2006, Brack In press) are both indicative of opportunistic feeding. Insects may be less common late at night, forcing bats to eat a greater variety of insects (Brack 1983). Diet varied across weeks at a maternity colony in Indiana (Tuttle et al. 2006). The diet contains less diversity late in the season (Brack 1983, Brack and LaVal 1985). Diet also varies by lunar cycle (Brack 1983, Brack and LaVal 1985), because the cycle affects insects. Murray and Kurta (2002) found that the diet was flexible across the range and potentially affected by regional and local differences in bat assemblages and availability of foraging habitat and prey. Despite variability of the diet, it should be noted that this variability is a result of eating different amounts of insects belonging to five orders: Lepidoptera (moths), Coleoptera (beetles), Diptera (true flies), Trichoptera (caddisflies), and Hymenoptera (wasps and ants) (Tuttle et al. 2006).

Using a variety of techniques, authors have reported that Indiana bats travel a wide range of distances from their roosts, and the inherent benefits and biases of these techniques must be considered when interpreting the data (Sparks et al. 2004). Using reflective wristbands, Humphrey et al. (1977) found that a maternity colony foraged in areas ranging from 1.5 to 4.5 hectares (3.7 to 11.1 ac). Using telemetry, much larger distances have been recorded. In Illinois, individuals traveled up to 4 kilometers (2.5 mi) from maternity colonies (Gardner et al. 1991). In Michigan, foraging areas were 0.5 to 4 kilometers (0.3 to 2.5 mi) from diurnal roosts (Murray and Kurta 2004), and members of a maternity colony moved a maximum distance among roosts of 5.8 kilometers (3.6 mi) overnight, but 9.2 kilometers (5.7 mi) over 4 years (Kurta et al. 2002). In Missouri, adult males traveled 5 kilometers (3.1 mi) while foraging LaVal and LaVal (1980), and Brack (1983) observed foraging light-tagged bats within 3.22 kilometers (2 mi) of caves used during autumn swarming. In Hoosier National Forest, the mean active foraging area of four adult male bats ranged from 95.1 to 151.9 hectares (235 – 375 ac) based on the method of estimation, while the means of individual bats across three methods of estimation (95% minimum convex polygon, capture radius, and non-circular) ranged from 43.1 to 314.2 hectares (107 – 776 ac) (Brack et al. 2004). At the Indianapolis Airport (Sparks et al. 2004, Sparks et al. 2005), maximum distance flown by Indiana bats averaged 3 kilometers (1.86 mi) but ranged from 0.8 to 8.4 kilometers (0.5 to 5.41 mi). Similarly, using 95 percent minimum convex polygons, home range size averaged 412 hectares (1081.07 ac) but ranged from 50 to 1168 hectares (123.55 to 2886.19 ac), and home ranges of
individuals often overlapped (Sparks et al. 2004, Sparks et al. 2005). Individuals of many species of bats that roost colonially forage independently of one another (Kerth et al. 2001). Like many other species of microchiropterans, the Indiana bat often uses travel corridors that consist of open flyways such as streams, woodland trails, small infrequently used roads, and possibly utility corridors, regardless of suitability for foraging or roosting (Brown and Brack 2003). Such corridors may play an important role in allowing bats to access isolated foraging areas (Murray and Kurta 2004, Sparks et al. 2004), but may not be essential as Indiana bats have been tracked crossing large open areas (Brack 1983).

Members of maternity colonies forage in a variety of woodland settings, including upland and floodplain forest (Humphrey et al. 1977, Brack 1983, Gardner et al. 1991). Foraging activity is concentrated above and around foliage surfaces, such as over the canopy in upland and riparian woods, around crowns of individual or widely spaced trees, and along edges (LaVal et al. 1977). They forage less frequently over old fields, and occasionally over bushes in open pastures (Brack 1983). Forest edges, small openings, and woodlands with patchy trees provide more foraging opportunities than dense woodlands. Most species of woodland bats forage prominently along edges, less in openings, and least within forests (Grindal 1996). Openings also provide a better supply of insects than do wooded areas (Tibbels and Kurta 2003).

At the landscape scale, the species makes preferential use of forested habitat for foraging in both Illinois and Indiana (Menzel et al. 2005, Sparks et al. 2005). The Illinois study was on a wildlife management area with substantial blocks of bottomland hardwood forest. In this landscape, bats foraged closer to roads, forest, and riparian areas than chance alone would predict. Grassland was used in proportion to availability and agricultural areas were avoided. In suburban Indianapolis, Indiana bats preferentially used woodlands more than agricultural, low density residential, and open water, and these habitats more than pasture, parks, and commercial lands, with high density residential least preferred. It should be noted, however, that at this study site most such neighborhoods were new developments within what were previously large agricultural fields. The authors suggest that this pattern might not hold for residential areas where woodland habitat is retained. Finally, it is likely that in heavily forested areas, open habitats would be preferentially used by foraging Indiana bats (Sparks et al. 2004).

2.4.3 Survivorship

Detailed studies of survivorship of the Indiana bat have not been completed. Paradiso and Greenhall (1967) and Humphrey and Cope (1977) determined a terminal age of between 12 and 13 years after marking. Brack et al. (2005b) found that survivorship of white and leucistic M. sodalis was low, about 7.7 percent (assuming individuals were 0.5 year old when first found). This calculated rate may be low because bats may have been 1.5 years of age when first found, and they may
have survived an additional year without being found. Low survivorship during adolescence is representative of many mammalian species, although white coloration may make bats more susceptible to predation by visually oriented nocturnal predators.

Extensive winter banding records were used by Humphrey and Cope (1977) to estimate survival between winters. Survival rates were high for years one through six after banding, 75.9 percent annually for females and 69.9 percent for males (72.9 % combined), lower after six years, at 66.0 percent for females and 36.3 percent for males (51.2 % combined), and only 4.1 percent (females) after 10 years. Humphrey and Cope (1977) could not determine survivorship for young of the year, but total survival was much lower the first year after marking (ca. 41%), which was attributed to low survivorship of young-of-the-year. Using more modern approaches, young-of-year survival rate is now estimated at 65 percent (Boyles et al. 2007). Because of substantially increased survival during the first winter, this analysis predicts a greater number of bats from each cohort surviving. Unfortunately, as noted by both sets of authors (Humphrey and Cope 1977, Boyles et al. 2007), these samples are inherently biased by the inability to reliably distinguish age classes among hibernating bats. No estimate of summer survivorship is available although efforts are underway to develop and apply molecular mark-recapture to this species (Sparks et al. 2008). Using emergence counts, the colony at the Indianapolis airport apparently increased in size from a maximum count of 70 individuals in 1997 to 228 in 2007 (Sparks et al. 2008).

2.5 Causes of Past/Current Decline
Long-term, detailed documentation of population changes of Indiana bats are lacking in most areas. Summer habitat degradation (USFWS 2007), pesticides, and winter disturbance (Johnson et al. 1998) are believed to have contributed to an overall decline. The greatest current threat to the species is the emergence of a new disease known as White-nose syndrome (WNS), which has been responsible for dramatic declines in bats throughout the Northeast (Blehert et al. 2008; 2009).

The Indiana bat uses a variety of wooded summer habitats, from large tracts of woodlands to riparian strips and woodlots on an anthropogenic landscape. Summer habitat losses include tree removal or land clearing for a variety of land use practices. Removal of standing dead trees, especially during summer months, is potentially harmful. Removal of riparian forest along streams and ditches also degrades summer habitat. Loss of wooded lands can lead to increased forest fragmentation, and a compounding of adverse effects. In many portions of their core range, Indiana bats utilize savanna-like habitats with large trees, an open canopy, and an uncluttered understory. However, suppression of fire and removal of dominant grazing herbivores, combined with frequent tree harvest, has often produced wooded lands of smaller trees with a closed canopy and a cluttered understory, which may have affected the quality of maternity habitat (USFWS 2007). Similarly, urbanization
removes potential foraging habitat and bats may not cross developed areas to access otherwise suitable foraging habitat (Sparks et al. 2005).

Chemical contamination in non-winter habitats has been implicated in the decline of most North American bats (USFWS 2007). Lethal concentrations of a number of pesticides have been found in several other species of bats that overlap substantially with Indiana bats in foraging habitat and thus have similar risk of exposure (Schmidt et al. 2001, O’Shea and Clark 2002, Schmidt et al. 2002). Of particular concern are organophosphates, which have been detected in the guano of Indiana bats and may indirectly cause mortality or decreased production by causing bats to become torpid or unconscious for long periods, potentially leading to indirect mortality through predation, exposure, or death of dependent offspring (Eidels et al. 2006). However, the importance of this group of contaminants on a species-by-species basis is not clearly documented, and additional studies are needed.

Documented threats to winter habitats, caused by humans, include: (1) disturbance and vandalism, (2) improper cave gates and structures, (3) indiscriminate collecting, and (4) flooding of caves from reservoir construction. Natural hazards include flash flooding of hibernacula (Brack et al. 2005a), ceiling collapse of mines and caves (Elliot 2007), colder or warmer than average winters, and severe summer storms. Natural and/or human-caused changes in the microclimate of caves and mines used as hibernacula can adversely affect the species (Richter et al. 1993).

Populations of hibernating bats in the northeastern United States have been dying in record numbers, and the specific cause of the deaths is unknown. However, this crisis is directly associated with WNS, named for a white fungus evident on the muzzles and wings of affected bats (Meteyer et al. 2009). This affliction was first documented at four sites in eastern New York in the winter of 2006-07 (Blehert et al. 2008; 2009). Since then, WNS has rapidly spread to multiple sites throughout the Northeast and Appalachians. Researchers associate WNS with a newly identified fungus (Geomyces destructans) that thrives in the cold and humid conditions characteristic of the caves and mines used by bats (Gargas et al. 2009). Bats apparently have a reduced immune response while hibernating (Carey et al. 2003), which may predispose them to infection by G. destructans. WNS ultimately results in inadequate energy reserves during hibernation, forcing bats to leave hibernacula in mid-winter in search of food. In the U.S., biologists and/or cavers have documented WNS in bat hibernacula in New Hampshire, Vermont, New York, Massachusetts, Connecticut, New Jersey, Pennsylvania, West Virginia, Virginia, Tennessee, Missouri, and Oklahoma.
3.0 Methods

The survey followed summer mist netting guidelines provided by the USFWS in the 2007 Indiana Bat Draft Recovery Plan (First Revision) and Draft Survey Protocol (Table 1).

Table 1. U.S. Fish & Wildlife Mist Netting Guidelines

<table>
<thead>
<tr>
<th>NETTING GUIDELINES</th>
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<tbody>
<tr>
<td>1. Netting Season: 15 May to 15 August, when Indiana bats occupy summer habitat</td>
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<tr>
<td>2. Equipment (Mist Nets): constructed of the finest, lowest visibility mesh commercially available – monofilament or black nylon – with the mesh size approximately 38 millimeters (1½ in)</td>
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<tr>
<td>3. Net Placement: mist nets extend approximately from water or ground level to tree canopy and are bounded by foliage on the sides. Net width and height are adjusted for the fullest coverage of the flight corridor at each site. A “typical” net set consists of three (or more) nets “stacked” on top of one another; width may vary up to 18 meters (60 ft)</td>
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<tr>
<td>4. Net Site Spacing:</td>
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<tr>
<td>♦ Streams – one net site per 1 kilometer (0.6 mi)</td>
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<td>♦ Land Tracts – two net sites per 1 square kilometer (246 ac)</td>
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<tr>
<td>5. Minimum Level of Effort Per Net Site:</td>
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<tr>
<td>♦ Two net locations (sets) per net site, with locations (sets) at least 30 meters apart</td>
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<tr>
<td>♦ Two (calendar) nights of netting</td>
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<tr>
<td>♦ At least four net–nights (1 net–night = 1 net set deployed for 1 night); typically, two net sets are deployed at one site for two nights, resulting in four net nights</td>
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<tr>
<td>♦ Sample Period: begin at dusk and net for 5 hours (approximately 0200h)</td>
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<td>♦ Nets are monitored at approximately 10-minute intervals</td>
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<td>♦ No disturbance near the nets between checks</td>
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<tr>
<td>6. Weather Conditions: net only if the following weather conditions are met:</td>
</tr>
<tr>
<td>♦ No precipitation</td>
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<tr>
<td>♦ Temperature ≥ 10°C (50°F)</td>
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<td>♦ No strong winds</td>
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</table>

3.1 Summer Mist Net Survey

3.1.1 Study Plan

As detailed above, a study plan was submitted to and approved by the USFWS WVFO.

As noted above, netting at 33 nets sites was anticipated in the study plan, but when the Route 62 pipeline corridor alternative was dropped from consideration, netting was only required at 28 Sites (Figure 5). Net sites were selected as identified in the study plan based on the suitability of available habitat along the length of corridor and areal extent of well sites. Thus, sampling was completed at 6 sites in well areas, 21 sites along the pipeline ROW, and 1 site for an access road. As identified in the study plan, this sampling regime included some overlap among well and corridor sites, based on typical coverage along corridors.

3.1.2 Site Selection and Level of Effort

During field surveys, net sites were numbered simply as KM1 – KM28. Each net site consisted of two nets operated for 2 nights each for a total of 4 net nights per site, or a total of 112 complete net nights (and 3 additional partial nights when netting was discontinued because of adverse weather conditions).

Per ESI’s 9 June 2010 Study Plan to USFWS, Section 6 (page 11) “Inaccessible Properties,” three net sites (KM9, KM12, and KM18) were located outside the 1-kilometer boundaries noted in the study plan. The study plan stated:

With a proposed Project of this size, it is not unexpected that we may not gain access to all parcels required for netting. Therefore, the following is proposed for properties for which landowner access cannot be obtained:

If access cannot be obtained for a high quality flyway within a 1-kilometer block, the next best property, for which access can be obtained, within that 1-kilometer block will be netted.

If access cannot be obtained for any suitable flyways within a 1-kilometer block, the best and most similar habitat, in one of the adjacent blocks will be netted instead. (This may result in two net sites being placed in some 1-kilometer blocks.)

The following circumstances resulted in relocation of these net sites, to alternate adjacent locations as follows (Figure 5):

- KM9: Suitable bat habitat was limited and good netting sites were not found. This net site was relocated into the KM10 block.
- KM12: Access was denied to all suitable habitat by the landowner. This net
site was relocated into the KM13.

- KM18: This block had a combination of limited land-owner access and limited good net sites. This site was relocated to KM17.

The precise placement of each net was based upon canopy cover, presence of a flight corridor, water, and habitat conditions near the site. Nets were set to maximize coverage of flight paths used by bats along suitable corridors. Riparian corridors often provide successful mist net sites; however, upland corridors (e.g., trails or logging roads) also provide suitable sites (Brown and Brack 2003). In upland areas, road ruts or other areas of standing water frequently facilitate capture of bats, including the Indiana bat. Placement of mist nets was based upon expectation of bat activity and to provide broad coverage of the Project area with potentially suitable Indiana bat habitat. Mist net site selection also included consideration of habitat characterizations described for the Indiana bat in current literature and experience of ESI personnel. Habitat with the following characteristics was selected to the degree feasible:

- Large trees (>16 inches dbh) (frequently used for maternity roosts)
- An open canopy (apparently important for warming roost sites)
- An open, uncluttered understory (used for traveling and foraging)

Figure 5 and Appendix D provide mist net site locations and habitat descriptions. GPS coordinates for each net site were recorded (Table 2) and photos were taken (Appendix E).
Figure 5. Mist Net Sites at the Mountaineer CCS II Project: CO₂ Pipeline and Injection Well Sites, Mason County, West Virginia.

Potential Injection Well Sites:
- Eastern Sporn Tract (400 ac)
- Jordan Tract (195 ac)
- Borrow Area (28 ac)
- Western Sporn Tract (70 ac)
- Mountaineer Plant Site (5 ac)
Table 2. Mist Net Site Coordinates on the Mountaineer CCS II Project: CO2 Pipeline and Injection Well Sites, Mason County, West Virginia

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
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<tbody>
<tr>
<td>KM1</td>
<td>N38 57 25.8</td>
<td>W82 00 45.0</td>
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<tr>
<td>KM2</td>
<td>N38 57 12.5</td>
<td>W82 00 08.7</td>
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<tr>
<td>KM3</td>
<td>N38 57 28.3</td>
<td>W81 59 32.9</td>
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<tr>
<td>KM4</td>
<td>N38 57 34.5</td>
<td>W81 58 26.6</td>
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<td>KM5</td>
<td>N38 57 45.5</td>
<td>W81 57 38.2</td>
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<td>KM6</td>
<td>N38 57 33.4</td>
<td>W81 56 35.3</td>
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<td>KM7</td>
<td>N38 57 42.8</td>
<td>W81 56 17.1</td>
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<td>KM8</td>
<td>N38 57 19.8</td>
<td>W81 55 51.5</td>
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<td>KM9</td>
<td>N38 56 22.3</td>
<td>W81 56 41.3</td>
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<td>KM28</td>
<td>N38 54 49.9</td>
<td>W81 56 36.9</td>
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3.1.3 Bat Capture

Mist netting was completed from 24 July through 15 August 2010. Mist nets were used to live capture and release bats unharmed near the point of capture. Bats were identified to species using a combination of morphological characteristics (e.g., ear and tragus, calcar, pelage, size/weight, length of right forearm, and overall appearance of the animal). The species, sex, reproductive condition, age, weight, length of right forearm, time, and location of capture were recorded for all bats captured. Age (adult or juvenile) of bats was
determined by examining epiphypseal-diaphyseal fusion (calcification) of long bones in the wing.

Weight was measured to the nearest 0.5 gram using a Pesola spring scale. Length of right forearm was measured to the nearest 0.5 millimeter using a rule marked at 1.0 millimeter intervals. The reproductive condition of captured bats was classified as non-reproductive male, reproductive male, non-reproductive female, or post-lactating female. Morphometric data recorded in the field are provided on Bat Capture Data sheets in Appendix D. Processing and data collection were usually completed in 30 minutes.

3.1.4 White-Nose Syndrome Decontamination Protocol
White-nose syndrome (WNS) is an emerging disease that is killing millions of bats in the eastern U.S. The disease, which was first found in New York, is spreading and is now in West Virginia. Bat handling followed current WNS protocols set by the USFWS. Captured bats were examined for damage associated with WNS to the wing and uropatagium (tail) membranes, including use of white and ultraviolet light. ESI biologists followed the Disinfection Protocol for Bat Field Research/Monitoring finalized by USFWS in June 2009. Wing damage was categorized using the Wing-Damage Index Used for Characterizing Wing Condition of Bats Affected by White-nose Syndrome (Reichard 2008).

3.1.5 Weather and Temperature
Weather conditions were monitored each night of mist netting (Appendix D). Conditions recorded included: temperature, wind speed and direction, percent cloud cover, and moon phase (if visible). A standard digital thermometer was used to record temperature, wind speed was determined by use of the Beaufort wind scale, and cloud cover was estimated visually. Netting was terminated early on 11 August 2010 at site KM24 at 2300h, and on 14 August at sites KM27 and KM28 at 2200h because of precipitation. No bats were caught on any of these nights when netting was terminated early and these nights were not included in the total of 112 complete net nights. Nightly temperatures never fell low enough to require the termination of netting (Figure 6).

3.1.6 Net Site Habitat
A habitat assessment was completed for each net site. Habitat descriptions included: size, species, and relative abundance of large trees and snags that potentially serve as roost trees; canopy closure; understory clutter/openness; water availability; and flight corridors.
Figure 6. High and low temperatures (°C) for nights when netting was completed.

ESI’s habitat assessment includes species of large trees near the net site or roost and identifies components of the canopy and subcanopy layers. All trees that reach into the canopy are canopy trees, regardless of their diameter/size. As defined in the Indiana Bat Habitat Suitability Index Model (3D/Environmental 1995), dominant trees are the large trees in the canopy (>40 cm dbh) that have the greatest likelihood of being used by maternity colonies of Indiana bats. Many smaller trees are often also found in the canopy, and in some situations, the canopy can be entirely composed of smaller-diameter trees. ESI’s habitat characterization identifies dominant and subdominant elements of the canopy.

The subcanopy, or understory, vegetation layer is well defined in classical ecological literature. It is that portion of the forest structure between the ground vegetation (to approximately 0.6 meter (2 ft) and the canopy layers, usually beginning at about 7.6 meters (25 ft). Vegetation in the understory may come from lower branches of overstory trees, small trees that will grow into the overstory, and small trees and shrubs that are confined to the understory. The amount of understory, or clutter, is also recorded, as many bat species, including the Indiana bat, tend to avoid areas of high clutter.

Roost potential, recorded only at net sites, is characterized by three categories: high, moderate, and low. The determination of roost potential is based on the individual bat biologist’s experience and discretion at each site. Certain criteria are evaluated to help in the determination. ESI uses a combination of tree species composition, presence/absence and/or abundance of snags in the immediate area, canopy closure (i.e. solar exposure), and degree of clutter.
Each net site was documented with a sketch on the Net Site Habitat Description data sheet provided in Appendix D.

3.2 Radio Telemetry
No Indiana bats were caught or radio-tagged; no maternity roosts were monitored.

3.3 Portal Surveys
The study plan submitted to and approved by the USFWS WVFO identified known areas of mining from the U.S. Geological Survey GIS databases for mineral mining and all other Abandon Mine Lands and Permit Boundaries information from the West Virginia Department of Environmental Protection (accessed through West Virginia Universities GIS Technical Center (http://wvgis.wvu.edu/).

Portal/cave searches were conducted from 6 June through 25 August 2010 by teams of two individuals walking approximately 150 feet apart, 75 feet to either side of centerline. Each individual searched the areas within 75 feet to either side of the path they were walking. Coverage of potential well properties was completed in a similar manner.

No portals were found, assessed, or sampled.

4.0 Results

4.1 Bat Capture
No Indiana bats were caught during these studies. A total of 99 bats representing five species was captured: 21 big brown bats (Eptesicus fuscus), 71 eastern red bats (Lasiurus borealis), 3 tricolor (eastern pipistrelle) bats (Perimyotis subflavus), 3 little brown bats (Myotis lucifugus), and 1 hoary bat (Lasiurus cinereous) (Table 3). Red bats were 71 percent of the total catch and big brown bats were 21 percent.

Table 3. Bat captures for the AEP Mountaineer CCS II Project.

<table>
<thead>
<tr>
<th>Bat Species</th>
<th>Adult</th>
<th>Adult Female</th>
<th>Juvenile</th>
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<tbody>
<tr>
<td></td>
<td>Male</td>
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<td>PL</td>
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<tr>
<td>Big brown bat</td>
<td>4</td>
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<tr>
<td>Eastern red bat</td>
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<td>Hoary bat</td>
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<tr>
<td>Little brown bat</td>
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</table>
4.1.1 Occurrence by Sex and Age

Adult bats were 51.5 percent of captures, including 22 females and 29 males; bats of unknown age were 19.2 percent of the catch. Of the adult individuals, approximately 22 and 29 percent were female and male, respectively. Only 18 percent of adult females ($n = 4$) were post-lactating, while the reproductive condition of most females ($n = 18$) could not be ascertained. The high frequency of individuals of unknown age and unknown reproductive condition precludes meaningful statistical analyses of most parameters for sex and age. Evidence of reproduction (capture of post-lactating females or juvenile bats) was obtained for four of the five species; reproduction was not confirmed for the hoary bat.

4.1.2 Species Diversity

Species richness was five species of bats. The mean number of individuals captured per net site was 3.5 bats; the catch per net night, excluding unproductive partial net nights cancelled because of poor weather, was 0.9 bats. The largest number of individuals caught was at site KM7 ($n = 15$), followed by sites KM5 ($n = 9$), KM14 ($n = 8$), and KM25 ($n = 8$). Three species (species richness) were caught at sites KM5 and KM7.

A MacArthur Diversity Index ($D = 1.8$) indicates that there is the equivalent of 1.8 species evenly represented. Species evenness was 0.356, meaning that 35.6 percent of species captured were equally represented in the sample.

4.2 Habitat Characterization of Net Sites

Mist net sites were placed in association with forested areas of the corridor, based upon their suitability for Indiana bat roosting. A habitat assessment of the immediate area surrounding net sites was conducted to gain a generalized view of the available habitat across the Project area. Table 4 summarizes habitat characteristics at each net site.

Sites were largely characterized as young upland forest (64%). Dominant tree species included white oak (*Quercus alba*) (42.8% of sites) followed by red oak (*Quercus rubra*) (25.0%). Subdominant canopy species consisted of red maple (*Acer rubrum*) and sugar maple (*Acer saccharum*), at 39 and 36 percent of sites, respectively. Nineteen sites (68%) were ranked as having a low roost tree potential with the remainder of sites characterized as moderate. Only three sites had open understory (7 were cluttered and 18 were moderately cluttered), which provides easy access to roosts. Most understory clutter was attributed to saplings, which is again
indicative of relatively young stands and inherent in a relatively low roosting potential.

Overall, 19 of 28 sites ranked as of low quality for roost sites and 9 ranked as of moderate value.
### Table 4. Habitat at the AEP Mountaineer CCS II Project mist net survey sites.

<table>
<thead>
<tr>
<th>Site</th>
<th>Water Source</th>
<th>Distance (m)</th>
<th>Dominant Canopy</th>
<th>Subdominant Canopy</th>
<th>Tree Species¹</th>
<th>Subcanopy Clutter</th>
<th>Roost Tree</th>
<th>Potential Composition</th>
<th>Composition</th>
<th>Habitat Type⁰</th>
<th>Herb. Cover²</th>
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<td>YU</td>
<td>S</td>
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¹ Tree species listed in order of dominance.
² Herb. Cover: S = Shrub, M = Sapling, C = Canopy.
³ Potential Composition: YU = Young Upright, W/FE = Woody Fork, S/R = Sapling Reserve, OF = Old Forest, WF = Whole Forest, CPL = Canopy Pile, DLP = Dead Log Pile.
⁴ Roost Tree: Lrg = Large, Snags = Snags, M = Medium, L = Low.
⁵ Habitat Type: YU = Young Upright, ML = Mature Upright, OF = Old Forest, WF = Whole Forest, CPL = Canopy Pile, DLP = Dead Log Pile.

Appendix F

ESI
<table>
<thead>
<tr>
<th>Site</th>
<th>Water Source</th>
<th>Site Name</th>
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<td>Subdominant Canopy</td>
<td>Subcanopy</td>
<td>CC $^3$</td>
<td>Rating $^3$</td>
<td>Composition</td>
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<td>M</td>
<td>Branches</td>
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<td>Lrg trees &amp; snags</td>
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$^1$Species: boxelder (Acer negundo), red maple (Acer rubrum), sugar maple (Acer saccharum), yellow buckeye (Aesculus flava), tree of heaven (Ailanthus altissima), pawpaw (Asimina triloba), American hophornbeam (Ostrya virginiana), shagbark hickory (Carya ovata), mockernut hickory (Carya tomentosa), eastern redbud (Cercis canadensis), flowering dogwood (Cornus florida), hawthorn (Crataegus spp.), common persimmon (Diospyros virginiana), American beech (Fagus grandifolia), white ash (Fraxinus americana), black walnut (Juglans nigra), eastern red cedar (Juniperus virginiana), northern spice bush (Lindera benzoin), sweetgum (Liquidambar styraciflua), tulip tree (Liriodendron tulipifera), honesuckle (Lonicera spp.), sourwood (Oxydendrum arboreum), white pine (Pinus strobus), scotch pine (Pinus sylvestris), Virginia pine (Pinus virginiana), American sycamore (Platanus occidentalis), bigtooth aspen (Populus grandidentata), black cherry (Prunus serotina), white oak (Quercus alba), scarlet oak (Quercus coccinea), chestnut oak (Quercus montana), red oak (Quercus rubra), post oak (Quercus stellata), black oak (Quercus velutina), rhododendron (Rhododendron spp.), poison ivy (Rhus radicans), staghorn sumac (Rhus typhina), black locust (Robinia pseudacacia), multiflora rose (Rosa multiflora), raspberry (Rubus spp.), sassafras (Sassafras albidum), willow (Salix spp.), American elm (Ulmus americana), slippery elm (Ulmus rubra), elm (Ulmus spp.)

$^2$CC: Canopy Closure: C = Closed, M = Moderate, O = Open

$^3$SC: Subcanopy Clutter: C = Closed, M = Moderate, O = Open

$^4$Roost Potential Rating: H = High, M = Moderate, L = Low

$^5$Habitat Type: MU = Mature Upland Forest; YU = Young Upland Forest; ML = Mature Lowland Forest; YL= Young Lowland Forest; WFE = Woodlot/Forest Edge; C/P = Crop/Pasture; S/R = Stream/River; OF = Old Field

$^6$Herb. Cover: S = Sparse, M = Moderate, D = Dense
5.0 Discussion

5.1 Bat Capture

Netting provided no evidence that the Indiana bat uses habitat within the project area during the summer season. Mist net sampling efforts met minimum requirements of guidelines set by USFWS and the Indiana bat Recovery Team, as set forth in a study plan approved by USFWS WVFO to survey summer habitat for the presence/absence of the federally-endangered Indiana bat.

Ninety-nine bats, representing five species, were captured at 28 net sites; all but 7 of these were big brown and red bats, the two most common species in the eastern United States. Three little brown bats, three tricolor bats, and one hoary bat were also captured. Twelve species of bats are typically considered to occur in West Virginia: little brown bat, northern bat, Indiana bat, small-footed bat (*Myotis leibii*), big brown bat, evening bat (*Nycticeius humeralis*), tricolor (eastern pipistrelle) bat, eastern red bat, hoary bat, silver-haired bat (*Lasionycteris noctivagans*), Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), and Townsend's big-eared bat (*Corynorhinus townsendii*) (Whitaker and Hamilton 1998, Harvey et al. 1999). In addition, the gray bat (*Myotis grisescens*) has once been documented in the state (Stihler and Brack 1992).

In general, species richness, diversity, and rate of capture were low (Table 5). Species diversity was 1.39 species per net site ($SD = 0.74$). Only two bats belonging to the genus *Myotis*, both little brown bats, were caught; no northern, Indiana, or small-footed bats were caught. The catch of tri-colored bats, another species that hibernates in caves during winter, was also low, and limited to two individuals. It is even arguable that the catch of big brown bats, which only sometimes hibernate in caves, was low, with an abundance of less than one-third of the catch of red bats, which it often exceeds.

Based on these survey results, it is improbable that the project will have any effect on the Indiana bat that is not insignificant or discountable.

Table 5. Capture success during the present study compared to similar studies in woodland habitats in West Virginia and in the eastern and midwestern United States within the range of the Indiana bat.

<table>
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<tr>
<th>Source</th>
<th>Bats/Net night</th>
<th>Bats/Net site</th>
<th>Sp. Diversity Index&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Sp. Richness</th>
<th>Source</th>
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<td>3.5</td>
<td>1.8</td>
<td>5</td>
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<tr>
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<td>6.1</td>
<td>4.0</td>
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<td>Brack et al. 2005</td>
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<td>Camp Dawson, WV</td>
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<td>21</td>
<td>2.4</td>
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<td>6</td>
<td>ESI 2000</td>
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</tbody>
</table>

Pesi 296.03 AEP Mountaineer CCS II Mist Net Survey
5.2 Habitat Suitability

The habitat near the 28 net sites was considered representative of the habitat in the project area. In general it was suitable but of low to moderate value in terms of providing suitable roost sites for a maternity colony of the Indiana bat; 19 of 28 sites ranked as low quality for roost sites and 9 were of moderate value.

5.3 Conclusions

This effort provided no evidence that the Indiana bat or other endangered bat uses the project area during summer months. No endangered bats were caught in mist nets and the roosting habitat was generally of low (to moderate) quality. Thus it is unlikely the Indiana bat, or other endangered bat, is present within the study areas or that the project would adversely affect them. Based on our experience, ESI anticipates that the project would have insignificant and discountable effects to bats, and on behalf of our clients (DOE and AEP) respectfully suggest that a "May Affect – Is Not Likely to Adversely Affect" determination is appropriate for Section 7 ESA consultation for this proposed project.
6.0 Literature Cited


ESI. 2004. Summer habitat for the Indiana bat (Myotis sodalis) within the Wabash Lowland Region from Oakland City to Washington, Indiana. Authors: Adam Mann, Jeanette Jaskula, Jason Duffey, and Virgil Brack, Jr. Report submitted to Indiana Department of Transportation by Environmental Solutions & Innovations, Inc. Cincinnati, Ohio. 34 pp+ appendices.


Kiser, J. D. and C. L. Elliott. 1996. Foraging habitat, food habits, and roost tree characteristics of the Indiana Bat (Myotis sodalis) during autumn in Jackson County, Kentucky. Unpublished report to Kentucky Department of Fish and Wildlife Resources. Frankfort, Kentucky. 75 pp.


Reichard, J. D. 2008. Wing-damage index used for characterizing wing condition of bats affected by white-nose syndrome. Center for Ecology and Conservation Biology, Boston University, Boston, Massachusetts. 10 pp.


APPENDIX A
STUDY PLAN DATED 9 JUNE 2010
Pesi 926.01 9 June 2010

Ms. Barbara Douglas
U.S. Fish and Wildlife Service
West Virginia Field Office
Ecological Services
694 Beverly Pike
Elkins, West Virginia 26241

RE: Request for Early Coordination/Informal Consultation for AEP’s Proposed Mountaineer CCS II Project in Mason County, West Virginia.

American Electric Power (AEP) and the U.S. Department of Energy (DOE), as lead Federal agency, propose to develop a carbon dioxide capture and storage (CCS) project at AEP’s Mountaineer Power Plant in Mason County, West Virginia. The project is referred to as the proposed Mountaineer CCS II Project (or “Project” hereafter in this transmittal). AEP is seeking financial assistance from DOE for the proposed Project. As such, AEP will support DOE’s preparation of an environmental impact statement (EIS) and future consultation under Section 7 of the Endangered Species Act (ESA).

The EIS will address all aspects of the Project; however, site selection for characterization wells and potential corridor alignments for the CO₂ pipeline are currently undergoing feasibility considerations by AEP. Preliminary field studies for characterization wells are expected to precede preliminary development of the Draft EIS. For that reason, Environmental Solutions & Innovations, Inc. (ESI) is writing on behalf of AEP and their consultant Potomac-Hudson Engineering, Inc (PHE), to request early coordination/informal consultation with U.S. Fish and Wildlife Service (USFWS) regarding threatened and endangered species or their critical habitat in the vicinity of the Project. Our approach is to investigate all such concerns as early in the Project as possible.

The following provides a brief description of the Project and plans for characterization work in support of Project planning and EIS development.

**Project Description**

The Project will add the infrastructure necessary to capture approximately 1.5 million tonnes of carbon dioxide (CO₂) annually from a 235-megawatt slipstream of flue gas from the existing 1300-megawatt Mountaineer Power Plant located near New Haven, West Virginia. Captured CO₂ will be transported by pipeline (primarily underground) to well injection sites within approximately 12 miles of the plant and injected for permanent storage into geologic formations approximately 1.5 miles underground.

www.EnvironmentalSI.com
AEP will conduct geologic and hydrogeologic characterization activities to support preliminary Project engineering and design. As part of these activities, preliminary characterization work is planned at potential injection well sites and within potential pipeline corridors between the Mountaineer Plant and well sites. Up to three deep characterization wells will be developed to characterize subsurface conditions and assess their suitability for injection and storage of CO₂. Four properties owned by AEP have been identified for potential characterization wells and, in order of preference to support characterization activities; they are the (1) Jordan Tract, (2) AEP Landfill Site, (3) Eastern Sporn Tract, and (4) the Western Sporn Tract. Conceptual pipeline corridors to each of the four locations have been preliminarily identified. The final locations and design of the characterization wells, pipeline corridors, access roads, injection and monitoring wells, and potentially other work areas will be refined after completion of associated environmental studies.

Attachment A contains maps depicting the location of the Mountaineer Plant, characterization well properties, and preliminary conceptual pipeline corridors.

**Indiana Bat Surveys**

ESI has been contracted to conduct Indiana bat surveys within the study area, following guidelines in the 2007 Indiana Bat Draft Recovery Plan. Along with this early coordination letter, ESI is submitting a Project Study Plan for the Indiana bat to your office and to the West Virginia Division of Natural Resources (WVDNR) for review and approval. Based on the acceptability of the Study Plan, fieldwork will be coordinated with your office and with WVDNR.

**Evaluations for Other Species**

ESI is also requesting information from USFWS about ecologically significant habitats and/or species of special concern present within or near the Project. We are also coordinating with WVDNR to see whether they have concerns for any protected or unique species or habitats that could be adversely affect. If so, we are seeking to identify appropriate characterization and evaluation needs/studies as a part of our efforts to avoid and minimize adverse impacts and to support our characterization and evaluation of these species and potential Project impacts in the EIS process and applicable documentation.

**Ongoing Consultation**

On-going coordination and consultation with the USFWS and WVDNR throughout the Project is expected. Updates to your agency will be provided as information becomes available. If you desire, we are available to participate in face-to-face or teleconference meetings to facilitate your review or understanding of the Project.
We would appreciate your participation and request a response as soon as practical within the next 30 days to help us more quickly identify and focus on potential impacts to protected species.

If you need additional information please do not hesitate to contact me at (513) 451-1777, VBrack@EnvironmentalSl.com.

Sincerely,

Virgil Brack, Jr., Ph.D., MBA, Principal Scientist
Certified Wildlife Biologist, TWS
Certified Senior Ecologist, ESA

cc:  M. Lusk, DOE/NETL
     M. McMillian, DOE/NETL
     B. Whipple, PHE
     F. Blake, AEP
     J. Magalski, AEP
     B. Sherrick, AEP
     V. Brack, ESI

enclosures
STUDY PLAN:
ENDANGERED BAT STUDIES FOR AMERICAN ELECTRIC POWER’S PROPOSED MOUNTAINEER CCS II PROJECT: CO₂ PIPELINE AND INJECTION WELL SITES, MASON COUNTY, WEST VIRGINIA

9 June 2010

Submitted to:
Ms. Barbara Douglas, Endangered Species Biologist
U.S. Fish and Wildlife Service
West Virginia Field Office
Elkins, West Virginia 26241

Prepared by:
Environmental Solutions & Innovations, Inc.

781 Neeb Road
Cincinnati, Ohio 45233
Phone: (513) 451-1777
Fax: (513) 451-3321
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Appendices
Appendix A: Project Maps
Appendix B: Sample Data Sheets

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1.0 Introduction

American Electric Power (AEP) and the U.S. Department of Energy (DOE), propose to develop a carbon dioxide capture and storage (CCS) project at the AEP Mountaineer Power Plant located in Mason County, West Virginia. It is referred to as the proposed Mountaineer CCS II Project (or simply “Project” hereafter within this document).

Environmental Solutions & Innovations, Inc (ESI) was hired by AEP and their prime consultant Potomac-Hudson Engineering, Inc. (PHE) to survey for the federally endangered Indiana Bat (*Myotis sodalis*) along feasible alternative CO₂ pipeline corridors and injection wells (initially characterization wells).

American Electric Power
1 Riverside Plaza
Columbus, OH 43215

Potomac-Hudson Engineering, Inc.
7830 Old Georgetown Road, Suite 220
Bethesda, MD 20814

Studies will be carried out under our U.S. Fish and Wildlife (USFWS) Federal Fish and Wildlife Permit (TE02373A-0). We currently hold West Virginia Scientific Collections Permits, issued to individual collectors (currently 2010.171 through 2010.18), enabling us to work with endangered bats.

2.0 Project Description

The Project will capture approximately 1.5 million tons of carbon dioxide (CO₂) annually from a 235-megawatt slipstream of flue gas from the existing 1300-megawatt Mountaineer Power Plant located near New Haven, West Virginia. Captured CO₂ will be transported by pipeline to injection sites located within approximately 12 miles of the plant. Captured CO₂ will be injected into and permanently stored in geologic formations approximately 1.5 miles underground.

AEP will conduct geologic and hydrogeologic characterization at alternative potential injection well sites and have identified alternative potential pipeline corridors between the Mountaineer plant and the well sites. Four properties owned by AEP have been identified for potential characterization wells, used to characterize subsurface conditions and assess the suitability for injection and storage of CO₂. The approximate acreages at these four sites are:
- Jordan Tract: 195 ac
- AEP Landfill property (3 parcels): 28 ac
- Eastern Sporn Tract: 400 ac
- Western Sporn Tract: 70 ac

Conceptual pipeline corridors to each of these four locations have been also identified. Each corridor may include areas of overlap with other corridors, so the sum for all corridors is greater than the total collective corridor length of 30.4 miles.

Appendix A Map 1 contains maps depicting the location of the Mountaineer Plant, characterization well properties, and preliminary conceptual corridors.

Major portions of each potential corridor parallel and are adjacent to existing corridor rights-of-way (ROW), including utilities and roads. In some cases, the pipeline may be collocated within the existing ROW, but at this time that cannot be ascertained with certainty, so they are treated as though they are not colocated. In addition, access roads, lay-down areas, and other additional work spaces may be required; however, at this time the only such identified area is to the south of the Jordan Tract well site.

### 3.0 Summer Mist Net Surveys

#### 3.1 Protocol
ESI will follow guidelines provided by the USFWS in the 2007 Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision (Table 1).

Bats are live-caught in mist nets and released unharmed near the point of capture. Captured bats are identified to species, sex, age class, and reproductive condition. Weight and right forearm length of each individual are also recorded (data sheets are provided in Appendix B). Age is determined by examining the ephiphyseal-diaphyseal fusion of long bones in the wing. Reproductive condition of female bats is recorded as pregnant (based on gentle abdominal palpation), lactating, post lactating, or non-reproductive. Time and location/net site of captured bats is recorded. Processing is typically completed within 30 minutes of the time the bat is removed from the net.
Table 1. USFWS Mist Netting Guidelines

**NETTING GUIDELINES**

1. Netting Season: 15 May to 15 August, when Indiana bats occupy summer habitat.

2. Equipment (Mist Nets): constructed of the finest, lowest visibility mesh commercially available – monofilament or black nylon – with the mesh size approximately 1½ inch (1¼ –1¾) (38 mm).

3. Net Placement: mist nets extend approximately from water or ground level to tree canopy and are bounded by foliage on the sides. Net width and height are adjusted for the fullest coverage of the flight corridor at each site. A “typical” net set consists of three (or more) nets “stacked” on top of one another; width may vary up to 60 feet (20 m).

4. Net Site Spacing:
   - Streams – one net site per 0.6 mile (1 km)
   - Land Tracts – two net sites per 246 acres (1 square km)

5. Minimum Level of Effort Per Net Site:
   - Two net locations (sets) per net site, with locations (sets) at least 100 feet (30 m) apart
   - Two (calendar) nights of netting
   - At least four net–nights (1 net–night = 1 net set deployed for 1 night); typically, two net sets are deployed at one site for two nights, resulting in four net-nights
   - Sample Period: begin at dusk and net for 5 hours (approximately 0200h)
   - Nets are monitored at approximately 10-minute intervals
   - No disturbance near the nets between checks

6. Weather Conditions: net only if the following weather conditions are met:
   - No precipitation
   - Temperature \( \geq 10^\circ C \) (50°F)
   - No strong winds


3.2 White Nose Syndrome

White-nose syndrome (WNS) is an emerging disease that is killing millions of bats in the eastern U.S. The disease, which was first found in New York is spreading and is
now in West Virginia. Bat handling will follow current WNS protocols set by the USFWS. Captured bats will be examined for damage associated with WNS to the wing and uropatagium (tail) membranes, including use of white light and ultraviolet and wing damage will be categorized using the “Wing-Damage Index Used for Characterizing Wing Condition of Bats Affected by White-nose Syndrome” established by Jon Reichard in 2008. We keep current on changes in agency responses to WNS needs.

3.3 Level of Effort

3.3.1 Well Areas
Netting is completed at a rate of 2 net sites per 246 ac (1 km²). For this project, this equated to 6 net sites, with the following level of effort at each of the well sites:

- Jordan Tract: 2 sites
- AEP Landfill property: no sites as the properties are contained within the corridor coverage
- Eastern Sporn Tract: 4 net sites
- Western Sporn Tract: 2 net sites

3.3.2 Pipeline Corridors
Netting is completed at 1-kilometer intervals along portions of the corridor where appropriate habitat is proposed to be cleared. Netting segments are 1 kilometer long by 1 kilometer wide, creating a netting block of 1 km². Net sites may be situated anywhere within each 1 km² block; thus, net sites will not be “forced” into even 1-kilometer spacing, although one net site will be completed for each linear kilometer of suitable habitat.

The well sites and pipeline corridors were overlain on aerial photographs in GIS. The pipeline corridors were evaluated to determine where potential habitat (forested or wooded areas) would be removed to install the proposed pipeline. Areas within the construction corridor possessing no roosting habitat (i.e., agricultural, commercial, and occasionally residential) were excluded. Appendix A Map 2 shows the lengths of each segment of all potential corridors with 1-kilometer blocks superimposed upon them where suitable (woodland) habitat is present, and within which a net site will be placed. This produced a total of 26 net sites.

When mist netting is completed, each segment of the corridor is evaluated in the field to verify the accuracy of the habitat determination made from aerial photographs. The final report will include maps identifying all segments, both netted and not. Segments that are not netted (because no wooded habitat is removed) will be identified as such. Likewise the basis for this determination is documented with a
ROW Habitat Exclusion data sheet and a representative photograph. Copies of ESI's data sheets are provided in Appendix B.

3.3.3 Overlap Between Well and Pipeline Corridors
Corridors are attached to well areas. Portions of the corridors may be covered by netting completed within the well areas. Specifically, netting within a well area will include portions of the corridor that are within 1 kilometer of the border of the well area opposite the attachment of the pipeline corridor. At the AEP Landfill property well site, no additional netting is required because it is contained within the area covered by netting of the corridor.

3.3.4 Access Roads and Other Additional Areas
As with the corridor, netting is completed for linear areas other than the corridor (e.g. access roads) where clearing will occur, except when they fall within 0.5 kilometer of the corridor and/or net site, they are covered by ROW netting. At this time the only such identified area is to the south of the Jordan Tract well site, where one additional net site is required (Appendix A) Map 2.

If additional clearing is required outside the established netting “blocks,” additional netting will be conducted accordingly.

3.4 Habitat Evaluation
When netting is completed, a habitat description will be completed for each net location. The emphasis of this description is habitat form: size and relative abundance of large trees and/or snags [$\geq$ 2.5 inches Diameter Breast Height (DBH)] (Gumbert et al. 2002)] that may potentially serve as roost trees, canopy closure, understory clutter/openness, water availability, and flight corridors. Habitat form is emphasized because the Indiana bat roosts in a great many species of trees. Tree species composition is included in the assessment. Species composition is important because it provides insight to edaphic conditions on site. For example, an oak-hickory stand references a different set of conditions than does a beech-maple stand. ESI’s habitat characterization does more than emphasize species of large trees near the net. It identifies components of the canopy and subcanopy layers. ESI’s habitat characterization also identifies dominant and subdominant elements of the canopy. The amount of understory, or clutter, is also recorded as many species of bats, including the Indiana bat, tend to avoid areas of high clutter.

The following items are used to ascertain the suitability of net sites and applicability of net placement:

- Netting is not completed in areas that have been cleared (e.g. row crops, hay fields/pastures, residences, etc.). In contrast, wooded streams in an otherwise cleared area typically provide suitable habitat and will be netted.
Netting is not completed in areas where all woody stems are ≤6 inches dbh.

A decision not to net discreet, specific areas is made if all habitat is unsuitable (e.g., even-age, live, smooth barked, young, small - <10 inches dbh – stands of maple or tulip poplar) and the areas are not within a 1-kilometer netting interval. In contrast, recently logged areas with a few remaining large trees, or young stands with a few large, old, often dead-or-dying "wolf trees" typically provide suitable habitat and will be netted.

Excluded areas are documented on our standard ROW Habitat Exclusion data sheet and are provided, with a photograph, in the final report along, with mapping as appropriate.

3.5 Net Placement

Mist nets are set to maximize coverage of flight paths used by Indiana bats along suitable travel corridors, foraging areas, and/or drinking areas. Riparian corridors are often used for travel or foraging by Indiana bats. However, upland corridors (e.g., trails or logging roads) also provide suitable sites for the Indiana bat. In upland areas, nets placed within proximity to road ruts holding water have produced Indiana bats in many portions of the range. Site selection is based upon the extent of canopy cover, presence of an open flyway, and forest conditions near the site. The actual location and orientation of each net is determined in the field.

3.6 Emergence Counts

Where the ROW crosses very small patches of trees (e.g., <5 trees >5" dbh) that ESI biologists determine are not suitable for netting, but do merit closer inspection (i.e., contain potentially suitable roost trees), ESI will visually monitor potential roost trees for a minimum of 2 nights at dusk to determine the presence/absence of bats roosting in trees possessing the following characteristics:

- Exfoliating, peeling or loose bark
- Splits in trunks or branches
- Cavities

Emergence counts/surveys are not completed during inclement weather, such as precipitation, strong wind, and/or temperatures below 10° Celsius (50°F).
4.0 Portal Surveys

4.1 Karst and Coal
Underground voids may be used by bats for winter hibernation. Voids may be natural or man made. In this portion of the world, natural caves occur in limestone bedrock or areas of karst topography. There are no natural caves known from within the Project area. In this portion of the world, the mining activity most likely to produce underground voids is coal extraction. Mining has occurred within the region containing the project.

4.2 Search for Portals
Coal deposits in West Virginia have been mined in many areas, with a variety of technologies. Portals, signaling mine voids, are the signature of sub-surface mining, and such voids may be used by bats for winter hibernation.

GIS databases for mineral mining were obtained from the U.S. Geological Survey (2001) and all other Abandon Mine Lands and Permit Boundaries information was from the West Virginia Department of Environmental Protection. These files can be accessed through West Virginia Universities GIS Technical Center (http://wvgis.wvu.edu/) and were used to identify known areas of mining (Appendix A Map 3).

Portal/cave searches will be conducted by teams of two individuals walking approximately 150 feet apart, 75 feet to either side of centerline. Each individual searches the areas within 75 feet to either side of the path they are walking. Coverage of well areas will be completed in a similar manner.

4.3 Initial Portal Assessment
If portals are found, they are assessed for their potential to serve as bat hibernacula, based on a variety of characteristics as identified in the USFWS in the 2007 Indiana Bat (Myotis sodalis) Draft Recovery Plan: First Revision. (Additional detail is provided in Brack (2005) “Field techniques for biological assessment: assessment of potential hibernacula and swarming/staging habitat” in Indiana Bat and Coal Mining). These characteristics include:

- Size of portal entrance (and the potential for predation)
- Presence/absence of guano
- Depth of the portal – i.e., did it extend beyond the depth to which a mine light shown, or did it appear to continue around a corner
• Air flow
• Other indications (such as spider webs or debris) that, by presence or state (disturbed vs. undisturbed), would provide evidence of use/no use by bats

Portals are documented with a GPS location, mine portal description data sheet (Appendix B), and photograph.

4.4 Portal Survey Protocol
Portals determined to be potentially suitable for bat use based on the initial Portal Assessment will be trapped. Trapping is completed in accordance with the 2007 Indiana Bat (Myotis sodalis) Draft Recovery Plan protocol and accepted trapping procedures (Table 2).

Table 2. Guidelines for mine/cave portal bat trapping surveys.

<table>
<thead>
<tr>
<th>PORTAL TRAPPING GUIDELINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Season: 10 April to 10 May or 15 September to 31 October</td>
</tr>
<tr>
<td>2. Equipment</td>
</tr>
<tr>
<td>♦ Harp Trap – Traps are checked at least once every 20 minutes.</td>
</tr>
<tr>
<td>♦ Mist Nets – 50 denier, 38mm mesh. Nets checked at least once every 20 minutes</td>
</tr>
<tr>
<td>♦ Bat Detector – AnaBat acoustical data collected for duration of trapping on both evenings</td>
</tr>
<tr>
<td>3. Net Placement: mist nets extend approximately from water or ground level to tree canopy and are bounded by foliage on the sides. Net width and height are adjusted for the fullest coverage of the flight corridor at each site. A “typical” net set consists of three (or more) nets “stacked” on top of one another; width may vary up to 60 feet (20 m).</td>
</tr>
<tr>
<td>4. Sample Period: ½ hour before sunset and continue for at least 5 hours</td>
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<tr>
<td>5. Minimum Level of Effort Per Net Site:</td>
</tr>
<tr>
<td>♦ Two (calendar) nights of netting</td>
</tr>
<tr>
<td>♦ If no captures occur and no bat activity is noted with</td>
</tr>
<tr>
<td>♦ a bat detector on the first evening during acceptable weather conditions, sampling will not be conducted a second night</td>
</tr>
<tr>
<td>6. Weather Conditions: net only if the following weather conditions are met:</td>
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<tr>
<td>♦ At least 3 hours free of heavy rain and thunderstorms</td>
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<tr>
<td>♦ Temperature $\geq 10^\circ$C (50°F) for first 2 hours of sampling</td>
</tr>
<tr>
<td>♦ Temperature above 1.6ºC (35ºF) until 0:00hr</td>
</tr>
</tbody>
</table>

Source: Pennsylvania Game Commission, 2004
5.0 Radio Telemetry

5.1 Radio Tagging of Indiana Bats
After collecting morphometric data, all adult Indiana bats are fitted with radio transmitters. If juvenile Indiana bats are captured at a site before adults have been captured, they will be fitted with transmitters; if reproductive females have been caught and fitted with transmitters then juvenile bats from that site will be not be fitted with transmitters. Transmitters affixed to pregnant or juvenile bats will not constitute more than 5 percent of the bat’s weight (Aldridge et al. 1988). Transmitters are obtained from Wildlife Materials, Inc., Titeley Electronics, PTY LTD, Blackburn Transmitters, or a similarly reputable vendor.

Bat transmitters weigh 0.20 to 0.68 gram; ESI typically favors smaller transmitters to minimize the impact to the bat over the additional tracking window associated with larger devices. These transmitters tend to last 7 to 14 days. Transmitters are activated and tested before attachment. A small interscapular area is trimmed of fur and the transmitter is attached to this area with non-toxic surgical adhesive. The adhesive degrades over time (typically 1 to 4 weeks) and the transmitter falls off the bat. Biologists record the transmitter weight, weight of the bat before and after transmitter attachment, and holding time. Bats are released unharmed near the point of capture. Standardized data forms (Appendix B) are used for transmitter attachment.

5.2 Diurnal Roost Telemetry

5.2.1 Number and Locations of Bats Tagged
No more than 3 bats will be tagged at net sites that are within a 3-kilometer proximity of one another. This should keep us from tagging a bunch of bats from the same colony, where captures are “clustered,” but should allow us to locate multiple colonies if they are present. Thus, two or more “clusters” of captures could occur along the alternative ROWs, and for example if there were three “clusters” of captures with three bats tagged at each cluster, nine bats would be tagged.

5.2.2 Length of Time
All Indiana bats tagged with transmitters will be tracked for a minimum of 6 days or until the transmitter is shed by the bat. Because receivers are not water resistant, telemetry will not occur during rain; however, barring rain telemetry typically will occur over 6 consecutive days. A ©Wildlife Materials TRX-2000S PLL Synthesized Tracking Receiver, ©Advanced Telemetry Systems, Inc. Model R2000 Scanning Receiver, or ©Titeley Australis 26k receiver, or similar standard equipment, in
conjunction with three or four element folding yagi directional antennas, loop antennas, and whip unidirectional antennas (manufactured by Wildlife Materials, Inc. or a similarly reputable firm) are used to track tagged bats. Signals are detected and followed to roost trees.

Beginning the day after bat capture and transmitter attachment, telemetry will be used to locate each bat's diurnal roost. Roost trees are identified to species and dbh is measured. The approximate height that each bat is roosting and general condition of the roost tree (dead, live, dying, % bark cover, etc.) and percentage of exfoliating bark are noted. A description of habitat near the roost (tree, hibernacula, man-made structure, etc.) is recorded. Roosts and associated habitat are characterized on standardized data forms (Appendix B).

Roosts are flagged or marked in another acceptable manner for ease of future identification. GPS coordinates are recorded for each roost. When feasible, distances among roost trees and other notable landscape features are determined.

5.2.3 Roost Emergence Counts
The value of finding roost trees is to understand the potential impact of the Project on the maternity colony. Unfortunately, many roost trees are often used by the same colony. Fortunately, most roosts contain only a very few bats and usually only one or two, or three roost trees contain a lot of bats. Thus, knowing how many bats are using the roost tree(s) located is an important part of understanding the importance of those trees.

Each tagged bat may roost in one or several trees. Emergence counts are conducted for a minimum of 6 days for each bat at each identified roost.

5.3 Nocturnal Foraging Telemetry
The impact to foraging habitat associated with habitat removal for a linear corridor tends to be small as a proportion of total availability. Likewise, studies have shown that Indiana bats may benefit from pipeline rights-of-way (Brown and Brack 2003, Brack 2006) and/or open green spaces (Romme et al. 1995, Farmer et al. 2002, Gardner and Cook 2002). However, there is a point at which the anthropogenic nature of a landscape decreases the productivity of the land for foraging bats. Within the project area, abundant suitable foraging habitat exists and it is not anticipated that development of any of the project alternatives would substantially change that equation. As such, ESI proposes not to conduct nighttime foraging telemetry studies if Indiana bats are captured and radio-tagged.
6.0 Inaccessible Properties

With a proposed Project of this size, it is not unexpected that we may not gain access to all parcels required for netting. Therefore, the following is proposed for properties for which landowner access cannot be obtained:

- If access cannot be obtained for a high quality flyway within a 1-kilometer$^2$ block, the next best property, for which access can be obtained, within that 1-kilometer$^2$ block will be netted.

- If access cannot be obtained for any suitable flyways within a 1-kilometer$^2$ block, the best and most similar habitat, in one of the adjacent blocks will be netted instead. (This may result in two net sites being placed in some 1-kilometer$^2$ blocks.)

- If access cannot be obtained for any habitat within multiple, adjacent 1-kilometer$^2$ blocks, then the forest habitat quality will be evaluated based upon review from publicly accessible roads and GIS data including forest cover type, percentage of canopy cover, and aspect.
  
  o If the habitat is low-moderate quality, we will place 2 net sites within the closest, 1-kilometer$^2$ blocks to the inaccessible properties.
  
  o If the habitat is moderate-high quality, we will place 4 net sites within the closest, 1-kilometer$^2$ blocks to the inaccessible properties.

If an Indiana bat is captured, we will likely need to work with new, additional land owners, beyond those identified for mist netting, in order to gain access to roost(s) and/or other active areas. Studies can only be conducted where landowners grant permission to do so. If we locate a roost on a parcel where land access can not be gained, triangulation will be used to approximate the bat’s diurnal roost location(s).

7.0 Avoidance and Minimization

To facilitate planning and smooth Project execution, we endeavor to gain agreement from USFWS on what minimization and avoidance measures will be employed under various capture scenarios, if in fact bats are caught:
7.1 Capture of a Single, Adult Male

If a single adult male Indiana bat is captured and:

- a roost tree cannot be located (after 6 days of telemetry efforts) then it will be assumed that the individual is transient and thus a seasonal cutting restriction (1 November to March 31) is not required.

- one or more roosts are located, but emergence counts show that bat to be the only bat roosting in the tree(s), two additional nights of netting and AnaBat data will be conducted nearby. If no additional sodalis are captured or detected by the AnaBat, then it will be assumed that the individual is transient and thus a seasonal cutting restriction (1 November to March 31) will be required for the identified roost trees, but not the surrounding area.

- one or more roosts are located and emergence counts reveal multiple bats using the tree(s), then at least two AnaBat acoustical detectors will be placed near the roost tree(s) for at least 2 nights used to identify the species using the tree(s). The two filters provided by the KDFWR / USFWS Frankfort field office and/or direct call identification by a qualified biologist will be used to determine if Indiana bat calls were recorded. If two or more separate call files contain calls of the Indiana bat, it is likely that multiple Indiana bats are using the tree(s). As such, ESI will either conduct additional mist netting in the area to attempt to catch and transmitter additional Indiana bats to understand how the bats are using the area OR assume a maternity colony is present and employ a seasonal cutting restriction within 2.5 miles of identified roost tree(s).

7.2 Capture of Adult Female or Juvenile

Capture of an adult female or juvenile Indiana bat is indicative that a maternity colony is present in the area. In the past, emergence counts of greater than 20 bats were often considered indicative of a “primary roost” while trees with less than 20 bats were considered “secondary roosts”. However, as we have come to understand that most colonies exhibit a fission-fusion society structure, it can be difficult to understand which trees are primary trees, how many trees actually constitute a maternity colony, and if there are multiple colonies present in an area. (In 2007, ESI completed studies in New York where there were up to four colonies present and emergence counts on several trees ranged from zero to over 80 bats in just a few days.) As such, if an adult female or juvenile Indiana bat is captured, ESI will endeavor to collect adequate data to understand the location and number of roosts, and how many bats are using which trees in order to facilitate a determination of if one or more maternity colonies are present as well the overall size of the area used by the bats. Efforts to this end include:
• Completion of dusk emergence counts at all identified roosts for a minimum of 6 days. (Night vision scopes and/or AnaBat recording devices may be used as deemed appropriate by field staff.)

• In the event that only one reproductive bat is captured within any 2.5-mile length of corridor and tracked to any roost tree, it is assumed that a maternity colony is present in the area. If no primary roost (i.e., tree with over 20 bats) is located during the telemetry efforts up to four additional calendar nights of netting will be conducted near the bat’s known roost(s) to capture and transmitter additional reproductive individuals from the same colony, to facilitate identification of at least one primary roost.

• If a single reproductive bat is caught and a roost tree cannot be located, we will observe a seasonal cutting restriction within 2.5 miles of the capture site.

• We will observe a seasonal cutting restriction within 2.5 miles of any identified roost tree(s) used by a reproductive individual.

8.0 Timeline and Reporting

Mist net surveys will be conducted between 15 May and 15 August 2010 and a complete survey report, covering all field studies completed will be submitted to USFWS. Our report includes maps showing all project areas including alternative well areas, ROW alignments, construction areas, access roads, net site locations, and areas excluded from netting based on habitat. Copies of all field data sheets and photographs of net sites, excluded areas, etc. are included in the report. The final report will detail survey methods, weather results, net site habitat analysis, and basic statistical analysis of results, including species diversity and richness.

Searches to locate portals will be completed by 15 July 2010 and if any portals are located they will be assessed for their potential to serve as hibernacula. A report of these findings will be submitted to USFWS by early August 2010 with recommendations for trapping of potentially suitable portals. With concurrence from USFWS, potentially suitable portals will be trapped between 25 August and the end of suitable autumn weather, typically about 20 October. The portal/cave search report will be amended to include results of the trapping surveys and resubmitted to USFWS. Our report includes maps showing portal search areas, portals assessed for potential suitability, and portals trapped. The report includes copies of all field...
data sheets and photographs of portals. The final report will detail survey methods, weather results, and basic statistical analysis of results.

USFWS will be notified within 24 hours (via phone and/or email) upon capture of any endangered species.

9.0 Personnel

A list of ESI staff that may be involved in the mist netting field work for the Project follows. Other staff not listed here may also participate – resumes can be provided in advance of surveys if requested by USFWS; all individuals responsible for bat identification are listed on ESI’s federal and state permits.

1. Dr. Virgil Brack, Jr. – Principal Scientist & Project Manager
2. Mr. Jason Duffey
3. Mr. Adam Mann
4. Ms. Erin (Pfeffer) Basiger
5. Mr. Jack Basiger
6. Dr. Dale Sparks
7. Mr. David Jeffcott
8. Mr. John Timpone
9. Ms. Michelle Gilley

Resumes for all individuals listed above can be provided upon request.

10.0 Literature Cited


Figure 1. Proposed Mountaineer CCS II Project: CO2 Pipeline and Injection Well Sites, Mason County, West Virginia.

- CO2 Pipeline Corridor
- Access Road
- Power Plant
- County Boundary

Source: http://www.mapgovw.gov

Base Map: WV/Orthophotos - SAMBA South, UTM NAD1983.

Appendix F
Map 2. Proposed Mist Net Sites at the Mountaineer CCS II Project: CO2 Pipeline and Injection Well Sites, Mason County, West Virginia.

Proposed CO2 Pipeline Corridor
- Blessing Road (1.3 mi)
- East Sporn 1 (2.9 mi)
- Foglesong (1.0 mi)
- Jordan East (0.1 mi)
- Jordan East/West (0.2 mi)
- Jordan West (2.2 mi)
- Landfill Option 1 (0.1 mi)
- Rt 62 (9.4 mi)
- South 1 (2.2 mi)
- W Sporn S, Landfill PL Opt, South 1 (0.2 mi)
- W Sporn S, Landfill PL Opt, South 1, Rt62 (0.3 mi)
- West Sporn South (3.7 mi)

Proposed Injection Well Site
- Eastern Sporn Tract (400 ac)
- Jordan Tract (195 ac)
- AEP Landfill Property (28 ac)
- Western Sporn Tract (70 ac)

Source: http://www.mapwv.gov

Base Map: WV Orthophotos - SAMBA South, UTM NAD1983.

Appendix F
Map 3. Mining Related Areas near the Mountaineer CCS II Project: CO2 Pipeline and Injection Well Sites, Mason County, West Virginia.

Proposed CO2 Pipeline Corridor
- Blessing Road (1.3 mi)
- East Sporn 1 (2.9 mi)
- Foglesong (1.0 mi)
- Jordan East (0.1 mi)
- Jordan East/West (0.2 mi)
- Jordan West (2.2 mi)
- Landfill Option 1 (0.1 mi)
- Rt62 (9.4 mi)
- South 1 (2.2 mi)
- W Sporn S, Landfill PL Opt, South 1 (0.2 mi)
- W Sporn S, Landfill PL Opt, South 1, Rt62 (0.3 mi)
- West Sporn South (3.7 mi)

Proposed Injection Well Site
- Eastern Sporn Tract (400 ac)
- Jordan Tract (195 ac)
- AEP Landfill Property (28 ac)
- Western Sporn Tract (70 ac)

Legend:
- Permitted Mine
- Abandoned Mine
- Mineral Operation
- Mine Permit Boundary
- Underground Mining Limit
- Abandoned Mine Land
- Access Road
- Power Plant
- County Boundary

Source: http://www.mapwv.gov

Base Map: WV Orthophotos - SAMBA South, UTM NAD1983.

ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC
Project No. 296
APPENDIX B
SAMPLE DATA SHEETS
**NET SITE HABITAT DESCRIPTION**

**Project #**: ______________  **Date**: ______________  **Biologists**: ______________________

**Project Name**: ______________________  **Site Name/#**: ______________________

**State**: ______  **County**: ______________________  **USGS Quad**: ______________________

**Camera #**: _____  **Picture #s**: ______________________  **GPS Unit #**: _____  **Waypoint #**: ___

**Latitude**: ______°_____'_______"N  **Longitude**: ______°_____'_______"W

**Distance to closest water source (meters)**: ____________  **Type of water source**: ____________

**Water source name**: ______________________

**ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS)**:

- **Bank Height**: ______ meters  **Channel Width**: ______ meters  **Stream Width**: ______ meters
- **Substratum**: ___Bedrock ___Boulder ___Cobble ___Gravel ___Sand ___Silt/Clay
- **Still Water Present (Y/N)**: ______  **Average Water Depth**: ____m or cm  **Clarity (H,M,L)**: ____

**VEGETATION**:

- **Dominant Canopy Species (> 40 cm/16" dbh)**: ______________________
- **Subdominant Canopy Species (< 40 cm/16" dbh)**: ______________________

**Estimated dbh range**:  Lg: _____  Sm: _____  **Estimated dbh range**:  Lg: _____  Sm: _____

**Relative abundance of dominant vs. subdominant (ratio)**: ____________

**Estimated canopy closure**:  ___Closed ___Moderate ___Open

**Roost tree potential consists of**:  ___Large Trees ___Snags ___Both ___Neither

**Roost tree potential for the area is**:  ___High ___Moderate ___Low

**Roost potential comments**: ______________________________________________________

**Subcanopy clutter**:  ___Closed ___Moderate ___Open

**Subcanopy comprised largely of**:  ___Lower Branches of Canopy Trees  ___Saplings  ___Shrubs

**Common Subcanopy Species**: ______________________

**Habitat Description**: ______________________

---

**Check all that apply**:  
- Mature Upland Forest  - Recently Logged Forest  - Crop/Pasture Land  - Shrub/scrub Swamp  
- Young Upland Forest  - Pine Plantation  - Stream/River  - Vernal Pool  
- Mature Lowland Forest  - Woodlot/Forest Edge  - Emergent Wetland  - Deepwater Lake/Pond  
- Young Lowland Forest  - Old Field  - Forested Swamp  - Other _______

**Herbaceous Cover**:  ___Sparse  ___Moderate  ___Dense
<table>
<thead>
<tr>
<th>Project #:</th>
<th>State/County:</th>
<th>Site Name/#:</th>
<th>Initials:</th>
</tr>
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**SKETCH: NETS A and B**

![Compass Diagram]

**LEGEND**

Nets: [Diagram of nets]

**COMMENTS**

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
### BAT CAPTURE DATA

**Project #:** __________________________  **Date:** __________________________

**Project Name:** ____________________________________________________________

State: ____________  County: __________________________

**Biologists:** ________________________________________________________________

**Site Name/#:** ____________________________________________________________

**GPS Unit #:** __________________________  **Camera #:** __________________________

#### NET/TRAP/ANABAT

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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**MOON PHASE**

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

#### NET PLACEMENT/SITE DESCRIPTION

____________________________________________________________________________

#### CAPTURE DATA

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
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<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index*</th>
<th>Comments</th>
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**WEATHER DATA**

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<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From ___ to ___</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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</tbody>
</table>

**MOON PHASE**

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat

2. Reproductive Condition: Female = NR/PG/L/PL; Male = T/F

* Refer to table on the back

---

Page 1 of ____
## BAT CAPTURE DATA (continued)

**Project #:** ____________________________  **Date:** ____________________________

**Project Name:** ____________________________  **Site Name/#:** ____________________________

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

**Beaufort Wind Scale**

<table>
<thead>
<tr>
<th>Wind Speed (mph)</th>
<th>Description</th>
<th>Visible Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Calm</td>
<td>Smoke rises vertically</td>
</tr>
<tr>
<td>1-3</td>
<td>Light Air</td>
<td>Direction of wind shown by smoke but not by wind vanes</td>
</tr>
<tr>
<td>4-7</td>
<td>Light Breeze</td>
<td>Wind felt on face; leaves rustle; ordinary wind vane moved by wind</td>
</tr>
<tr>
<td>8-12</td>
<td>Gentle Breeze</td>
<td>Leaves and small tangle in constant motion; wind extends light flag</td>
</tr>
<tr>
<td>13-18</td>
<td>Moderate Breeze</td>
<td>Raises dust and loose paper; small branches are moved</td>
</tr>
<tr>
<td>19-24</td>
<td>Fresh Breeze</td>
<td>Small trees in leaf begin to sway; crested waves on inland water</td>
</tr>
<tr>
<td>25-31</td>
<td>Strong Breeze</td>
<td>Large branches in motion; telephone wires whistle; umbrellas used with difficulty</td>
</tr>
<tr>
<td>32-38</td>
<td>Moderate Gale</td>
<td>Whole trees in motion; inconvenience in walking against wind</td>
</tr>
<tr>
<td>39-46</td>
<td>Fresh Gale</td>
<td>Breaks twigs off trees, generally impedes progress</td>
</tr>
</tbody>
</table>

**2010 Lunar Phases**

<table>
<thead>
<tr>
<th>New Moon</th>
<th>First Quarter</th>
<th>Full Moon</th>
<th>Last Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 13</td>
<td>Mar 23</td>
<td>Mar 29</td>
<td>Mar 7</td>
</tr>
<tr>
<td>Mar 15</td>
<td>Apr 21</td>
<td>Apr 28</td>
<td>Apr 6</td>
</tr>
<tr>
<td>Apr 14</td>
<td>May 20</td>
<td>May 27</td>
<td>May 5</td>
</tr>
<tr>
<td>May 13</td>
<td>Jun 18</td>
<td>Jun 26</td>
<td>Jun 4</td>
</tr>
<tr>
<td>Jun 12</td>
<td>Jul 18</td>
<td>Jul 25</td>
<td>Jul 4</td>
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<tr>
<td>Jul 11</td>
<td>Aug 16</td>
<td>Aug 24</td>
<td>Aug 2</td>
</tr>
<tr>
<td>Aug 9</td>
<td>Sep 15</td>
<td>Sep 23</td>
<td>Sep 1</td>
</tr>
<tr>
<td>Sep 6</td>
<td>Oct 14</td>
<td>Oct 22</td>
<td>Oct 30</td>
</tr>
<tr>
<td>Oct 7</td>
<td>Nov 13</td>
<td>Nov 21</td>
<td>Nov 28</td>
</tr>
</tbody>
</table>

**Wing Index Key**

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No damage. Fewer than 5 small scar spots are present on the membranes.</td>
</tr>
<tr>
<td>1</td>
<td>Light damage. Less than 50% of flight membrane is depigmented (splothing), which is often visible only with translumination.</td>
</tr>
<tr>
<td>2</td>
<td>Moderate damage. Greater than 50% of wing membrane covered with scar tissue (splothing). Scarring is visible without translumination. Membrane exhibits some necrotic tissue and possibly few small holes (&lt;0.5 cm diameter). Forearm skin may be flaking and discolored along the majority of the forearm.</td>
</tr>
<tr>
<td>3</td>
<td>Heavy damage. Deteriorated wing membrane and necrotic tissue. Isolated holes &gt;0.5 cm are present in membranes. Necrotic or receding plagiopatagium and/or chiroptogus are evident.</td>
</tr>
</tbody>
</table>
ROW HABITAT EXCLUSION
(Linear Corridor Study)

Project #: ____________ Date: ____________ Biologists: ________________

Project Name: ___________________________ Picture #: ____________

State: ________ County: ______________________ USGS Quad: ______________

Location of Excluded Section:

Eastern Terminus

Approximate Milepost: _____ and/or Landmark: __________________________
Latitude: _____ ° _____' _____"N   Longitude: _____ ° _____' _____"W

Western Terminus

Approximate Milepost: _____ and/or Landmark: __________________________
Latitude: _____ ° _____' _____"N   Longitude: _____ ° _____' _____"W

Approximate Length: ____________

Reasons for Exclusion:
___________________________________________________________________________________
___________________________________________________________________________________
___________________________________________________________________________________

Habitat Types: (Check all that apply)
__ Industrial / Commercial  __ Recent Clearcut  __ Open Agriculture
__ Residential  __ Saplings only  __ Meadow
__ Open Water / Lake  __ Scrub / Shrub  __ Mowed Grass
__ Large River  __ Trees unsuitable as roosts  __ Other ___________________

Estimated tree dbh range: Lg: _____ Sm: _____ Stream Present: ___ No  ___Yes

Roost Tree Potential: ___ None  ___ Poor  ___ Moderate

Travel Corridor: ___ No  ___ Yes   IF YES, THEN  ___ Riparian  ___ Upland

Revised 27 December 2007
BAT TRANSMITTER DATA

Project #:_____________  Date:___________  Biologists:__________________________

Project Name:_________________________  Site Name/#:__________________________

State:____  County:____________________  Camera #:___________________________

Picture #:______________________________________________________________

Bat Species:__________________________  Capture Time:_______________

<table>
<thead>
<tr>
<th>Age Ad or Jv</th>
<th>Sex M or F</th>
<th>Reproductive Condition F=(NR/PG/L/PL; M=↑↓</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
</tr>
</thead>
</table>

Transmitter weight = _______ grams  Frequency number:________________________

Transmitter + bat total weight = _______ grams  Band/color number:________________

FINAL CHECK:
1) Transmitter attachment (Y/N):________________________
2) Signal receiving (frequency):________________________
3) Band attachment (Y/N):_______________________________
4) Condition of animal:________________________________
5) Description of release:_______________________________

RELEASE TIME:_________  TOTAL HOLD TIME:__________ minutes

RELEASE LOCATION:_____________________________________________________

COMMENTS:
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Appendix F
## FIXED TELEMETRY DATA

<table>
<thead>
<tr>
<th>Station #</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Frequency</th>
<th>Time (0000h)</th>
<th>Azimuth</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>
## ROOST TREE DATA

<table>
<thead>
<tr>
<th>Project #:</th>
<th>Date:</th>
<th>Biologists:</th>
</tr>
</thead>
</table>

### Project Information
- **Project Name:**
- **State:**
- **County:**
- **GPS Unit #:**
- **Waypoint:**
- **Camera #:**
- **Picture #:**
- **Latitude:** °’”N
- **Longitude:** °’”W
- **Bat Species:**
- **Sex(M/F):**
- **Age(Ad/Jv):**
- **Capture Date:**
- **Capture Site:**
- **Frequency:**
- **Roost Name/#:**

### ROOST TREE DATA
- **Roost tree species:**
  - **dbh:** cm
- **Estimated height from ground to roost:** (meters)
- **Exfoliating bark (%):**
- **Distance from capture site:** m or km (circle one)
- **Tree health:**
  - _Live
  - _Dead
  - _Partial
- **Observed roost potential:**
  - _Exfoliating Bark
  - _Cracks/crevasses
  - _Hollow
  - _Unknown
- **Bat vocalizations:**
  - _Yes
  - _No
- **Guano on ground/foliage:**
  - _Yes
  - _No
- **Is guano fresh (if present)?:**
  - _Yes
  - _No
- **Guano volume (if present):**

### DESCRIPTION OF SURROUNDING HABITAT
- **Dominant Canopy Species (> 40 cm/16” dbh):**
  - Subdominant Canopy Species (< 40 cm/16” dbh):
  - **Estimated dbh range (cm):** Lg: Sm: 
  - **Estimated canopy closure at roost:** %
  - **Slope:**
    - _Steep
    - _Moderate
    - _Slight
    - _None
  - **Direction facing:**
  - **Subcanopy Clutter:**
    - _Closed
    - _Moderate
    - _Open
  - **Distance to nearest water source:** m or km (circle one)
  - **Distance to nearest flight corridor:** meters

### Habitat Description:

Check all that apply:
- **Mature Upland Forest**
- **Young Upland Forest**
- **Mature Lowland Forest**
- **Young Lowland Forest**
- **Recently Logged Forest**
- **Pine Plantation**
- **Woodlot/ForestEdge**
- **Old Field**
- **Crop/Pasture Land**
- **Stream/River**
- **Emergent Wetland**
- **Forested Swamp**
- **Shrub/scrub Swamp**
- **Stream/River**
- **Vernal Pool**
- **Deepwater Lake/Pond**
- **Other ____________**

Comments:

Revised May 2006

**Appendix F**
ROOST TREE DATA (continued)

State/County: ______________________ Project Name/#: ______________________ Date: ________
Frequency: ______________________ Roost Name/#: ______________________ Initials: ______

Sketch: Roost Tree Habitat

Sketch: Roost Tree

Comments: ______________________________________________
_________________________________________________________

Stages of Decay:

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
<th>Stage 6</th>
<th>Stage 7</th>
<th>Stage 8</th>
<th>Stage 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live</td>
<td>Declining</td>
<td>Dead</td>
<td>Loose bark</td>
<td>Clean</td>
<td>Broken</td>
<td>Decomposed</td>
<td>Down material</td>
<td>Stump</td>
</tr>
</tbody>
</table>

Figure 38

Appendix F
ROOST TREE EMERGENCE DATA

Project #:______________  Date:______________  Biologists:________________________

Project Name:______________  State:_____  County:__________________________

GPS Unit #:__________________  Waypoint:______________________________

Latitude: _____°_____’_______”N  Longitude: _____°_____’_______”W

Roost Name/#:____________________________________________________

Radio-tagged bat present in tree: Yes____  No____

Complete the following information only if a radio-tagged bat is present in the roost

Bat species:______________  Sex(M/F):______  Age(Ad/Jv):______  Repro.:_______

Capture date:______________  Capture site:______________  Frequency:__________

NOTE: Tallies of bat exits should be made at 2-minute intervals. Use the back lighting of the setting sun to help distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

Arrival time:______  Departure time:______

<table>
<thead>
<tr>
<th>Emergence Time</th>
<th>Number of Bats</th>
<th>Emergence Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
ROOST TREE EMERGENCE DATA (continued)

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmitted bat(s) emerge? What direction did the transmitted bat fly?

<table>
<thead>
<tr>
<th>Emergence Time</th>
<th>Number of Bats</th>
<th>Emergence Aspect</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>
# MINE PORTAL DESCRIPTION

<table>
<thead>
<tr>
<th>Portal/opening</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter (height x width)</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Is opening vertical or horizontal (V or H)</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
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<tr>
<td>Is opening sloped (estimated degree of slope)</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Estimated length of portal</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
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<tr>
<td>Estimated internal dimensions (height x width)</td>
<td>[ ]</td>
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<tr>
<td>Entrance appears stable?</td>
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<tr>
<td>Evidence of collapse?</td>
<td>[ ]</td>
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<tr>
<td>Ceiling condition stable?</td>
<td>[ ]</td>
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<tr>
<td>Amount of airflow (slight, moderate, heavy)</td>
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<tr>
<td>Direction of airflow (in or out)</td>
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<tr>
<td>Outside temperature</td>
<td>[ ]</td>
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<tr>
<td>Temperature at portal</td>
<td>[ ]</td>
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<tr>
<td>Evidence of past flooding?</td>
<td>[ ]</td>
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<td>[ ]</td>
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<tr>
<td>% Canopy closure at entrance</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Estimated distance to nearest water source</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Evidence of foraging (insect remains)?</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Presence of guano?</td>
<td>[ ]</td>
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</tr>
<tr>
<td>Portal obstructed by vegetation?</td>
<td>[ ]</td>
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<td>[ ]</td>
</tr>
<tr>
<td>Portal obstructed by spider webs?</td>
<td>[ ]</td>
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<td>[ ]</td>
</tr>
<tr>
<td>Would use make bat susceptible to predation?</td>
<td>[ ]</td>
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</tbody>
</table>

Is portal recommended for bat survey? No___ Yes___ Why__________________________

____________________________________________________________________________

Comments: ___________________________________________________________________

Please include site sketch on back when feasible.
APPENDIX B
USFWS WVFO REQUEST LETTER DATED 30 AUGUST 2010
Ms. Barbara Douglas  
U.S. Fish and Wildlife Service  
West Virginia Field Office  
Ecological Services  
694 Beverly Pike  
Elkins, West Virginia 26241

**RE: AEP’s Mountaineer CCS II Project, Mason County, West Virginia – Request for USFWS Approval to Install a Characterization Well at Borrow Area No. 1**

Dear Ms. Douglas:

As you will recall, American Electric Power (AEP) and the U.S. Department of Energy (DOE), as lead Federal agency, propose to develop a carbon dioxide capture and storage (CCS) project at AEP’s Mountaineer Power Plant in Mason County, West Virginia. In correspondence dated June 9, 2010, Environmental Solutions & Innovations, Inc. (ESI), on behalf of AEP, DOE, and Potomac-Hudson Engineering, Inc. (PHE), AEP’s prime consultant, requested early coordination/informal consultation with U.S. Fish and Wildlife Service (USFWS) regarding threatened and endangered species or their critical habitat in the vicinity of the Project. That correspondence included “Study Plan: Endangered Bat Studies for American Electric Power’s Proposed Mountaineer CCS II Project: CO₂ Pipeline and Injection Well Sites, Mason County, West Virginia.” We subsequently completed the field studies and no endangered bats were found. We anticipate completion of a detailed report by October 2010 that will address all fieldwork completed in support of the Project. However, in advance of your review of that report, AEP is seeking your approval to install a geologic characterization well and an associated access road to a single location on one of AEP’s existing properties.

Initially, AEP had identified four potential sites, all on AEP-owned properties, for the development of a geologic characterization well. AEP later determined that the preferred location for the well would be at the AEP Mountaineer Plant. An area identified as Borrow Area No. 1 was selected because the entire site is previously disturbed and biological values are essentially lacking, including habitat for the endangered Indiana bat and other listed species.

www.EnvironmentalSI.com
The purpose of this letter is to seek your approval to install a characterization well and an associated access road to Borrow Area 1 ("BA-1") located at the existing AEP Mountaineer Plant. Included below is a description of BA-1, and a summary of the field survey for endangered bats undertaken on and adjacent to BA-1. An additional Field Survey Report will be submitted in the near future for the entire project.

**Description of Current Project Needs**

Map 1 provides an overview of the project area, which also identifies the field mist net sampling sites. In the upper portion of the map, areas identified as mist net sampling areas KM9 and KM10 include three small areas that are colored deep pink. The western most of these three areas is labeled “Borrow Area 1.” This small site is the area intended for placement of the characterization well, located within the property boundary of AEP’s Little Broad Run Landfill. The landfill commenced operation with the inception of operations of the Mountaineer Plant in 1980. A maximum of 5 acres will be used for the geologic characterization well activities at the Borrow Area 1 site.

Borrow Area 1 is one of three borrow areas initially considered as a potential location for a characterization well. The other two borrow areas are no longer under consideration as potential characterization well sites. All three borrow areas and the proposed access road to Borrow Area 1 are shown on Map 2. Borrow Area 1 (as well as the other two areas) falls within the existing clay borrow pits that have been actively mined for clay to use in lining disposal cells within the landfill. Generally, this area consists of upland ridge finger landforms and steep slopes at elevations ranging from 700 to 840 ft. AMSL. The landscape has been heavily denuded of vegetation and modified by extraction and disposal activities. Existing vegetation on these previously disturbed areas consists mostly of short grasses and provides no suitable roosting habitat for the Indiana bat.

**Summary of Field Efforts Completed to Date**

A total of 28 sites, as Identified on Map 1, were netted. No endangered bats were caught. A total of 97 bats of 5 species were caught: 71 red bats, 21 big brown bats, 2 little brown bats, 2 tri-colored bats, and 1 hoary bat. This equates to 3.5 bats per net site and an average species richness of 1.2 species per net site.

At site KM10, which encompassed Borrow Area 1, the only captures were two red bats. At the two adjoining sites, KM9 and KM11, the only captures were three and one red bats, respectively. Surveys at site KM 10 were completed on August 4 - 5, 2010; and surveys on sites KM9 and KM11 were completed on August 2 - 3 and on August 4 - 5, respectively.

In summary, no endangered bats were caught anywhere on lands to be used for the Project. In general, the rate of bat capture and species richness were low. Across the entire project, only two bats belonging to the genus *Myotis*, both little brown bats, were caught; no northern, Indiana, or small-footed bats were caught. The catch of tri-colored bats, another species that hibernates in caves during winter, was also low, and limited to two individuals.
It is even arguable that the catch of big brown bats, which only sometimes hibernate in caves, was low, with an abundance of less than one-third of the catch of red bats, which it often exceeds. The community of bats at the mist net sites nearest Borrow Area 1 was depauperate and limited to a single species. The area required for the characterization well and access road has been heavily disturbed for 30 years, is a very small part of the overall project area, and provides no suitable roosting habitat for endangered bats. As such, AEP requests concurrence to proceed with installation of the characterization well at Borrow Area No. 1 prior to further ESA and NEPA consultation.

We look forward to your concurrence with this request for AEP to install the characterization well at the Borrow Area No. 1 location. If you have questions or require additional information, please contact me at (513) 451-1777, or Vbrack@EnvironmentalSI.com.

Sincerely,

Virgil Brack, Jr., Ph.D., MBA, Principal Scientist
Certified Wildlife Biologist, TWS
Certified Senior Ecologist, ESA
Email: VBrack@EnvironmentalSI.com

cc: B. Sargent, WVDNR
M. Lusk, DOE/NETL
M. McMillian, DOE/NETL
B. Whipple, PHE
F. Blake, AEP
J. Magalski, AEP
B. Sherrick, AEP
Map 1. Proposed Mist Net Sites at the Mountaineer CCS II Project: CO2 Pipeline and Injection Well Sites, Mason County, West Virginia.

Proposed CO2 Pipeline Corridor
- Blessing Road (1.3 mi)
- East Sporn 1 (2.9 mi)
- Foglestown (1.0 mi)
- Jordan East (0.1 mi)
- Jordan East/West (0.2 mi)
- Jordan West (2.2 mi)
- Landfill Option 1 (0.1 mi)
- Rt 62 (9.4 mi)
- South 1 (2.2 mi)
- W Sporn S, Landfill PL Opt, South 1 (0.2 mi)
- W Sporn S, Landfill PL Opt, South 1, Rt62 (0.3 mi)
- West Sporn South (3.7 mi)

Proposed Injection Well Site
- Eastern Sporn Tract (400 ac)
- Jordan Tract (195 ac)
- AEP Landfill Property (28 ac)
- Western Sporn Tract (70 ac)

Source: http://www.mdpw.gov

Base Map: WV Orthophotos - Samba South, UTM NAD1983.

ENVIROMENTAL SOLUTIONS
& INNOVATIONS, INC
Project No. 298
Map 2. Aerial photograph of AEP Borrow Area 1, where the proposed characterizations well and associated access road are proposed to be sited.
APPENDIX C
E-MAIL CONFIRMATION FROM USFWS AND WVDNR, DATED 8 SEPTEMBER AND 20 SEPTEMBER 2010
Hi Virgil - I received your letter dated 30 August 2010 regarding the proposal to install a geologic characterization well and associated access road for AEP's Mountaineer CCS II project in an area of Mason County, West Virginia identified as Borrow Area 1 on the maps attached to your letter. This 5 acre area had been previously disturbed and is devoid of potential Indiana bat habitat. There should be no endangered species concerns regarding the construction of this portion of the project.

Thanks and give me a call if you have questions.

Barb

Barbara Douglas
Senior Endangered Species Biologist
U. S. Fish and Wildlife Service
West Virginia Field Office
694 Beverly Pike
Elkins, WV 26241
Phone: 304-636-6586 x19
Fax: 304-636-7824
From: Barbara Sargent [mailto:barbarasargent@wvdnr.gov]  
Sent: Monday, September 20, 2010 11:14 AM  
To: Virgil Brack  
Subject: RE: geologic characterization well - AEP Mason County, WV

Virgil—

I concur with the USFWS that this project will not impact rare, threatened or endangered species.

Barb

Barbara Sargent  
WVDNR - Wildlife Resources Section  
PO Box 67 - Ward Road  
Elkins, WV  26241  
304/637-0245 x 2048 (voice)  
304/637-0250 (fax)  
www.wvdnr.gov

"Speak when you are angry and you will make the best speech you will ever regret." ~ Ambrose Bierce

From: Virgil Brack [mailto:VBrack@environmentalsi.com]  
Sent: Monday, September 20, 2010 10:22 AM  
To: BarbaraSargent@wvdnr.gov  
Subject: FW: geologic characterization well - AEP Mason County, WV

Barbara,

Thanks for taking the time to talk with me this morning about AEP’s Mountaineer CCSII project. As you can see below, and as I mentioned in our conversation, USFWS was in agreement that proceeding with work for the characterization well in this small area would not present a threat for T&E species. For our project records, could you concur via return e-mail, with the statement below by USFWS.

Thanks
From: barbara_Douglas@fws.gov
Sent: Wednesday, September 08, 2010 4:16 PM
To: Virgil Brack
Subject: geologic characterization well - AEP Mason County, WV

Hi Virgil - I received your letter dated 30 August 2010 regarding the proposal to install a geologic characterization well and associated access road for AEP's Mountaineer CCS II project in an area of Mason County, West Virginia identified as Borrow Area 1 on the maps attached to your letter. This 5 acre area had been previously disturbed and is devoid of potential Indiana bat habitat. There should be no endangered species concerns regarding the construction of this portion of the project.

Thanks and give me a call if you have questions.

Barb

____________________________
Barbara Douglas
Senior Endangered Species Biologist
U. S. Fish and Wildlife Service
West Virginia Field Office
694 Beverly Pike
Elkins, WV 26241
Phone: 304-636-6586 x19
Fax: 304-636-7824
NET SITE HABITAT DESCRIPTION

Project #: 29603  Date: 24 July 2010  Biologists: D. Jeffcoat, C. Murphy
Project Name: AEP CO2  Site Name/#: KM1
State: WV  County: Mason  USGS Quad: 
Camera #: 61  Picture #s: 
Latitude: 38° 59' 25.8" N  Longitude: 82° 00' 45.0" W
Distance to closest water source (meters): 
Type of water source: 
Water source name: 

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: ___ meters  Channel Width: ___ meters  Stream Width: ___ meters
Substratum: ___ Bedrock  ___ Boulder  ___ Cobble  ___ Gravel  ___ Sand  ___ Silt/Clay
Still Water Present (Y/N): ___  Average Water Depth: ___ m or cm  Clarity (H,M,L): ___

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh) 
___ Quercus alba 
___ Quercus rubra
___ Acer saccharum
Subdominant Canopy Species (< 40 cm/16" dbh) 
___ Carya ovata
___
Estimated dbh range: Lg: 2.5  Sm: 16  Estimated dbh range: Lg: 15  Sm: 5
Relative abundance of dominant vs. subdominant (ratio): ___
Estimated canopy closure: ___ Closed  ___ Moderate  ___ Open
Roost tree potential consists of: ___ Large Trees  ___ Snags  ___ Both  ___ Neither
Roost tree potential for the area is: ___ High  ___ Moderate  ___ Low
Roost potential comments: ___
Subcanopy clutter: ___ Closed  ___ Moderate  ___ Open
Subcanopy comprised largely of: ___ Lower Branches of Canopy Trees  ___ Saplings  ___ Shrubs
Common Subcanopy Species: ___

Habitat Description: ___ Horse pasture with distinct browsing line and sparse vegetation in forest. Upland trees on hill where nets are placed.
Check all that apply:
___ Mature Upland Forest  ___ Recently Logged Forest  ___ Crop/Pasture Land  ___ Shrub/scrub Swamp
___ Young Upland Forest  ___ Pine plantation  ___ Stream/River  ___ Vernal Pool
___ Mature Lowland Forest  ___ Woodlot/ForestEdge  ___ Emergent Wetland  ___ Deepwater Lake/Pond
___ Young Lowland Forest  ___ Old Field  ___ Forested Swamp  ___ Other
Herbaceous Cover: ___ Sparse  ___ Moderate  ___ Dense

Revised June 2007
Appendix F

NET SITE HABITAT DESCRIPTION (continued)

Project #: 294.03  State/County: WV/Mason  Site Name/#: KMI  Initials: (M)

SKETCH: NETS A and B

LEGEND

Nets: ● ● ●

COMMENTS

Not drawn to scale

Pasture and forest are sparsely vegetated

in herbaceous layer.
Appendix F

**BAT CAPTURE DATA**

**Project #:** 296  
**Date:** 23 July 2010  
**Project Name:** AEP CO2  
**State:** WV  
**County:** Mason  
**Biologists:** D. Seffroth, C. Murphy  
**Site name/#:** KMI  
**GPS Unit #:**  
**Camera #:** 61

**MOON PHASE**

- [X] New moon  
- [ ] Waxing crescent  
- [ ] First quarter  
- [ ] Waxing gibbous  
- [ ] Full moon  
- [ ] Waning gibbous  
- [ ] Waning crescent

---

### WEATHER DATA

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### Net/Trap/Anabat # | Net/Trap Type | Latitude | Longitude | Length (m) | Height (m) | Time Up (0000 h) | Time Down (0000 h) | Picture #
---------------------|---------------|----------|-----------|------------|-------------|-------------------|-------------------|-----------------|
| A                   | NW            | "N"      | "W"       | 12         | 9           | 2030              | 0130              |                 |
| B                   | NW            | "N"      | "W"       | 9          | 6           | 2045              | 0150              |                 |

**Net Placement/Site Description:**

---

### Capt # | Net # | Species | Time | Age (Ad/Jy) | Sex (M/F) | Repro. | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index | Comments |
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1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PGI/PL; Male = T/L  
* Refer to table on the back
# BAT CAPTURE DATA

**Project #:** 29603  
**Date:** 24 July 2010

**Project Name:**  
**State:** WV  
**County:** Mason

**Biologists:**  
**Site name/#:**  
**GPS Unit #:**  
**Camera #:** 61

---

## MOON PHASE

- New moon  
- Waxing crescent  
- First quarter  
- Waxing gibbous  
- Full moon  
- Waning gibbous  
- Last quarter

---

## WEATHER DATA

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**Net Placement/Site Description:** Nets were set up in a row along the edge of a field

---

<table>
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<th>Net #</th>
<th>Species</th>
<th>Time (AD/JV)</th>
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<th>Sex</th>
<th>Repro. 2</th>
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<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index (0-3)</th>
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</tr>
</thead>
</table>
| 1      | A     | Lasiusurus borealis | 22:15        | Ad | F | PL | 14.2 | 33% | M | 0 | /Guano/Hair Sample

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/LPL; Male = T/L

* Refer to table on the back
NET SITE HABITAT DESCRIPTION

Project #: 296,03 Date: 26 July 2010 Biologists: D. Jeffcott, C. Murphy
Project Name: AEP C02 Site Name/#: K2M
State: WV County: Mason USGS Quad: 
Camera #: 51 Picture #s: 
Latitude: 38 ° 57 ' 12.5 "N Longitude: 82 ° 00 ' 08.7 "W
Distance to closest water source (meters): Type of water source:
Water source name:

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: ______ meters Channel Width: ______ meters Stream Width: ______ meters
Substratum: Bedrock Boulder Cobble Gravel Sand Silt/Clay
Still Water Present (Y/N): ______ Average Water Depth: ______ m or cm Clarity (H,M,L): ______

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

Subdominant Canopy Species (< 40 cm/16" dbh)

Estimated dbh range: Lg: ______ Sm: ______
Relative abundance of dominant vs. subdominant (ratio): 1:10

Estimated canopy closure: Closed Moderate Open
Roost tree potential consists of: Large Trees Snags Both Neither
Roost tree potential for the area is: High Moderate Low
Roost potential comments:

Subcanopy clutter: Closed Moderate Open
Subcanopy comprised largely of: Lower Branches of Canopy Trees Saplings Shrubs

Common Subcanopy Species:

Habitat Description:

Check all that apply:
Mature Upland Forest Recently Logged Forest Crop/Pasture Land Shrub/scrub Swamp
Young Upland Forest Pine Plantation Stream/River Vernal Pool
Mature Lowland Forest Woodlot/ForestEdge Emergent Wetland Deepwater Lake/Pond
Young Lowland Forest Old Field Forested Swamp Other

Herbaceous Cover: Sparse Moderate Dense
NET SITE HABITAT DESCRIPTION (continued)

**Project #:** 29003  **State/County:** WV/Mason  **Site Name/#:** KM2  **Initials:** CM

**SKETCH:** NETS A and B

---

**LEGEND**

- Nets:
  - Small Circle
  - Medium Circle
  - Large Circle

**COMMENTS**

- Not drawn to scale.
- Grasses in field to a foot tall.
- Nets placed to capture all bats flying through this wide area between forests.
# BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 25 July 2010  
**Project Name:** AF CO2  
**State:** WV  
**County:** Mason  
**Biologists:** D. Scott, C. Murphy  
**Site name/#:** KM2  
**GPS Unit #:** 6  
**Camera #:** 61

## MOON PHASE*

- **New moon**
- **Waxing crescent**
- **First quarter**
- **Waxing gibbous**
- **Full moon**
- **Last quarter**
- **Waning crescent**

## WEATHER DATA

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## Net/Trap/Anabat #

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## Net Placement/Site Description:

Net A placed in field at line 3, trees on both sides of net. B placed over road corridor, small trees.

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<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.2</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

* M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat

* Reproductive Condition: Female = NR/PG/PL; Male = ↑↓

* Refer to table on the back
# BAT CAPTURE DATA

**Project #:** 290.03  
**Date:** 26 July 2010  
**Project Name:** AEP CO2  
**State:** WV  
**County:** Mason  
**Biologists:** D. Jefferies, C. Murphy  
**Site name/#:** KMJ  
**GPS Unit #:** 6  
**Camera #:** 61

### MOON PHASE

- [ ] New moon  
- [ ] Waxing crescent  
- [X] Full moon  
- [ ] Waning gibbous  
- [ ] Waning crescent

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NN</td>
<td>38° 57' 12.5&quot; N</td>
<td>82° 00' 00.7&quot; W</td>
<td>12</td>
<td>9</td>
<td>2620</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>NN</td>
<td>38° 57' 13.3&quot; N</td>
<td>82° 00' 08.9&quot; W</td>
<td>10</td>
<td>5</td>
<td>2630</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Net Placement/Site Description:** Net A placed in field with line of trees on both sides of net, B placed over road corridor at canopy level.

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/ Juvenile)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index*</th>
<th>Comments</th>
<th>Picture # /Guano/Hair Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B</td>
<td>Lasius b recurvius</td>
<td>2240</td>
<td>Juvenile</td>
<td>F</td>
<td>NR</td>
<td>10.6</td>
<td>39</td>
<td>M</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR(PGI/RPL); Male = T/L  
* Refer to table on the back

---

**WEATHER DATA**

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart*)</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>21.8</td>
<td>0</td>
<td></td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>2100</td>
<td>20.8</td>
<td>0</td>
<td></td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>2140</td>
<td>20.8</td>
<td>0</td>
<td></td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>2200</td>
<td>19.4</td>
<td>1.3</td>
<td>NW 35°SE</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>2230</td>
<td>19.3</td>
<td>1.3</td>
<td>NW 5°SE</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>2300</td>
<td>18.9</td>
<td>0</td>
<td></td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>2330</td>
<td>18.7</td>
<td>1.3</td>
<td>SW 5°NE</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>19.7</td>
<td>0</td>
<td></td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>0030</td>
<td>19.5</td>
<td>1.3</td>
<td>NW 5°SE</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>0100</td>
<td>19.7</td>
<td>0</td>
<td></td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>0130</td>
<td>18.0</td>
<td>0</td>
<td></td>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>

---

**Appendix F**

Page 1 of ___
NET SITE HABITAT DESCRIPTION

Project #: 296.03 Date: 28 July 2010

Biologists: D. Jeffreys, C. Murphy

Property of: Environmental Solutions & Innovations, Inc.
781 Neeb Road. Cincinnati, OH 45233 (Phone: 513-451-1777)

State: WV County: Mason

USGS Quad: 

Camera #: 61 Picture #: 7

GPS Unit #: 13 Waypoint #: 38

Latitude: 38°57'27"N Longitude: 81°59'31.3"W

Distance to closest water source (meters): 

Type of water source:

Water source name:

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):

Bank Height: _______ meters Channel Width: _______ meters Stream Width: _______ meters

Substratum: [ ] Bedrock [ ] Boulder [ ] Cobble [ ] Gravel [ ] Sand [ ] Silt/Clay

Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm Clarity (H,M,L):

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

[ ] Liriodendron tulipifera

[ ] Quercus alba

[ ] Fraxinus americana

Subdominant Canopy Species (< 40 cm/16" dbh)

[ ] Acer saccharum

[ ] Acer rubrum

[ ] Fraxinus americana

Estimated dbh range: Lg: 12" Sm: 16"

Estimated dbh range: Lg: 16" Sm: 6"

Relative abundance of dominant vs. subdominant (ratio): 1:7

Estimated canopy closure:

[ ] Closed [ ] Moderate [ ] Open

Roost tree potential consists of:

[ ] Large Trees [ ] Snags [ ] Both [ ] Neither

Roost tree potential for the area is:

[ ] High [ ] Moderate [ ] Low

Roost potential comments:

Few flaky white oaks, some snags

Subcanopy clutter:

[ ] Closed [ ] Moderate [ ] Open

Subcanopy comprised largely of:

[ ] Lower Branches of Canopy Trees [ ] Saplings [ ] Shrubs

Common Subcanopy Species:

[ ] Acer saccharum [ ] Acer rubrum

Habitat Description:

Variable sized trees in a sloping forest with open canopies. Field is grass and makes good foraging area.

Check all that apply:

[ ] Mature Upland Forest [ ] Recently Logged Forest [ ] Crop/Pasture Land

[ ] Young Upland Forest [ ] Pine Plantation [ ] Stream/River

[ ] Mature Lowland Forest [ ] Woodlot/ForestEdge [ ] Emergent Wetland

[ ] Young Lowland Forest [ ] Old Field [ ] Forested Swamp

[ ] Shrub/scrub Swamp [ ] Vernal Pool

[ ] Deepwater Lake/Pond [ ] Other

Herbaceous Cover: [ ] Sparse [ ] Moderate [ ] Dense

Revised June 2007

Appendix F
### NET SITE HABITAT DESCRIPTION (continued)

<table>
<thead>
<tr>
<th>Project #</th>
<th>294.03</th>
<th>State/County</th>
<th>WV/Mason</th>
<th>Site Name/#</th>
<th>KM #3</th>
<th>Initials</th>
<th>CM</th>
</tr>
</thead>
</table>

**SKETCH: NETS A and B**

#### LEGEND
- **Nets:** ● -●
- **drainage stream**
- **Slope =**
- **canopy corner =**

#### COMMENTS
- Not drawn to scale.
- Grass in field a foot long.
**BAT CAPTURE DATA**

Project #: 2960.03  
Date: 27 July 2010  
Project Name: AEP Con  
State: WV  
County: Mason  
Biologists: D. Jeffcott, C. Murphy  
Site name#: KM3  
GPS Unit #: 13  
Camera #: G1

![weather data table](image.png)

**MOON PHASE**

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter

**Net/Trap/Anabat #**  
**Net/Trap Type**  
**Latitude**  
**Longitude**  
**Length (m)**  
**Height (m)**  
**Time Up (0000 h)**  
**Time Down (0000 h)**  
**Picture #**

**Net Placement/Site Description:** Nets placed in opening of forest. Corridors blocked by nets leading to open fields.

<table>
<thead>
<tr>
<th>Capt</th>
<th>Net</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index² (0-3)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td><em>Eptesicus fuscus</em></td>
<td>2145</td>
<td>Ad</td>
<td>M</td>
<td>↑</td>
<td>15.4</td>
<td>45</td>
<td>M</td>
<td>0</td>
<td>Picture # / Guano/Hair Sample</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td><em>E. fuscus</em></td>
<td>2220</td>
<td>JV</td>
<td>F</td>
<td>NR</td>
<td>10.1</td>
<td>44</td>
<td>M</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td><em>E. fuscus</em></td>
<td>2245</td>
<td>JV</td>
<td>M</td>
<td>↑</td>
<td>15.5</td>
<td>46</td>
<td>M</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
² Reproductive Condition: Female = NR/PGL/PL; Male = ↑↓  
* Refer to table on the back
### BAT CAPTURE DATA (continued)

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Beaufort Wind Scale

<table>
<thead>
<tr>
<th>Wind Speed (mph)</th>
<th>Description</th>
<th>Visible Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Calm</td>
<td>Smoke rises vertically</td>
</tr>
<tr>
<td>1-3</td>
<td>Light Air</td>
<td>Direction of wind shown by smoke but not by wind vanes</td>
</tr>
<tr>
<td>4-7</td>
<td>Gentle Breeze</td>
<td>Wind felt on face; leaves rustle; ordinary wind gauge moved by wind</td>
</tr>
<tr>
<td>8-12</td>
<td>Moderate Breeze</td>
<td>ubbles dust and loose paper; small branches are moved</td>
</tr>
<tr>
<td>13-24</td>
<td>Fresh Breeze</td>
<td>Small trees in leaf begin to sway; crested waves on inland water</td>
</tr>
<tr>
<td>25-31</td>
<td>Strong Breeze</td>
<td>Large branches in motion; telephone wires whistle; umbrellas used with difficulty</td>
</tr>
<tr>
<td>32-38</td>
<td>Moderate Gale</td>
<td>Whole trees in motion; inconvenience in walking against wind</td>
</tr>
<tr>
<td>39-46</td>
<td>Fresh Gale</td>
<td>Breaks twigs off trees; generally impedes progress</td>
</tr>
</tbody>
</table>

#### 2010 Lunar Phases

<table>
<thead>
<tr>
<th>New Moon</th>
<th>First Quarter</th>
<th>Full Moon</th>
<th>Last Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 15</td>
<td>Mar 23</td>
<td>Mar 29</td>
<td>Mar 7</td>
</tr>
<tr>
<td>Mar 15</td>
<td>Apr 21</td>
<td>Apr 28</td>
<td>Apr 6</td>
</tr>
<tr>
<td>Apr 14</td>
<td>May 20</td>
<td>May 27</td>
<td>May 9</td>
</tr>
<tr>
<td>May 13</td>
<td>Jun 18</td>
<td>Jun 26</td>
<td>Jun 4</td>
</tr>
<tr>
<td>Jun 12</td>
<td>Jul 18</td>
<td>Jul 25</td>
<td>Jul 4</td>
</tr>
<tr>
<td>Jul 11</td>
<td>Aug 16</td>
<td>Aug 24</td>
<td>Aug 2</td>
</tr>
<tr>
<td>Aug 9</td>
<td>Sep 15</td>
<td>Sep 23</td>
<td>Sep 1</td>
</tr>
<tr>
<td>Sep 8</td>
<td>Oct 14</td>
<td>Oct 22</td>
<td>Oct 30</td>
</tr>
<tr>
<td>Oct 7</td>
<td>Nov 13</td>
<td>Nov 21</td>
<td>Nov 28</td>
</tr>
</tbody>
</table>

#### Wing Index Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No damage, Fewer than 5 small scar spots are present on the membranes.</td>
</tr>
<tr>
<td>1</td>
<td>Light damage. Less than 50% of flight membrane is depigmented (splotching), which is often visible only with transillumination.</td>
</tr>
<tr>
<td>2</td>
<td>Moderate damage. Greater than 50% of wing membrane covered with scar tissue (splotching). Scarring is visible without transillumination. Membrane exhibits some necrotic tissue and possibly few small holes (&lt;0.6 cm diameter). Forearm skin may be flaking and discolored along the majority of the forearm.</td>
</tr>
<tr>
<td>3</td>
<td>Heavy damage. Deteriorated wing membrane and necrotic tissue. Isolated holes &gt;0.5 cm are present in membranes. Necrotic or reeding plagiopatagium and/or chiroptangia are evident.</td>
</tr>
</tbody>
</table>
## BAT CAPTURE DATA

**Project #:** 296.03        **Date:** 28 July 2010

**Project Name:** AEP    **County:** Mason

**State:** WV    **County:** Mason

**Biologists:** D. Jeffcott, C. Murphy

**Site name/#:** KM3    **Camera #:** 62

### MOON PHASE*

- New moon
- Waxing crescent
- Full moon
- Waxing gibbous
- Last quarter
- Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2100</td>
<td>25.5</td>
<td>0</td>
<td></td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td>2200</td>
<td>24.6</td>
<td>0</td>
<td></td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>2300</td>
<td>25.1</td>
<td>0</td>
<td></td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>2400</td>
<td>24.7</td>
<td>0</td>
<td></td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>2500</td>
<td>24.9</td>
<td>0</td>
<td></td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>2600</td>
<td>24.6</td>
<td>0</td>
<td></td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>24.4</td>
<td>0</td>
<td></td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td>0100</td>
<td>24.1</td>
<td>0</td>
<td></td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>0200</td>
<td>23.7</td>
<td>0</td>
<td></td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>0300</td>
<td>23.4</td>
<td>0</td>
<td></td>
<td>60%</td>
<td></td>
</tr>
</tbody>
</table>

### Net/Trap/Anabat #

| A | NN | 38° 57' 28.3" N | 81° 59' 32.9" W | 12 | 9 | 2030 | 0150 |
| B | NN | 38° 57' 27.3" N | 81° 59' 31.3" W | 9  | 0 | 2030 | 0155 |

### Net Placement/Site Description:

Nets placed at edge of forest where open canopy field is. Corridors blocked by nets.

### Capt 

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro. ²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
<th>Picture #</th>
<th>Guano/Hair Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>Empisicus fusus</td>
<td>2335</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ESCAPED</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat

² Reproductive Condition: Female = NR/PG/LPL; Male = ↑↓

* Refer to table on the back
## Bat Capture Data (continued)

### Beaufort Wind Scale

<table>
<thead>
<tr>
<th>Wind Speed (mph)</th>
<th>Description</th>
<th>Visible Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Calm</td>
<td>Smoke rises vertically</td>
</tr>
<tr>
<td>1-3</td>
<td>Light Air</td>
<td>Direction of wind shown by smoke but not by wind vane.</td>
</tr>
<tr>
<td>4-7</td>
<td>Light Breeze</td>
<td>Wind felt on face; leaves rustle; ordinary wind vane moved by wind.</td>
</tr>
<tr>
<td>8-12</td>
<td>Gentle Breeze</td>
<td>Leaves and small bags in constant motion; wind sideways light flag.</td>
</tr>
<tr>
<td>13-18</td>
<td>Moderate Breeze</td>
<td>Rises dust and loose paper; small branches are moved.</td>
</tr>
<tr>
<td>19-24</td>
<td>Fresh Breeze</td>
<td>Small trees in leaf begin to sway; crest waves on inland water.</td>
</tr>
<tr>
<td>25-31</td>
<td>Strong Breeze</td>
<td>Large branches in motion; telephone wires whistle; umbrellas used with difficulty.</td>
</tr>
<tr>
<td>32-38</td>
<td>Moderate Gale</td>
<td>Whole trees in motion; inconvenience in walking against wind.</td>
</tr>
<tr>
<td>39-46</td>
<td>Fresh Gale</td>
<td>Breaks twigs off trees; generally impedes progress.</td>
</tr>
</tbody>
</table>

### 2010 Lunar Phases

<table>
<thead>
<tr>
<th>New Moon</th>
<th>First Quarter</th>
<th>Full Moon</th>
<th>Last Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 13</td>
<td>Mar 23</td>
<td>Mar 29</td>
<td>Apr 6</td>
</tr>
<tr>
<td>Mar 15</td>
<td>Apr 21</td>
<td>Apr 29</td>
<td>May 5</td>
</tr>
<tr>
<td>Apr 14</td>
<td>May 20</td>
<td>May 27</td>
<td>Jun 4</td>
</tr>
<tr>
<td>May 13</td>
<td>Jun 18</td>
<td>Jun 26</td>
<td>Jul 4</td>
</tr>
<tr>
<td>Jun 12</td>
<td>Jul 18</td>
<td>Jul 25</td>
<td>Aug 2</td>
</tr>
<tr>
<td>Jul 11</td>
<td>Aug 16</td>
<td>Aug 24</td>
<td>Sep 1</td>
</tr>
<tr>
<td>Aug 9</td>
<td>Sep 15</td>
<td>Sep 23</td>
<td>Sept 30</td>
</tr>
<tr>
<td>Sep 6</td>
<td>Oct 14</td>
<td>Oct 21</td>
<td>Oct 30</td>
</tr>
<tr>
<td>Oct 7</td>
<td>Nov 13</td>
<td>Nov 21</td>
<td>Nov 28</td>
</tr>
</tbody>
</table>

### Wing Index Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No damage. Fewer than 5 small scar spots are present on the membrane.</td>
<td>Light damage. Less than 50% of flight membrane is depigmented (spatching), which is often visible only with transillumination.</td>
</tr>
<tr>
<td>1</td>
<td>Moderate damage. Greater than 50% of wing membrane covered with scar tissue (spatching). Scarring is visible without transillumination. Membrane exhibits some necrotic tissue and possibly few small holes (&lt;0.5 cm diameter). Forearm skin may be flaking and discolored along the majority of the forearm.</td>
<td>Heavy damage. Deteriorated wing membrane and necrotic tissue. Isolated holes &gt;0.5 cm are present in membranes. Necrotic or receding plagiopatagium and/or chiroptopatagium are evident.</td>
</tr>
</tbody>
</table>
NET SITE HABITAT DESCRIPTION

Project #: 296.03  Date: 07/28/10  Biologists: M. Little, T. Hern
Project Name: AEP CO2  Site Name/#: KMH
State: WV  County: Mason  USGS Quad:
Camera #:  Picture #: 001, 002  GPS Unit #:  Waypoint #:
Latitude: 38° 57' 34.6" N  Longitude: 81° 58' 09.6" W
Distance to closest water source (meters): 150  Type of water source: Pond
Water source name: Unknown - private pond

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: _______ meters  Channel Width: _______ meters  Stream Width: _______ meters
Substratum: _______ Bedrock _______ Boulder _______ Cobble _______ Gravel _______ Sand _______ Silt/Clay
Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm  Clarity (H,M,L): _______

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)  Subdominant Canopy Species (< 40 cm/16" dbh)
Quercus alba  Saeland nigra
Platanus occidentalis  Pinnus serratifolia
Estimated dbh range: Lg: 40  Sm: 35  Estimated dbh range: Lg: 30  Sm: 7
Relative abundance of dominant vs. subdominant (ratio): 15:25
Estimated canopy closure: _______ Closed  _______ Moderate  _______ Open
Roost tree potential consists of:  _______ Large Trees  _______ Snags  _______ Both  _______ Neither
Roost tree potential for the area is: _______ High  _______ Moderate  _______ Low
Roost potential comments: 
Subcanopy clutter:  _______ Closed  _______ Moderate  _______ Open
Subcanopy comprised largely of: _______ Lower Branches of Canopy Trees  _______ Saplings  _______ Shrubs
Common Subcanopy Species: Poison Ivy

Habitat Description: Paved public single lane road with small/short corridor with moderate canopy closure

Check all that apply:
____ Mature Upland Forest  ____ Recently Logged Forest  ____ Crop/Pasture Land  ____ Shrub/scrub Swamp
____ Young Upland Forest  ____ Pine Plantation  ____ Stream/River  ____ Vernal Pool
____ Mature Lowland Forest  ____ Woodlot/ForestEdge  ____ Emergent Wetland  ____ Deepwater Lake/Pond
____ Young Lowland Forest  ____ Old Field  ____ Forested Swamp  ____ Other
Herbaceous Cover: _______ Sparse  _______ Moderate  _______ Dense

Revised June 2007
## NET SITE HABITAT DESCRIPTION (continued)

<table>
<thead>
<tr>
<th>Project #:</th>
<th>State/County:</th>
<th>Site Name/#:</th>
<th>Initials:</th>
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<tr>
<td>096.03</td>
<td>WV/MASON</td>
<td></td>
<td>NV</td>
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</tbody>
</table>

**SKETCH: NETS A and B**

### LEGEND

- Nets: ●●

### COMMENTS

- 
- 
- 
- 
- 

Revised June 2007

Appendix F
# BAT CAPTURE DATA

**28 July**

**Project #:** 796.03  
**Date:** 07/09/2010

**Project Name:** AEP CO2  
**State:** WV  
**County:** Mason  
**Biologists:** ML Little, TJ Herr

**Site name/#:** KMY  
**GPS Unit #:**  
**Camera #:**

### MOON PHASE*

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>20:30</td>
<td>90</td>
<td>0</td>
<td></td>
<td>0</td>
<td></td>
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</tr>
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<td>22:30</td>
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<td>0</td>
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<td>50</td>
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<td>50</td>
<td></td>
</tr>
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<td>0</td>
<td></td>
<td>50</td>
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### Net/Trap/Anabat #

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NN</td>
<td>38°51’34.5&quot;N</td>
<td>81°58’26.6&quot;W</td>
<td>6</td>
<td>6</td>
<td>2030</td>
<td>0130</td>
<td>0001</td>
</tr>
<tr>
<td>A</td>
<td>NN</td>
<td>38°57’34.1&quot;N</td>
<td>81°58’29.5&quot;W</td>
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<td>6</td>
<td>2030</td>
<td>0130</td>
<td>0002</td>
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</table>

**Net Placement/Site Description:** Both nets on ft. 0

### Capt #  

<table>
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<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro. 2</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>Lasiurus borealis</td>
<td>2149</td>
<td>Jv</td>
<td>F</td>
<td>NR</td>
<td>150</td>
<td>40</td>
<td>M</td>
<td>0</td>
<td>Picture # /Guano/Hair Sample</td>
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</tbody>
</table>

---

1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2. Reproductive Condition: Female = NR/PG/I/LPL; Male = ↑↓

* Refer to table on the back
### BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 07/29/2010

**State:** WV  
**County:** Mason

**Biologists:** W. Cottle, T. Herr

**Site name/#:** VMH

**GPS Unit #:**  
**Camera #::**

---

**MOON PHASE**

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

---

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>NN</td>
<td>39° 57' 34.5&quot; N</td>
<td>88° 58' 26.6&quot; W</td>
<td>60</td>
<td>60</td>
<td>0030</td>
<td>0600</td>
<td>0001</td>
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<tr>
<td>B</td>
<td>NN</td>
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<td>88° 58' 24.6&quot; W</td>
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<td>0600</td>
<td>0600</td>
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<td>0002</td>
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**Net Placement/Site Description:** Both nets on RT 6

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<table>
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<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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</thead>
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<td>A</td>
<td>Lasiurus borealis</td>
<td>2330</td>
<td>Ju</td>
<td>F</td>
<td>NR</td>
<td>14.5</td>
<td>41.0</td>
<td>M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>Myotis evotis</td>
<td>0015</td>
<td>Ju</td>
<td>F</td>
<td>NR</td>
<td>7.0</td>
<td>34.5</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A</td>
<td>Lasiurus borealis</td>
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<td>Ju</td>
<td>F</td>
<td>NR</td>
<td>15.0</td>
<td>35.0</td>
<td>M</td>
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<td></td>
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</table>

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat

2 Reproductive Condition: Female = NR/PGI/PL; Male = T/T

* Refer to table on the back

---

**WEATHER DATA**

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<tbody>
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<td>0</td>
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<td>0</td>
</tr>
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<td>0130</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0230</td>
<td>65</td>
<td>0</td>
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<td>0</td>
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<tr>
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<td>60</td>
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<td>0</td>
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<td>0</td>
</tr>
</tbody>
</table>

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Page 1 of ___
NET SITE HABITAT DESCRIPTION

**Project #: 296.03**  
**Date: 30 July 2010**  
**Biologists:** D. Jeffcott, C. Murphy

**Project Name:** AEP CO2  
**Site Name/#:** KM5

**State:** WV  
**County:** Mason  
**USGS Quad:**

**Camera #: G1**  
**Picture #:**

**Latitude:** 38° 57' 45.5" N  
**Longitude:** 81° 57' 38.2" W

**Distance to closest water source (meters):** 10m from A  
**Type of water source:** Ephemeral Stream

**Water source name:** Broad Run on 8

**ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):**

Bank Height: 2 meters  
Channel Width: 8-10 meters  
Stream Width: 5-6 meters

**Substratum:**  
- [X] Bedrock  
- [X] Boulder  
- [X] Cobble  
- [X] Gravel  
- [X] Sand  
- [X] Silt/Clay

**Still Water Present (Y/N):** Y  
**Average Water Depth:** 0.5m or (cm)  
**Clarity (HML):** M

**VEGETATION:**

**Dominant Canopy Species (> 40 cm/16" dbh):**
1. Quercus rubra
2. Quercus alba
3. Prunus serotina

**Subdominant Canopy Species (< 40 cm/16" dbh):**
1. Juglandis nigra
2. Platanus occidentalis
3. Acer rubrum

**Estimated dbh range:** Lg: 24"  Sm: 16"

**Estimated dbh range:** Lg: 16"  Sm: 4"

**Relative abundance of dominant vs. subdominant (ratio):** 1:1

**Estimated canopy closure:**
- [X] Closed
- [X] Moderate
- [Open]

**Roost tree potential consists of:**
- [X] Large Trees
- [X] Snags
- [X] Both
- [Neither]

**Roost tree potential for the area is:**
- [X] High
- [X] Moderate
- [Low]

**Roost potential comments:**
Several white oaks w/ shaggy bark and a few snags

**Subcanopy clutter:**
- [X] Closed
- [X] Moderate
- [Open]

**Subcanopy comprised largely of:**
- [X] Lower Branches of Canopy Trees
- [ ] Saplings
- [ ] Shrubs

**Common Subcanopy Species:**
- Carpinus caroliniana
- Sassafras albicinum
- Acer rubrum

**Habitat Description:** Mature upland forest to Post, uphill from nets, Younger trees along stream and closer to the road. Stream is mostly dry with some pools.

**Check all that apply:**
- [X] Mature Upland Forest  
- [ ] Recently Logged Forest  
- [ ] Crop/Pasture Land  
- [X] Shrub/scrub Swamp  
- [ ] Young Upland Forest  
- [ ] Pine Plantation  
- [ ] Stream/River  
- [ ] Vernal Pool  
- [X] Mature Lowland Forest  
- [X] Woodlot/Forest Edge  
- [X] Emergent Wetland  
- [ ] Deepwater Lake/Pond  
- [ ] Young Lowland Forest  
- [ ] Old Field  
- [X] Forested Swamp  
- [ ] Other  

**Herbaceous Cover:**
- [ ] Sparse  
- [ ] Moderate  
- [X] Dense

Revised June 2007
SKETCH: NETS A and B

LEGEND

Nets: ● ● ●
bridge: > <
pools in stream: ▲
channel: ▼▼▼

COMMENTS

NOT DRAWN TO SCALE

Revised June 2007
# BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 29. July 2010  
**State:** WV  
**County:** Mason  
**Biologists:** D. Jefferson, C. Murphy  
**Site name/#:** KM8  
**GPS Unit #:** 13  
**Camera #:** 61

## MOON PHASE
- [ ] New moon
- [ ] Waxing crescent
- [x] Waxing gibbous
- [ ] Full moon
- [ ] Waning crescent

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
</tr>
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<tbody>
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<td>2030</td>
<td>23.3</td>
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<td>2300</td>
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<td>SW to NE</td>
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<td>2330</td>
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<td>W to E</td>
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## Net Placement/Site Description:
Net A placed over road corridor & canopy cover adjacent & mowed. Net B placed over creek corridor.

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Adj./Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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<tbody>
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<td>Ad</td>
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<td>↑</td>
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<td>JV</td>
<td>M</td>
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</tr>
</tbody>
</table>

1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2. Reproductive Condition: Female = NR/PG/PL; Male = T/L
3. Refer to table on the back
## BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 30 July 2010  
**State:** WV  
**County:** Mason  
**Biologists:** D. Jeffcraft, C. Murphy  
**Site name/#:** KMS

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated — see chart)*</th>
<th>Wind Direction: From—to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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</tr>
<tr>
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<td>100%</td>
<td></td>
</tr>
<tr>
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<td>18.6</td>
<td>0</td>
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<td>100%</td>
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</tbody>
</table>

### MOON PHASE*

- New moon
- Waxing crescent
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter

**Net/Trap/Anabat #:** KMSA  
**Net/Trap Type:** NN  
**Latitude:** 38° 57’. 45.5” N  
**Longitude:** 81° 57’. 38.2” W

### Net Placement/Site Description:
Net A placed over grass corridor with canopy cover. Net B placed over creek corridor.

### CAPTURE DATA

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (L1/E)</th>
<th>Wing Index*</th>
<th>Comments</th>
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<td>42½</td>
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<td>F</td>
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1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2. Reproductive Condition: Female = NR/PG/LPL; Male = H/L

* Refer to table on the back
NET SITE HABITAT DESCRIPTION

[Headers]

Project #: CR-03 Date: 07/20/10
Biologists: Miller, T. Herr

Project Name: ACE CO2
Site Name/#: Kymbo

State: WV County: Macon
USGS Quad:

Camera #: 2 Picture #s: 00004
GPS Unit #: 380 Waypoint #: 200

Latitude: 38° 57' 38.4"N
Longitude: 81° 36' 38.6"W

Distance to closest water source (meters): None
Type of water source:
Water source name:

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):

Bank Height: _______ meters Channel Width: _______ meters Stream Width: _______ meters
Substratum: _Bedrock _Boulder _Cobble _Gravel _Sand _Silt/Clay
Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm Clarity (H,M,L):

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh) Subdominant Canopy Species (< 40 cm/16" dbh)
_Acer negundo _Ostrya sp.

Estimated dbh range: Lg: 15 Sm: 7 Estimated dbh range: Lg: 5 Sm: 3
Relative abundance of dominant vs. subdominant (ratio): 50:50

Estimated canopy closure: _Closed _Moderate _Open
Roost tree potential consists of: _Large Trees _Snags _Both _Neither
Roost tree potential for the area is: _High _Moderate _Low
Roost potential comments:

Subcanopy clutter: _Closed _Moderate _Open
Subcanopy comprised largely of: _Lower Branches of Canopy Trees _Saplings _Shrubs
Common Subcanopy Species:

Habitat Description: Small trees along a dirt trail and very cluttered

Check all that apply:

- Mature Upland Forest
- Young Upland Forest
- Mature Lowland Forest
- Young Lowland Forest
- Recently Logged Forest
- Pine Plantation
- Woodlot/ForestEdge
- Old Field
- Crop/Pasture Land
- Stream/River
- Emergent Wetland
- Forested Swamp
- Shrub/scrub Swamp
- Vernal Pool
- Deepwater Lake/Pond
- Other

Herbaceous Cover: _Sparse _Moderate _Dense

Revised June 2007
NET SITE HABITAT DESCRIPTION (continued)

<table>
<thead>
<tr>
<th>Project #:</th>
<th>State/County:</th>
<th>Site Name/#:</th>
<th>Initials:</th>
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**SKETCH: NETS A and B**

- Open Field
- Boundary
- Young Woodland
- House
- County Rt 9

---

**LEGEND**

Nets: ● ● ●

**COMMENTS**

---

Revised June 2007

Appendix F
# BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 30 July 2010  
**Project Name:** AEP  
**State:** IOV  
**County:** Mason  
**Biolists:** M. Miller, T. Herr  
**Site name/#:** VML  
**GPS Unit #:**  
**Camera #::**  

## MOON PHASE*
- New moon  
- Waxing crescent  
- First quarter  
- Waxing gibbous  
- Full moon  
- Waning gibbous  
- Last quarter  
- Waning crescent

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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## Net/Trap/Anabat

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<th>Net/Trap Type¹</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<tr>
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<td>NN</td>
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<td>81° 56' 35.3&quot;W</td>
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<td>B</td>
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## Net Placement/Site Description:

- CAPS

## Capt #  

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<th>Net #</th>
<th>Species</th>
<th>Time (Ad/Jv)</th>
<th>Age (M/F)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index ² (0-3)</th>
<th>Comments</th>
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</table>

|       |       |         |              |          |          |         |       |         |             |                     |          |

¹ M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
² Reproductive Condition: Female = NR/P/G/L/P; Male = ↑/↓  
* Refer to table on the back
**BAT CAPTURE DATA**

**Project #:** 296.03  **Date:** 31 July 2010

**Project Name:** EEP  **County:** Mason

**State:** WV  **Biologists:** R. Little, L. Horn

**Site name/#:** KM6  **GPS Unit #:** 13  **Camera #:** ?

**MOON PHASE**

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

---

**WEATHER DATA**

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
</tr>
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<td>21:30</td>
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</tbody>
</table>

**Net/Trap/Anabat #**  **Net/Trap Type**  **Latitude**  **Longitude**  **Length (m)**  **Height (m)**  **Time Up (0000 h)**  **Time Down (0000 h)**  **Picture #**

| A  | NN  | 38°57'33.4"N | 66°36'35.3"W | 16 | 16 | 20:30 | 01:30 | 2008 |
| B  | NN  | 38°57'36.0"N | 66°36'35.0"W | 16 | 16 | 20:30 | 01:30 | 2008 |

**Net Placement/Site Description:** Nets placed across dirt path on Powerline ROW

---

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time (Ad/Jv)</th>
<th>Age (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Picture # /Guano/Hair Sample</td>
</tr>
</tbody>
</table>

---

* M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
² Reproductive Condition: Female = NR/PG/LJPL; Male = ↑↓

---

Page 1 of 4
NET SITE HABITAT DESCRIPTION

Project #: 296.03  Date: 01 August 2010  Biologists: D. Jeffcott, C. Murphy
Project Name: AEP COz  Site Name#: KM7
State: WV  County: Martinsville
USGS Quad:  GPS Unit #: A73  Waypoint #: 
Camera #: GJ  Picture #: N
Latitude: 38° 57' 42.8" N
Longitude: 81° 56' 17.1" W
Distance to closest water source (meters): 20m from A
Type of water source: Wetland
Water source name: 

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: _______ meters  Channel Width: _______ meters  Stream Width: _______ meters
Substratum: ___Bedrock ___Boulder ___Cobble ___Gravel ___Sand ___Silt/Clay
Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm  Clarity (H,M,L): 

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)
___ Picea glauca
___ Pseudotsuga menziesii
___ Pinus virginiana
Subdominant Canopy Species (< 40 cm/16" dbh)
___ Acer rubrum
___ Fagus grandifolia
___ Fraxinus americana

Estimated dbh range: Lg: 22"  Sm: 10"
Estimated dbh range: Lg: 14"  Sm: 5"
Relative abundance of dominant vs. subdominant (ratio): 1:12

Estimated canopy closure: ___ Closed  ___ Moderate  ___ Open
Roost tree potential consists of: ___ Large Trees  ___ Snags  ___ Both  ___ Neither
Roost tree potential for the area is: ___ High  ___ Moderate  ___ Low
Roost potential comments: ___ lots of snags in wetland
Subcanopy clutter: ___ Closed  ___ Moderate  ___ Open
Subcanopy comprised largely of: ___ Lower Branches of Canopy Trees  ___ Saplings  ___ Shrubs
Common Subcanopy Species: ___ Acer negundo  ___ Robinia pseudacacia  ___ Ulmus rubra

Habitat Description: Young forest surrounds wetland with many snags. Wetland has open canopy with water present.

Check all that apply:
___ Mature Upland Forest  ___ Recently Logged Forest  ___ Crop/Pasture Land  ___ Shrub/scrub Swamp
___ Young Upland Forest  ___ Pine Plantation  ___ Stream/River  ___ Vernal Pool
___ Mature Lowland Forest  ___ Woodlot/Forest Edge  ___ Emergent Wetland  ___ Deepwater Lake/Pond
___ Young Lowland Forest  ___ Old Field  ___ Forested Swamp  ___ Other

Herbaceous Cover: ___ Sparse  ___ Moderate  ___ Dense

Revised June 2007
NET SITE HABITAT DESCRIPTION (continued)

| Project #: 296.03 | State/County: WV/Mason | Site Name/#: K M 7 | Initials: CA |

SKETCH: NETS A and B

LEGEND

Nets: ● ● ●

Wetland = X

COMMENTS

Not drawn to scale

Revised June 2007
**BAT CAPTURE DATA**

**Project #:** 296.03  
**Date:** 31 July 2010  
**Project Name:** AEP  
**State:** WV  
**County:** Mason  
**Biologists:** D. Jeffcotte, C. Murphy  
**Site name/#:** KM7  
**GPS Unit #:** 13  
**Camera #:** G2

**MOON PHASE**

- New moon
- Waxing crescent
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

**WEATHER DATA**

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart’</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
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<td>30%</td>
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<td>1-3</td>
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**Net/Trap/Anabat #**  
**Net/Trap Type**

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<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<td>81° 56' 17.1&quot; W</td>
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<td>2030</td>
<td>0300</td>
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<td>NN</td>
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<td>6</td>
<td>2030</td>
<td>0300</td>
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</table>

**Net Placement/Site Description:** Net A placed in corridor leading to wetland surrounded by forest. Net B placed in corridor of forest.

**Capt #**  
**Net #**  
**Species**  
**Time**  
**Age (Ad/Jv)**  
**Sex (M/F)**  
**Repro.**  
**Wt (g)**  
**RFA (mm)**  
**Belly (F/M/E)**  
**Wing Index**  
**Comments**  
**Picture # Guano/Hair Sample**

<table>
<thead>
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<th>Capt #</th>
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<th>Sex (M/F)</th>
<th>Repro.</th>
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<td>2130</td>
<td>Jv</td>
<td>M</td>
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<td>9.8</td>
<td>37</td>
<td>E</td>
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<td>Ad</td>
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<td>Jv</td>
<td>M</td>
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<td>2253</td>
<td>Jv</td>
<td>M</td>
<td>↑</td>
<td>9.7</td>
<td>39.5</td>
<td>E</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>A</td>
<td>L. borealis</td>
<td>2310</td>
<td>Jv</td>
<td>M</td>
<td>↑</td>
<td>10.8</td>
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<td>Ad</td>
<td>M</td>
<td>↓</td>
<td>10.7</td>
<td>37</td>
<td>M</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

1. M = Monofilament, CN = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2. Reproductive Condition: Female = NR/PG/LPL; Male = Jv

* Refer to table on the back
# BAT CAPTURE DATA

**Project #:** 20003  
**Date:** 01 Aug 2012

**State:** WV  
**County:**  
**Biologists:**  
**Site Name #:** KM7  
**GPS Unit #:** A13  
**Camera #:** 61

---

## MOON PHASE

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

---

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated — see chart)*</th>
<th>Wind Direction: From ___ to ___</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
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<td></td>
<td>10%</td>
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<tr>
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<td>10%</td>
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## Net/Trap/Anabat

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NN</td>
<td>38° 57' 42.3&quot; N</td>
<td>81° 56' 17.1&quot; W</td>
<td>12</td>
<td>9</td>
<td>2020</td>
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## Capt Placement/Site Description

Net 1 placed in corridor leading to wetland surrounded by forest; Net 2 in corridor 1 forest

---

## Bat Capture Data

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (D-3)</th>
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<td>F</td>
<td>NR</td>
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<td>E. fuscus</td>
<td>2210</td>
<td>JV</td>
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<td>5</td>
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<td>12.1</td>
<td>37½</td>
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</table>

| 1      | M = Monofilament, CN = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat ² Reproductive Condition: Female = NR/P/G/L/P; Male = ² |          |          |

---

* Refer to table on the back
NET SITE HABITAT DESCRIPTION

Project #: 296.03  Date: 08/01/10  Biologists: M. Little, T. Hearn
Project Name: CO2
State: WV  County: Mason
Camera #:  Picture #: 006, 006
Latitude: 38° 51' 19.8"N
Distance to closest water source (meters): N/A
Longitude: 81° 55' 51.5"W  Type of water source: N/A
Water source name: N/A

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: ______ meters  Channel Width: ______ meters  Stream Width: ______ meters
Substratum:  Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay
Still Water Present (Y/N): ______  Average Water Depth: ______ m or cm  Clarity (H,M,L): ______

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh):  Pseudotsuga menziesii
Subordinate Canopy Species (< 40 cm/16" dbh):  Pseudotsuga menziesii

Estimated dbh range: Lg: 15  Sm: 10
Relative abundance of dominant vs. subdominant (ratio): 50/50
Estimated canopy closure:  Closed  Moderate  Open
Roost tree potential consists of:  Large Trees  Snags  Both  Neither
Roost tree potential for the area is:  High  Moderate  Low
Roost potential comments:

Subcanopy clutter:  Closed  Moderate  Open
Subcanopy comprised largely of:  Lower Branches of Canopy Trees  Saplings  Shrubs
Common Subcanopy Species:  Pseudotsuga menziesii

Habitat Description: Young upland woodland on hill next to an old water tower

Check all that apply:
  Mature Upland Forest  Recently Logged Forest  Crop/Pasture Land  Shrub/scrub Swamp
  Young Upland Forest  Pine Plantation  Stream/River  Vernal Pool
    Mature Lowland Forest  Woodlot/ForestEdge  Emergent Wetland  Deepwater Lake/Pond
    Young Lowland Forest  Old Field  Forested Swamp  Other
Herbaceous Cover:  Sparse  Moderate  Dense

Revised June 2007
<table>
<thead>
<tr>
<th>Project #:</th>
<th>State/County:</th>
<th>Site Name/#:</th>
<th>Initials:</th>
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</thead>
<tbody>
<tr>
<td></td>
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**LEGEND**

Nets: ●——●

**COMMENTS**

AEP Power Plant

Hill

Old water tower

AEP Access Road

Revised June 2007
## BAT CAPTURE DATA

**Date:** 08/01/2010

<table>
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<th>Project #</th>
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<td>Mason</td>
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<td>Biologists</td>
<td>M. Little, T. Iern</td>
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<tr>
<td>Site name/#</td>
<td>&quot;EMB&quot;</td>
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<td>GPS Unit #</td>
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### MOON PHASE
- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<td>10</td>
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<td>19.2</td>
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### Net/Trap/Anabat

<table>
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<tr>
<th>Net/Trap Trap Net/Trap Type¹</th>
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<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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</thead>
<tbody>
<tr>
<td>B</td>
<td></td>
<td></td>
<td>36° 57' 19.8&quot;N</td>
<td>81° 55' 51.5&quot;W</td>
<td>9</td>
<td>6</td>
<td>2030 2010</td>
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<tr>
<td>B</td>
<td></td>
<td></td>
<td>36° 57' 19.8&quot;N</td>
<td>81° 55' 51.5&quot;W</td>
<td>9</td>
<td>6</td>
<td>2030 2010</td>
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</tbody>
</table>

### Net Placement/Site Description

Dirt path on NEP property - Upland

<table>
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<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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<td>A</td>
<td>F</td>
<td>NR</td>
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<td>M</td>
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<tr>
<td>A</td>
<td>2</td>
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<td>A</td>
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<td>NR</td>
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</table>

¹ M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
² Reproductive Condition: Female = NR/PG/LJPL; Male = ♂/♀
* Refer to table on the back
### BAT CAPTURE DATA

**Date:** 3 Aug

<table>
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<th>Date</th>
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<th>State:</th>
<th>County:</th>
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<tr>
<td></td>
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<td>FICE CO2</td>
<td>MAHON</td>
<td></td>
<td>T. L. HERN</td>
<td>KM8</td>
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#### MOON PHASE*

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From ___ to ___</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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### Net/Trap/Anabat #

<table>
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<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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</thead>
<tbody>
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<td>NW</td>
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<td>71° 55' 51.5&quot;W</td>
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**Net Placement/Site Description:** Upland wooded w/two-track dirt road

### Capt #

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time (Ad/Jv)</th>
<th>Age (M/F)</th>
<th>Sex (M/F)</th>
<th>Repro. 2</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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<tr>
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</table>

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat

2 Reproductive Condition: Female = NR/PGL/PPL; Male = ↑↓

* Refer to table on the back

---

Page 1 of ___
NET SITE HABITAT DESCRIPTION

Project #: 296.03 Date: 3 August 2010
Project Name: [Redacted]
State: WV County: Mason
Radio # 1 Picture #: __________
Latitude: 38° 56' 22.3" N
Distance to closest water source (meters): ________
Water source name: __________

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: ________ meters Channel Width: ________ meters Stream Width: ________ meters
Substratum: ___ Bedrock ___ Boulder ___ Cobble ___ Gravel ___ Sand ___ Silt/Clay
Still Water Present (Y/N): _____ Average Water Depth: ____ m or cm Clarity (H,M,L): ______

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)
- [Redacted]
- [Redacted]
Subdominant Canopy Species (< 40 cm/16" dbh)
- [Redacted]
- [Redacted]

Estimated dbh range: Lg: ______ Sm: ______
Relative abundance of dominant vs. subdominant (ratio): ______
Estimated canopy closure: _______ Closed _______ Moderate _______ Open
Roost tree potential consists of:
- [Redacted]
Roost tree potential for the area is:
- [Redacted]
Roost potential comments:

Subcanopy clutter:
- [Redacted]
Subcanopy comprised largely of:
- [Redacted]
Common Subcanopy Species:
- [Redacted]

Habitat Description:

Check all that apply:
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
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</table>

**SKETCH: NETS A and B**

---

**LEGEND**

Nets: ●●●

---

**COMMENTS**

- Add down to scale
- 
- 
- 
- 
- 

Revised June 2007
# BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 02 Aug 2010  
**Project Name:**  
**State:** WV  
**County:** Mason  
**Biologists:** D. Jeffcot, T. Horn  
**Site name #:** KM 9  
**GPS Unit #:** A73  
**Camera #:** G1

## MOON PHASE
- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From ___ to ___</th>
<th>% Cloud Cover (estimated)</th>
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<td>50%</td>
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## Net/Trap/Anabat

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type^</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NW</td>
<td>38° 56' 27.3&quot; N</td>
<td>81° 56' 4.3&quot; W</td>
<td>9</td>
<td>6</td>
<td>2630 0135</td>
<td>0135</td>
<td></td>
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<tr>
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<td>NW</td>
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<td>81° 56' 44.2&quot; W</td>
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<td>6</td>
<td>2030 0130</td>
<td>0130</td>
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**Net Placement/Site Description:** Nets placed in access road corridor leading to powerline ROW.

## Capt 

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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<tbody>
<tr>
<td>1</td>
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<td>Lasiurus borealis</td>
<td>2105</td>
<td>Ad</td>
<td>M</td>
<td>↓</td>
<td>9.5</td>
<td>36.5</td>
<td>E</td>
<td>0</td>
<td>Picture # /Guano/Hair Sample</td>
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<tr>
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<td>A</td>
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<td>2105</td>
<td>Ad</td>
<td>E</td>
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</table>

---

^ M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat

---

* Refer to table on the back

---

* Reproductive Condition: Female = NR/PG/L/PL; Male = ↑↓

---

Page 1 of 1
BAT CAPTURE DATA

Project #: 296.03  Date: 3 August 2010

Project Name: AEP Co

State: WV  County: Mason

Biologists: D. Jeffco, T. Murphy

Site name#: KM9

GPS Unit #: A13  Camera #: 61

MOON PHASE*

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From ___ to ___</th>
<th>% Cloud Cover (estimated)</th>
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<td>7700</td>
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<td>100%</td>
<td></td>
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<td>27.1</td>
<td>0</td>
<td>100%</td>
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<td>100%</td>
<td>100%</td>
<td></td>
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</tr>
<tr>
<td>0100</td>
<td>25.3</td>
<td>100%</td>
<td>100%</td>
<td></td>
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<td>0300</td>
<td>25.0</td>
<td>100%</td>
<td>100%</td>
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<tr>
<td>0130</td>
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<td>100%</td>
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</table>

Net/Trap/Anabat #  Net/Trap Type  Latitude  Longitude  Length (m)  Height (m)  Time Up (0000 h)  Time Down (0000 h)  Picture #
A  NN  38°56'22.3"N  81°56'41.3"W  9  6  2030  0130
B  NN  38°56'21.8"N  81°56'44.2"W  6  6  2030  0130

Net Placement/Site Description: Nets placed in access road corridor leading to powerline REL1.

Capt #  Net #  Species  Time  Age (Ad/Lv)  Sex (M/F)  Repro. 2  Wt (g)  RFA (mm)  Belly (F/M/E)  Wing Index*  Comments  Picture # / Guano/Hair Sample
1  B  Lasiusus borealis  0000  —  —  2  —  —  —  —  Sapped from net
2  A  Lasiusus borealis  00:50  —  —  2  —  —  —  —  Crushed from net

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2 Reproductive Condition: Female = NR/PG/LPL; Male = ±/±
* Refer to table on the back
NET SITE HABITAT DESCRIPTION

Project #: 796.03  Date: 05 August 2010  Biologists: D. Jeffcott, C. Murphy
Project Name: AEP CO2  Site Name/#: KM10
State: WV  County: MASON  USGS Quad:  
Camera #: G1  Picture #:  
Latitude: 38° 56' 33.2" N  Longitude: 81° 56' 47.2" W
Distance to closest water source (meters):  
Water source name:  

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: _______ meters  Channel Width: _______ meters  Stream Width: _______ meters
Substratum: Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay
Still Water Present (Y/N): _______  Average Water Depth: _______ m or cm  Clarity (H,M,L): _______

VEGETATION:

<table>
<thead>
<tr>
<th>Dominant Canopy Species (&gt; 40 cm/16&quot; dbh)</th>
<th>Subdominant Canopy Species (&lt; 40 cm/16&quot; dbh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer rubrum</td>
<td>Quercus rubra</td>
</tr>
</tbody>
</table>

Estimated dbh range: Lg: _______  Sm: _______
Relative abundance of dominant vs. subdominant (ratio): _______
Estimated canopy closure: Closed  Moderate  Open
Roost tree potential consists of: Large Trees  Snags  Both  Neither
Roost tree potential for the area is: High  Moderate  Low
Roost potential comments:  

Subcanopy clutter: Closed  Moderate  Open
Subcanopy comprised largely of: Lower Branches of Canopy Trees  Saplings  Shrubs

Common Subcanopy Species:  

Habitat Description:  

Check all that apply:

- Mature Upland Forest  Recently Logged Forest  Crop/Pasture Land  Shrub/scrub Swamp
- Young Upland Forest  Pine Plantation  Stream/River  Vernal Pool
- Mature Lowland Forest  Woodlot/ForestEdge  Emergent Wetland  Deepwater Lake/Pond
- Young Lowland Forest  Old Field  Forested Swamp  Other

Herbaceous Cover: Sparse  Moderate  Dense

Revised June 2007
SKETCH: NETS A and B

LEGEND

Nets: ● ● ●

COMMENTS

Not drawn to scale

Revised June 2007
## BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 4 Aug 2010  
**Project Name:** AEP  
**State:** WV  
**County:** MASON  
**Biologists:** Dr. Jeffcoat, C. Murphy  
**Site name/#:** KM10  
**GPS Unit #:** A13  
**Camera #:** G2

### WEATHER DATA

<table>
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<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From __ to __</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<tbody>
<tr>
<td>2045</td>
<td>22.8</td>
<td>1-3</td>
<td>NE to SW</td>
<td>60%</td>
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<tr>
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<td>2145</td>
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<td>SW to NE</td>
<td>80%</td>
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<tr>
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<td>4-7</td>
<td>SW to NE</td>
<td>30%</td>
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<tr>
<td>2245</td>
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<td>30%</td>
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<tr>
<td>23:45</td>
<td>22.01</td>
<td>1-3</td>
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<tr>
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<tr>
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<td>100%</td>
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<tr>
<td>0300</td>
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<td>1-3</td>
<td>SW to NE</td>
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<td></td>
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</tbody>
</table>

### MOON PHASE*

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

### Net Placement/Site Description:

Tissue noted in access and corridor adjacent to powerline ROW.

### Net Trap/Anabat

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<tbody>
<tr>
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<td>NN</td>
<td>38° 56' 13.2&quot; N</td>
<td>81° 56' 47.2&quot; W</td>
<td>9</td>
<td>6</td>
<td>0135</td>
<td>0135</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>NN</td>
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<td>81° 56' 47.2&quot; W</td>
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<td>6</td>
<td>0135</td>
<td>0135</td>
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</table>

### Capt # | Net # | Species | Time | Age (Ad/Jv) | Sex | Repro.² | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index* (0-3) | Comments |
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<tbody>
<tr>
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<td>39</td>
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</table>

¹ M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
² Reproductive Condition: Female = NR/F/G/L/I/P; Male = T/D

* Refer to table on the back
**BAT CAPTURE DATA**

- **Project #:** Project #296.63
- **Date:** 05 August 2010
- **Project Name:** AEPCo.
- **State:** WV
- **County:** MASON
- **Biologists:** D. Jeffcoff, C. Murphy
- **Site name/#:** KM10
- **GPS Unit #:** F13
- **Camera #:** G1

### MOON PHASE

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
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### Net/Trap/Anabat Data

<table>
<thead>
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<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
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<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
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<th>Picture #</th>
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<td>NN</td>
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<tr>
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<td>2030</td>
<td>0135</td>
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### Net Placement/Site Description

Nets placed in access road corridor leading to RCW for monitoring.

### Species Data

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad./Jv.)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
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<td>CATTUDE</td>
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</tbody>
</table>

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2 Reproductive Condition: Female = NR/PG/LPL; Male = T/U
3 Refer to table on the back
NET SITE HABITAT DESCRIPTION

Project #: 296.03 Date: 08/01/10
Project Name: NEL CO2
State: WY County: (MASON)
Camera #: Picture #: 00-1/008
Latitude: 48° 56' 00.8"N
Longitude: 71° 56' 44.1"W
Distance to closest water source (meters): 0
Type of water source:

Water source name:

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: _______ meters Channel Width: _______ meters Stream Width: _______ meters
Substratum: __Bedrock __Boulder __Cobble __Gravel __Sand __Silt/Clay
Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm Clarity (H,M,L):

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)
Robinia pseudoacacia
Quercus alba
Subdominant Canopy Species (< 40 cm/16" dbh)

Estimated dbh range: Lg: 10 Sm: 7
Estimated dbh range: Lg: 5 Sm: 3
Relative abundance of dominant vs. subdominant (ratio): 50:50

Estimated canopy closure: _______ Closed _______ Moderate _______ Open
Roost tree potential consists of: _______ Large Trees _______ Snags _______ Both _______ Neither
Roost tree potential for the area is: _______ High _______ Moderate _______ Low
Roost potential comments:
Subcanopy clutter: _______ Closed _______ Moderate _______ Open
Subcanopy comprised largely of: _______ Lower Branches of Canopy Trees _______ Saplings _______ Shrubs
Common Subcanopy Species: (Firm spp.)

Habitat Description: Narrow grass path lined with young trees adjacent to pasture

Check all that apply:
[ ] Mature Upland Forest [ ] Recently Logged Forest [X] Crop/Pasture Land
[ ] Young Upland Forest [ ] Pine Plantation [ ] Stream/River
[ ] Mature Lowland Forest [ ] Woodlot/ForestEdge [ ] Emerging Wetland
[ ] Young Lowland Forest [ ] Old Field [ ] Forested Swamp
[ ] Herbaceous Cover: _______ Sparse _______ Moderate _______ Dense

Biologists: McMillen, T. Fern
Site Name/#: KM11
USGS Quad: _______
GPS Unit #: 13 Waypoint #: _______

Revised June 2007
## NET SITE HABITAT DESCRIPTION (continued)

<table>
<thead>
<tr>
<th>Project #:</th>
<th>39603</th>
<th>State/County:</th>
<th>UV/MAISON</th>
<th>Site Name/#:</th>
<th>KW 11</th>
<th>Initials:</th>
<th>MC</th>
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**SKETCH: NETS A and B**

![Sketch of NETS A and B]

### LEGEND

**Nets:** •

### COMMENTS

<table>
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<tr>
<th>Comments</th>
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</table>

Revised June 2007
Appendix F

BAT CAPTURE DATA

4 Aug

Project #: 296.03 Date: 07/04/10

Project Name: AEP CON

State: WV County: Mason

Biologists: M. Little, T. Herr

Site name#: Km11

GPS Unit #: 13 Camera #:

WEATHER DATA

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<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From ___ to ___</th>
<th>% Cloud Cover (estimated)</th>
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<td>20</td>
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</table>

MOON PHASE*

New moon
Waxing crescent
Waxing gibbous
Full moon
Waning gibbous
Last quarter
Waning crescent

Net/Trap/Anabat # | Net/Trap Type¹ | Latitude | Longitude | Length (m) | Height (m) | Time Up (0000 h) | Time Down (0000 h) | Picture # |
<table>
<thead>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Net Placement/Site Description: Grassy trail underneath power lines adjacent to open field.

Capt # | Net # | Species | Time | Age (Ad/Jv) | Sex (M/F) | Repro.² | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index* (0-3) | Comments |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B</td>
<td>Lesturus borealis</td>
<td>22:45</td>
<td>Jr</td>
<td>F</td>
<td>NR</td>
<td>11.5</td>
<td>4/Fem</td>
<td>E</td>
<td>0</td>
<td>007/008</td>
</tr>
</tbody>
</table>

¹ M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
² Reproductive Condition: Female = NR/PG/LPL; Male = M/F
* Refer to table on the back
# BAT CAPTURE DATA

<table>
<thead>
<tr>
<th>Project #: 296.03</th>
<th>Date: 08/05/10</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>State:</td>
<td></td>
</tr>
<tr>
<td>County:</td>
<td>Mason</td>
</tr>
<tr>
<td>Biologists:</td>
<td></td>
</tr>
<tr>
<td>Site Name#:</td>
<td>KM W</td>
</tr>
<tr>
<td>GPS Unit #:</td>
<td>13</td>
</tr>
<tr>
<td>Camera #:</td>
<td></td>
</tr>
</tbody>
</table>

## MOON PHASE*
- New moon
- Waxing crescent
- Waxing gibbous
- Full moon
- First quarter
- Waning gibbous
- Last quarter

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From ___ to ___</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030</td>
<td>18.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>21.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>19.9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>19.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>19.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>19.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>19.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0 000</td>
<td>19.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

## Net/Trap/Anabat #

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NN</td>
<td>38° 56' 08.8&quot; N</td>
<td>81° 56' 48.7&quot; W</td>
<td>2.8</td>
<td>6</td>
<td>2030 0135</td>
<td>2030 0135</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>NN</td>
<td>38° 56' 02.5&quot; N</td>
<td>81° 56' 49.8&quot; W</td>
<td>6</td>
<td>3</td>
<td>2030 0135</td>
<td>2030 0135</td>
<td></td>
</tr>
</tbody>
</table>

## Net Placement/Site Description:
Grassy trail underneath power lines adjacent to open fields.

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time (Ad/Jv)</th>
<th>Age (M/F)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO BATS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2 Reproductive Condition: Female = NR/I/G/I/PL; Male = T/I
* Refer to table on the back

Page 1 of ___
NET SITE HABITAT DESCRIPTION

Project #: 2960.04    Date: 11 August 2010    Biologists: D. Jeffery, C. Murphy
Project Name: AEP - CO2    Site Name/#: KM24
State: WV    County: MASON    USGS Quad: 
Camera #: 57    Picture #:
Latitude: 38° 51' 49.6''N    Distance to closest water source (meters): under B
Longitude: 82° 01' 22.1''W    Type of water source: ephemeral stream
Water source name: 

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: ______ meters    Channel Width: 4-7 meters    Stream Width: 3-4 meters
Substratum: ____ Bedrock    ____ Boulder    X Cobble    X Gravel    ____ Sand    X Silt/Clay
Still Water Present (Y/N): Y    Average Water Depth: 4 m or cm    Clarity (H,M,L): 4

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)    Subdominant Canopy Species (< 40 cm/16" dbh)
Platanus occidentalis    Juglans nigra
Acer negundo    Acer saccharum
Liquidambar styraciflua

Estimated dbh range: Lg: 55 cm    Sm: 41 cm
Relative abundance of dominant vs. subdominant (ratio): 3:1
Estimated canopy closure: ______ Closed    X Moderate    ____ Open
Roost tree potential consists of: ______ Large Trees    ____ Snags    ____ Both    X Neither
Roost tree potential for the area is: ______ High    ____ Moderate    ____ Low
Roost potential comments: 
Subcanopy clutter: ______ Closed    X Moderate    ____ Open
Subcanopy comprised largely of: X Lower Branches of Canopy Trees    ____ Saplings    ____ Shrubs
Common Subcanopy Species: Aesculus Flava

Habitat Description: Old abandoned pipeline ROW parallel to small ephemeral stream with multiple areas of standing water

Check all that apply:
___ Mature Upland Forest    ___ Recently Logged Forest    ___ Crop/Pasture Land
___ Young Upland Forest    ___ Pine Plantation    X Stream/River
___ Mature Lowland Forest    ___ Woodlot/ForestEdge    ___ Emergent Wetland
X Young Lowland Forest    ___ Old Field    ___ Forested Swamp
___ Herbaceous Cover: ___ Sparse    X Moderate    ___ Dense

Revised June 2007

Appendix F    F-143
**NET SITE HABITAT DESCRIPTION (continued)**

| Project #: 290.04 | State/County: WV/MASON | Site Name/#: ZM84 | Initials: OV |

**SKETCH: NETS A and B**

![Sketch Diagram]

---

**LEGEND**

- Nets: ● ● ●
- Stream = ● ● ●
- Channel = =

**COMMENTS**

- Forest to S is more mature than that of NE.
- NE part of forest is more open, understory.
- Flow is usually low, due to heavy rain on 11 August; streams are high with low clarity.
- Not drawn to scale.

Revised June 2007
## BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 10 August 2010  
**Project Name:** AEP - CO2  
**State:** WV  
**County:** Mason  
**Biologists:** D. Jeffcott, C. Murphy  
**Site name/#:** KM 24  
**GPS Unit #:** A13  
**Camera #:** G1

### MOON PHASE*

- New moon
- Waxing crescent
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030</td>
<td>25.9</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2100</td>
<td>25.1</td>
<td>0</td>
<td></td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>2130</td>
<td>24.6</td>
<td>0</td>
<td></td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>2250</td>
<td>24.1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>2230</td>
<td>23.6</td>
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<td></td>
</tr>
<tr>
<td>2300</td>
<td>23.3</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2330</td>
<td>22.9</td>
<td>3</td>
<td>SW to NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>22.8</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0030</td>
<td>22.4</td>
<td>3</td>
<td>SW to NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0100</td>
<td>22.4</td>
<td>3</td>
<td>SW to NE</td>
<td></td>
<td></td>
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<tr>
<td>0130</td>
<td>22.4</td>
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</table>

### Net Placement/Site Description:

Net A placed in corridor between forested area near stream and old field. Net B placed over stream in forest.

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NO CAPTURES</td>
<td></td>
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<td></td>
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<td></td>
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</tbody>
</table>
## BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 11 August 2010

**Project Name:** AEP C02  
**State:** WV  
**County:** Mason  
**Biologists:** D. Jeffcott, C. Murphy  
**Site name/#:** km 24  
**GPS Unit #:** A13  
**Camera #:** 61

### MOON PHASE*

- New moon  
- Waxing crescent  
- First quarter  
- Waxing gibbous  
- Full moon  
- Waning gibbous  
- Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>2030</td>
<td>22.9</td>
<td>0</td>
<td></td>
<td>80%</td>
<td>Hard rain from 4:15 PM</td>
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<td>22.5</td>
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<td></td>
<td>70%</td>
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<tr>
<td>2130</td>
<td>21.9</td>
<td>0</td>
<td></td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>2150</td>
<td>21.6</td>
<td></td>
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<tr>
<td>2230</td>
<td>20.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2300</td>
<td>20.5</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>FOG OUT</td>
<td></td>
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<td></td>
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</tbody>
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### Net Placement/Site Description:

Net A placed in corridor between forested area near stream and old field. Net B placed over stream in forest.

### Net Trap/Anabat #

<table>
<thead>
<tr>
<th>Net Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>38° 57' 44.6&quot; N</td>
<td>80° 01' 22.1&quot; W</td>
<td>9</td>
<td>6</td>
<td>2030</td>
<td>2330</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>38° 57' 45.0&quot; N</td>
<td>80° 01' 22.9&quot; W</td>
<td>6</td>
<td>6</td>
<td>2030</td>
<td>2335</td>
<td></td>
</tr>
</tbody>
</table>

### Capt # Net Species Time Age (Ad/Jv) Sex (M/F) Repro. Wt (g) RFA (mm) Belly (FIM/E) Wing Index* (0-3) Comments

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (FIM/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
</tr>
</thead>
</table>

1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2. Reproductive Condition: Female = NR/PG/L/PL; Male = ??
* Refer to table on the back

---

Page 1 of 1
# BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 12 August 2010

**State:** WV  
**County:** Mason

**Biologists:** D. Sefton, C. Murphy

**Site name/#:** KM24

**GPS Unit #:** A13  
**Camera #:** G1

---

## MOON PHASE*

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

---

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From – to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030</td>
<td>22.5</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2100</td>
<td>22.6</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2130</td>
<td>22.1</td>
<td>0</td>
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<td></td>
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<tr>
<td>2200</td>
<td>21.8</td>
<td>1-3</td>
<td>5W-6w NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2330</td>
<td>21.3</td>
<td>1-3</td>
<td>5W-6w NE</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>0150</td>
<td>19.9</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NW</td>
<td>32° 57'</td>
<td>92° 0'</td>
<td>9</td>
<td>6</td>
<td>2230</td>
<td>0130</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>NW</td>
<td>33° 57'</td>
<td>92° 0'</td>
<td>6</td>
<td>6</td>
<td>2030</td>
<td>0145</td>
<td></td>
</tr>
</tbody>
</table>

---

**Net Placement/Site Description:**

Net was placed in swale on lower slope of abandoned stream and old field. Horseshoe crab present.

---

## CAPT.

<table>
<thead>
<tr>
<th>Capt. #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>Perimyotis subflavus</td>
<td>2110</td>
<td>Ad</td>
<td>F</td>
<td>PL</td>
<td>10.0</td>
<td>34 1/2</td>
<td>M</td>
<td>0</td>
<td>Picture # /Guano/Hair Sample</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>Perimyotis subflavus</td>
<td>2345</td>
<td>M</td>
<td></td>
<td></td>
<td>7.3</td>
<td>35</td>
<td>M</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

---

* M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
* Reproductive Condition: Female = NR/PG/L/PL; Male = T/L
* Refer to table on the back

---

Page 1 of 1
NET SITE HABITAT DESCRIPTION

Project #: 596.04  Date: 12 May 2010  Biologists: M. Michaels, S. Reeves
Project Name: AED CO2  Site Name/#: km25
State: WV  County: Mason  USGS Quad:
Camera #: K270  Picture #: 5833-5930
Latitude: 38° 54' 214"N  GPS Unit #: A4  Waypoint #: km25-w
Longitude: 81° 56' 302"W  Distance to closest water source (meters): 1,300
Type of water source: River
Water source name: Ohio River

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS): NA
Bank Height: meters  Channel Width: meters  Stream Width: meters
Substratum: Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay
Still Water Present (Y/N):  Average Water Depth: m or cm  Clarity (H, M, L):

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)
Quercus alba
Quercus rubra

Subdominant Canopy Species (< 40 cm/16" dbh)
Quercus montana
Ulmus americana
Acer rubrum

Estimated dbh range: Lg: 90  Sm: 40
Estimated dbh range: Lg: 39  Sm: 10
Relative abundance of dominant vs. subdominant (ratio): 1:50

Estimated canopy closure:  Closed  moderate  Open
Roost tree potential consists of: Large Trees  Snags  Both  Neither
Roost tree potential for the area is: High  Moderate  Low
Roost potential comments:

Subcanopy clutter:  Closed  moderate  Open
Subcanopy comprised largely of: Lower Branches of Canopy Trees  Saplings  Shrubs

Common Subcanopy Species:
Quercus montana
Ulmus americana
Acer rubrum

Habitat Description: Young upland forest with ravine to the East. A paved county road intersecting.

Check all that apply:
Mature Upland Forest  Recently Logged Forest  Crop/Pasture Land  Shrub/scrub Swamp
Young Upland Forest  Pine Plantation  Stream/River  Vernal Pool
Mature Lowland Forest  Woodlot/Forest Edge  Emergent Wetland  Deepwater Lake/Pond
Young Lowland Forest  Old Field  Forested Swamp  Other

Herbaceous Cover: Sparse  Moderate  Dense
NET SITE HABITAT DESCRIPTION (continued)

Project #: 296  State/County: WV/Mason  Site Name/#: KM 25  Initials: SR

SKETCH: NETS A and B

LEGEND

Nets: ●●●

COMMENTS

Revised June 2007
Appendix F
BAT CAPTURE DATA

Project #: 296.041  Date: 12 Aug 2010
Project Name: AEP C02
State: WV  County: Mason
Biologists: M. Michaels + S. Reeves
Site name/#: kN 25
GPS Unit #: AY  Camera #: KZ 740

MOON PHASE:

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
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Net/Trap/Anabat #  Net/Trap Type¹  Latitude  Longitude  Length (m)  Height (m)  Time Up (0000 h)  Time Down (0000 h)  Picture #
A  NN  38° 54' 21.9"N  81° 56' 30.2"W  9  6  0030  0130  5834 - 5834
B  NN  38° 54' 19.8"N  81° 56' 29.8"W  6  6  0030  0130  5834 - 5834

Net Placement/Site Description: Nets across asphalt road (Blessing Rd) w/ closed - moderate canopy

Capt #  Net #  Species  Time  Age (Ad/Jv)  Sex  Repro.²  Wt (g)  RFA (mm)  Belly (F/M/E)  Wing Index (0-3)  Comments
1  B  Lasiurus borealis  0000  A  M  v  19.5  49  E  O  
2  A  L. borealis  0015  A  F  NR  12.3  44  M  O  

¹ M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
² Reproductive Condition: Female = NR/PG/LPL; Male = T/A
* Refer to table on the back
### BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 15 Aug 2010

**Project Name:** AEP CO

**State:** WV  
**County:** Mason

**Biologists:** M. Michaels & S. Reeves

**Site name/#:** kma2

**GPS Unit #:** A4  
**Camera #:** k760

#### MOON PHASE
- [X] Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- New moon
- Waning crescent

### WEATHER DATA

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<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
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<th>Wind Direction: From to</th>
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#### Net/Trap/Anabat

<table>
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<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
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<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<td>0830</td>
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**Net Placement/Site Description:** Nets across asphalt road (Bessogle) w/ closed medium canopy

### Capture Data

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<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
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1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2. Reproductive Condition: Female = NR/P/G/L/JP; Male = T/F

* Refer to table on the back
NET SITE HABITAT DESCRIPTION

Project #: 296-04  Date: 12 August 2010  Biologists: J. Wilson, Tyler Herr
Project Name: AEPC02  Site Name/#: Km 2.6
State: WV  County: Mason  USGS Quad:
Camera #: 69  Picture #'s: 104-04129, 0420  GPS Unit #: A-10  Waypoint #: 41
Latitude: 38° 51' 31.6", N  Longitude: 81° 56' 21.3", W  Type of water source: river
Distance to closest water source (meters): 1 Km  Water source name: Ohio River

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: _____ meters  Channel Width: _____ meters  Stream Width: _____ meters
Substratum: Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay
Still Water Present (Y/N): _____  Average Water Depth: _____ m or cm  Clarity (H,M,L):

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)
Quercus rubra  Quercus alba
Acer saccharum
Liriodendron tulipifera

Subdominant Canopy Species (< 40 cm/16" dbh)
Robinia pseudoacacia
Acer saccharum
Liriodendron tulipifera

Estimated dbh range: Lg: 150  Sm: 41
Estimated dbh range: Lg: 39  Sm: 25
Relative abundance of dominant vs. subdominant (ratio): 1:10

Estimated canopy closure: X Closed  _____ Moderate  _____ Open
Roost tree potential consists of: X Large Trees  X Snags  X Both  _____ Neither
Roost tree potential for the area is: _____ High  X Moderate  _____ Low
Roost potential comments: Few large trees with extensive bark and shaded snags
Subcanopy clutter: X Closed  _____ Moderate  _____ Open
Subcanopy comprised largely of: X Lower Branches of Canopy Trees  _____ Saplings  X Shrubs
Common Subcanopy Species:
Sassafras albidum, Carpinus tomentosa, Quercus velutina,
Acer saccharum, Ulmus rubra, Fagus grandifolia, Fraxinus americana, Smilax sp.

Habitat Description:
Rolling upland hills with dense understory with open patches, site adjacent to open woods.

Check all that apply:
X Mature Upland Forest  _____ Young Upland Forest  _____ Lowland Forest
_____ Mature Lowland Forest  _____ Young Lowland Forest  _____ Woodlot/Forest Edge
_____ Old Field  _____ Crop/Pasture Land  _____ Stream/River
_____ Emergent Wetland  _____ Forested Swamp  _____ Shrub/scrub Swamp
_____ Vernal Pool  _____ Deepwater Lake/Pond  _____ Other

Herbaceous Cover: _____ Sparse  X Moderate  _____ Dense

Revised June 2007
NET SITE HABITAT DESCRIPTION (continued)

Project #: 296-04  State/County: WV / Mason  Site Name/#: km 24  Initials: JW

SKETCH: NETS A and B

LEGEND

Nets: ●●

 COMMENTS

Revised June 2007

Appendix F
## BAT CAPTURE DATA

**Project #:** 296-04  
**Date:** 12 August 2010  
**Project Name:** AEP COZ  
**State:** WV  
**County:** Mason  
**Biologists:** J. Wilson, T. Amer  
**Site #:** 24  
**GPS Unit #:** A-6  
**Camera #:** 69  

### WEATHER DATA

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<th>Time (0000 h)</th>
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<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From</th>
<th>% Cloud Cover (estimated)</th>
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### MOON PHASE
- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

### Net/Trap/Anabat

<table>
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<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
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### Net Placement/Site Description:
Nets stacked over sampled ATV trail

### Capt 

<table>
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<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro. 2</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
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<th>Wing Index (0-3)</th>
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1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2. Reproductive Condition: Female = NR/PG/LPL; Male = ?/V
* Refer to table on the back
# BAT CAPTURE DATA

**Appendix F**

**Project #:** 2916-04  
**Date:** 13 August 2010

**Project Name:** AEP Co.

**State:** WV  
**County:** Mason

**Biologists:** J. Wilson, T. Horn

**Site name/#:** KM26

**GPS Unit #:** A-66  
**Camera #:** 169

## MOON PHASE*

- New moon  
- Waxing gibbous  
- Full moon  
- First quarter  
- Waning gibbous  
- Last quarter

---

## WEATHER DATA

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<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
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<th>% Cloud Cover (estimated)</th>
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## Net/Trap/Anabat

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<td>16</td>
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<td>01:30</td>
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## Net Placement/Site Description:

Nets stocked over canopy, ATV trail.

## Capt # | Net # | Species | Time | Age (Ad/Jv) | Sex (M/F) | Repro.2 | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index* (0-3) | Comments |
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1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap, A = Anabat  
2 Reproductive Condition: Female = NR/P/G/LPL; Male = T/F  
* Refer to table on the back

**Page 1 of ___**
NET SITE HABITAT DESCRIPTION

Project #: 296.64       Date: 13 Aug 2016       Biologists: DJC/Scott/M.Little
Project Name: AEP CO2       Site Name/#: VM 27
State: WV       County: Monongahela
USGS Quad: 
Camera #:       Picture #s: 
GPS Unit #: 13       Waypoint #: 02
Latitude: 39° 45' 40.8" N       Longitude: 81° 56' 26.5" W
Distance to closest water source (meters): 
Type of water source: River
Water source name: Ohio River

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: _______ meters       Channel Width: _______ meters       Stream Width: _______ meters
Substratum: _______ Bedrock       _______ Boulder       _______ Cobble       _______ Gravel       _______ Sand       _______ Silt/Clay
Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm       Clarity (H,M,L): _______

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)
  Acer saccharum
  Liriodendron tulipifera
Subdominant Canopy Species (< 40 cm/16" dbh)
  Acer saccharum
  Liriodendron tulipifera

Estimated dbh range: Lg: 30"       Sm: 16"
Estimated dbh range: Lg: 16"       Sm: 4"
Relative abundance of dominant vs. subdominant (ratio): 1:20

Estimated canopy closure: 
  X Closed       _______ Moderate       _______ Open
Roost tree potential consists of:
  X Large Trees       _______ Snags       _______ Both       _______ Neither
Roost tree potential for the area is:
  _______ High       _______ Moderate       _______ Low
Roost potential comments: 

Subcanopy clutter:
  _______ Closed       _______ Moderate       X Open
Subcanopy comprised largely of:
  X Lower Branches of Canopy Trees       _______ Saplings       _______ Shrubs

Common Subcanopy Species: Cercis canadensis

Habitat Description: Small trail through woods, mostly sugar maple

Check all that apply:
  _______ Mature Upland Forest       _______ Recently Logged Forest       _______ Crop/Pasture Land
  X Young Upland Forest       _______ Pine Plantation       _______ Shrub/scrub Swamp
  _______ Mature Lowland Forest       _______ Woodlot/ForestEdge       _______ Stream/River
  _______ Young Lowland Forest       _______ Old Field       _______ Vernal Pool
  _______ Herbaceous Cover: _______ Sparse       _______ Moderate       _______ Dense
  _______ Deepwater Lake/Pond       _______ Emergent Wetland       _______ Forested Swamp
  _______ Other

Revised June 2007
## NET SITE HABITAT DESCRIPTION (continued)

<table>
<thead>
<tr>
<th>Project #:</th>
<th>296</th>
<th>State/County:</th>
<th>WV/ Mason</th>
<th>Site Name/#:</th>
<th>KM 27</th>
<th>Initials:</th>
</tr>
</thead>
</table>

### SKETCH: NETS A and B

- **Nets:**
  - Small sand in woods
  - Pull off area

### LEGEND

- **Nets:**

### COMMENTS

- [Blank]

---

*Revised June 2007
Appendix F*
## BAT CAPTURE DATA

**Project #:** 2916.04  
**Date:** 13 Aug 2010

**Project Name:** AEP CO  
**State:** WV  
**County:** Mason  
**Biologists:** M. Michael S. Reeves

**Site name/#:** KM 27  
**GPS Unit #:** A13  
**Camera #:**

### MOON PHASE*
- New moon
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<tbody>
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<td>SE - NW</td>
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<tr>
<td>2200</td>
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<td>0%</td>
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<tr>
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<tr>
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### Net/Trap/Anabat

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
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<td>39° 53'</td>
<td>W</td>
<td>12</td>
<td>4</td>
<td>2030</td>
<td>0130</td>
<td></td>
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<tr>
<td>B</td>
<td>NW</td>
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<td>W</td>
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<td>4</td>
<td>2030</td>
<td>1140</td>
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</table>

**Net Placement/Site Description:** Nets over small trail through woods

### Capt # | Net # | Species | Time | Age (Ad/Jv) | Sex (M/F) | Repro. | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index* | Comments |
<table>
<thead>
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<th></th>
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<tbody>
<tr>
<td>1</td>
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<td>Lasius borealis</td>
<td>01/5</td>
<td>A</td>
<td>M</td>
<td>V</td>
<td>10.4</td>
<td>39</td>
<td>M</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

* M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
** Refer to table on the back  

<table>
<thead>
<tr>
<th>Repro.</th>
<th>Wing Index*</th>
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<tbody>
<tr>
<td>Female = NR/PG/LPL; Male = T/L</td>
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</table>

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/LPL; Male = T/L  
* Refer to table on the back  

---

Page 1 of ___
# BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 14 August 2018

**Project Name:** AEPCO

**State:** WV  
**County:** Mason

**Biologists:** D. Jeffco T. Horn

**GPS Unit #:** KM27  
**Camera #:** 61

---

## WEATHER DATA

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<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
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<tbody>
<tr>
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<td>Rain</td>
</tr>
<tr>
<td>2100</td>
<td>23.2</td>
<td>8-12</td>
<td>W↑E</td>
<td>100%</td>
<td>Rain</td>
</tr>
<tr>
<td>2130</td>
<td>22.5</td>
<td>8-12</td>
<td>W↑E</td>
<td>100%</td>
<td>Rain</td>
</tr>
<tr>
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<td>1-2</td>
<td>W↑E</td>
<td>100%</td>
<td>Rain Out</td>
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</table>

---

### MOON PHASE*

- **New moon**
- **Waxing crescent**
- **First quarter**
- **Waxing gibbous**
- **Full moon**
- **Waning gibbous**
- **Waning crescent**

### Net Placement/Site Description:

Nets over trail through woods

---

## Net/Table/Anabat # | Net/Table Type | Longitude | Length (m) | Height (m) | Time Up (0000 h) | Time Down (0000 h) | Picture #
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### Capt # | Net # | Species | Time (Ad/Jv) | Age (M/F) | Sex (M/F/E) | Repro. | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index* (0-3) | Comments |
|----------|--------|----------|--------------|-----------|-------------|--------|--------|----------|--------------|-----------------|----------|

1. M = Monofilament, CN = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2. Reproductive Condition: Female = NR/PG/LPL; Male = T/L
3. Refer to table on the back

---

Page 1 of ___
## BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 15 Aug 2010

**Project Name:** AGP CO2  
**State:** WV  
**County:** Mason  
**Biologists:** M. Little  
**Site name/#:** KM 27  
**GPS Unit #:** A15  
**Camera #::**

### MOON PHASE
- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

### WEATHER DATA

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<tr>
<th>Time (0000 h)</th>
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<th>Wind Speed (estimated – see chart*)</th>
<th>Wind Direction: From ___ to ___</th>
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<td>20%</td>
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<tr>
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<td>-</td>
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<tr>
<td>0500</td>
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<td>90°</td>
<td>-</td>
<td>10%</td>
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</tr>
<tr>
<td>0600</td>
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<td>-</td>
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<td>-</td>
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<td>-</td>
<td>10%</td>
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### Net/Trap/Anabat

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<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<td>91° 56'</td>
<td>9</td>
<td>6</td>
<td>2030</td>
<td>0130</td>
<td>601</td>
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</table>

**Net Placement/Site Description:** Net over small trail in wooded area near forest edge opening

**Capt # | Net # | Species | Time | Age (Ad/Jv) | Sex (M/F) | Repro.² | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index* (0-3) | Comments |
|--------|-------|---------|------|-------------|-----------|---------|--------|----------|---------------|-------------------|----------|

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2 Reproductive Condition: Female = NR/PG/IPL; Male = ♀♀
* Refer to table on the back

**Picture # /Guano/Hair Sample**
INTENTIONALLY LEFT BLANK
NET SITE HABITAT DESCRIPTION

Project #: 296.04 Date: 15 Aug 2010

Biologists: D. Jeffcoat

Site Name/#: K128

State: WV County: Mason

USGS Quad:

Camera #: 61 Picture #: 60

GPS Unit #: A13 Waypoint #: K128

Latitude: 38° 54’ 49.9” N

Longitude: 81° 56’ 36.9” W

Distance to closest water source (meters):

Type of water source:

Water source name:

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):

Bank Height: _______ meters Channel Width: _______ meters Stream Width: _______ meters

Substratum: _______ Bedrock _______ Boulder _______ Cobble _______ Gravel _______ Sand _______ Silt/Clay

Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm Clarity (H,M,L): _______

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

Quercus alba

Quercus rubra

Subdominant Canopy Species (< 40 cm/16" dbh)

Quercus rubra

Rabina pseudoacacia

Estimated dbh range: Lg: 18” Sm: 16”

Estimated dbh range: Lg: 14” Sm: 4”

Relative abundance of dominant vs. subdominant (ratio): 1:10

Estimated canopy closure:

_____ Closed _______ Moderate _______ Open

Roost tree potential consists of:

_____ Large Trees _______ Snags _______ Both _______ Neither

Roost tree potential for the area is:

_____ High _______ Moderate _______ Low

Roost potential comments:

Subcanopy clutter:

_____ Closed _______ Moderate _______ Open

Subcanopy comprised largely of:

_____ Lower Branches of Canopy Trees _______ Saplings _______ Shrubs

Common Subcanopy Species: Ceris eugamensis

Habitat Description:

Field to west

Check all that apply:

X Mature Upland Forest _______ Recently Logged Forest _______ Crop/Pasture Land _______ Shrub/scrub Swamp

__ Young Upland Forest _______ Pine Plantation _______ Stream/River _______ Vernal Pool

__ Mature Lowland Forest _______ Woodlot/ForestEdge _______ Emergent Wetland _______ Deepwater Lake/Pond

__ Young Lowland Forest _______ Old Field _______ Forested Swamp _______ Other _______

Herbaceous Cover: _______ Sparse _______ Moderate _______ Dense

Revised June 2007
NET SITE HABITAT DESCRIPTION (continued)

Project #: 246.04  State/County: WV/Mason  Site Name/#:  Initials:

SKETCH: NETS A and B

LEGEND

Nets: ●●

COMMENTS

---

Revised June 2007

Appendix F
## BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 13 August 2010  
**Project Name:** AEP-CO2  
**State:** WV  
**County:** Mason  
**Biologists:** D. Jeffcoat, C. Murphy  
**Site name/#:** KM28  
**GPS Unit #:** A13  
**Camera #:** G1

### MOON PHASE
- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

### WEATHER DATA

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<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
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### Net/Trap/Anabat

<table>
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<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<td>6</td>
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<td>2030</td>
<td>0130</td>
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**Net Placement/Site Description:** Nets placed over gravel road in forested area, good corridor w/ canopy

### Captured Species

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
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<th>Comments /Guano/Hair Sample</th>
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<tbody>
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<td>M</td>
<td>M</td>
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<td>37½</td>
<td>M</td>
<td>O</td>
<td></td>
<td></td>
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<tr>
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<td>A</td>
<td>L. borealis</td>
<td>2345</td>
<td>M</td>
<td>F</td>
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¹ M = Monofilament, ON = Old Nylon, NN = New Nylon; HT = Harp Trap; A = Anabat  
² Reproductive Condition: Female = NR/PGI/PL; Male = T/↓

* Refer to table on the back
## BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 14 August 2010

**Project Name:** AEPCO

**State:** WV  
**County:** Mason

**Biologists:** D. Joffeott

**GPS Unit #:** 413  
**Camera #:** 61

### MOON PHASE*
- New moon
- Waxing crescent
- Growing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<tbody>
<tr>
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<td>8-12</td>
<td>W 60° E</td>
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<td>Rain</td>
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### Net/Trap/Anabat

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<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
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<td>81° 56' 36.7&quot; W</td>
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<td>2200</td>
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<td>NN</td>
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<td>6</td>
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<td>2205</td>
<td></td>
</tr>
</tbody>
</table>

### Net Placement/Site Description:
- Nets over ground had

### Captures

- **NO Captures**
- **Rain Out**

---

1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2. Reproductive Condition: Female = NR/PG/PL; Male = F/M

* Refer to table on the back
# BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 15 August 2010  
**Project Name:** AEP Co.  
**State:** WV  
**County:** Mason  
**Biologists:** D. Sefton  
**Site name/#:** Km 28  
**GPS Unit #:** A13  
**Camera #:** 61

### MOON PHASE*  
- [ ] New moon  
- [ ] Waxing crescent  
- [ ] First quarter  
- [ ] Waxing gibbous  
- [ ] Full moon  
- [ ] Waning gibbous  
- [ ] Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
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<th>Wind Direction: From</th>
<th>% Cloud Cover (estimated)</th>
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<td>10%</td>
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</table>

**Net/Trap/Anabat #**  
**Net/Trap Type**: A  
**Latitude**: 38° 59.6' N  
**Longitude**: 81° 56.9' W  
**Length (m)**: 9  
**Height (m)**: 6  
**Time Up (0000 h)**: 2030-0130  
**Time Down (0000 h)**: 2030-0130

### Net Placement/Site Description: Net #2 over ground road.

**Capt #**  
**Net #**  
**Species**  
**Time**  
**Age (Ad/Jv)**  
**Sex (M/F)**  
**Repro.**  
**Wt (g)**  
**RFA (mm)**  
**Belly (F/M/E)**  
**Wing Index**  
**Comments**  
**Picture #**  
**Guano/Hair Sample**

---

1 M = Monofilament, ON = Old Nykon, NN = New Nykon, HT = Harp Trap, A = Anabat  
2 Reproductive Condition: Female = NR/PGI/PL; Male = T/Q  
* Refer to table on the back

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Page 1 of
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NET SITE HABITAT DESCRIPTION

Project #: 296.03  Date: 7 August 2010  Biologists: B. Jeffries, C. Murphy
Project Name: AEP CO2  Site Name#: KM12
State: WV  County: MASON  USGS Quad: A13
Camera #: F7  Picture #s:  GPS Unit #: Waypoint #: KM12A
Latitude: 38° 54' 59.1"N  Longitude: 81° 56' 47.9"W  Type of water source: ephemeral stream
Distance to closest water source (meters): 3m  Water source name:

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: _______ meters  Channel Width: _______ meters  Stream Width: _______ meters
Substratum: ___Bedrock ___Boulder ___Cobble ___Gravel ___Sand ___Silt/Clay
Still Water Present (Y/N): _______ Average Water Depth: _______m or cm  Clarity (H,M,L):

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)  Subdominant Canopy Species (< 40 cm/16" dbh)
Platycarya occidentalis  Acer saccharum
Liriodendron tulipifera  Juglanis nigra
Pinus virginiana

Estimated dbh range: Lg: 50cm  Sm: 10cm  Estimated dbh range: Lg: 30cm  Sm: 10cm
Relative abundance of dominant vs. subdominant (ratio): 1:10
Estimated canopy closure:  ___Closed  ___Moderate  ___Open
Roost tree potential consists of:  ___Large Trees  ___Snags  ___Both  ___Neither
Roost tree potential for the area is:  ___High  ___Moderate  ___Low
Roost potential comments:

Subcanopy clutter:  ___Closed  ___Moderate  ___Open
Subcanopy comprised largely of:  ___Lower Branches of Canopy Trees  ___Saplings  ___Shrubs
Common Subcanopy Species:  Cercis canadensis  Carpinus caroliniana

Habitat Description: open fields used as hunting grounds w/ open fields and open canopy. Several wide trails through woods.

Check all that apply:
___Mature Upland Forest  ___Recently Logged Forest  ___Crop/Pasture Land  ___Shrub/scrub Swamp
___Young Upland Forest  ___Pine Plantation  ___Stream/River  ___Vernal Pool
___Mature Lowland Forest  ___Woodlot/ForestEdge  ___Emergent Wetland  ___Deepwater Lake/Pond
___Young Lowland Forest  ___Old Field  ___Forested Swamp  ___Other

Herbaceous Cover: ___Sparse  ___Moderate  ___Dense
Appendix F

NET SITE HABITAT DESCRIPTION (continued)

| Project #: | 296.03 | State/County: WV/Mason | Site Name/#: | KM 12 | Initials: | CAL |

**SKETCH: NETS A and B**

![Diagram with labeled areas and notes]

**LEGEND**

- Nets: ![](image)

**COMMENTS**

- Parts of trail leading North to net B
- have canopy cover.
- ATV/Grass road not highly used.
- Not drawn to scale.

Revised June 2007
# BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 16 August 2010  
**Project Name:** EED-CO2  
**State:** WV  
**County:** MASON  
**Biologists:** D. Jeffcott, C. Murphy  
**Site name/#:** KM12  
**GPS Unit #:** A13  
**Camera #:** GI

## MOON PHASE
- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From</th>
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<tr>
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## Net/Trap/Anabat #

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<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
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## Net Placement/Site Description

A placed between forest and ephemeral stream in field. B placed in AUV corridor between forest and ephemeral stream.

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro. ²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index²</th>
<th>Comments</th>
<th>Picture # /Guano/Hair Sample</th>
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<td></td>
<td></td>
<td>ESCHAPED From net</td>
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---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/LPL; Male = TN

* Refer to table on the back

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Page 1 of 1
## BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 7 August 2010

**Project Name:** AEPP CO2  
**State:** WV  
**County:** MASON  
**Biologists:** D. Jeffcoat, C. Murphy

**Site name/#:** KM 12  
**GPS Unit #:** A13  
**Camera #:** 61

### MOON PHASE*
- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
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### Net/Trap/Anabat

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### Net Placement/Site Description:

A placed between forest and eglomeral stream in field. B placed in ATV corridor between.

**Capt #**  
**Net #**  
**Species**  
**Time**  
**Age (Ad/Jv)**  
**Sex (M/F)**  
**Repro.**  
**Wt (g)**  
**RFA (mm)**  
**Belly (F/M/E)**  
**Wing Index* (0-3)**

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<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
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</table>

---

1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap, A = Anabat
2. Reproductive Condition: Female = NR/IP/GI/LPL; Male = MN

* Refer to table on the back

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Page 1 of 1
NET SITE HABITAT DESCRIPTION

Property of: Environmental Solutions & Innovations, Inc.
781 Neub Road, Cincinnati, OH 45233 (Phone: 513-451-1777)

Project #: 296.03  Date: 7 August 2010  Biologists: D. Jeffree, C. Murphy
Project Name: AEP - CO  Site Name/#: KM13
State: WV  County: MASON  USGS Quad: A13
Camera #: 61  Picture #s:  GPS Unit #: KM13A  Waypoint #: KM13A
Latitude: 38° 55', 11N  Longitude: 81° 56', 53.6 W  Type of water source: ephemeral stream
Distance to closest water source (meters):  Water source name:

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: 1 meters  Channel Width: 2 meters  Stream Width: NA meters
Substratum: Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay
Still Water Present (Y/N): N  Average Water Depth: NA m or cm  Clarity (H,M,L): NA

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)  Subdominant Canopy Species (< 40 cm/16" dbh)
Quercus alba  Juglans nigra
Platanus occidentalis  Acer saccharum
Liriodendron tulipifera  Acer rubrum

Estimated dbh range: Lg: 50 cm  Sm: 40 cm  Estimated dbh range: Lg: 39 cm  Sm: 10 cm
Relative abundance of dominant vs. subdominant (ratio): 1:2

Estimated canopy closure:  Closed  Moderate  Open
Roost tree potential consists of:  Large Trees  Snags  Both  Neither
Roost tree potential for the area is:  High  Moderate  Low
Roost potential comments:  Some large white oaks

Subcanopy clutter:  Closed  Moderate  Open
Subcanopy comprised largely of:  Lower Branches of Canopy Trees  Saplings  Shrubs
Common Subcanopy Species:  Aesculus Flava  Cercis canadensis

Habitat Description: Old road w/ dense canopy and closed understory. Ephemeral stream runs through.

Check all that apply:
Mature Upland Forest  Recently Logged Forest  Crop/Pasture Land  Shrub/scrub Swamp
Young Upland Forest  Pine Plantation  Stream/River  Vernal Pool
Mature Lowland Forest  Woodlot/Forest Edge  Emergent Wetland  Deepwater Lake/Pond
Young Lowland Forest  Old Field  Forested Swamp  Other
Herbaceous Cover: Sparse  Moderate  Dense

Revised June 2007

Appendix F
SKETCH: NETS A and B

LEGEND
Nets: ● ● ●

COMMENTS
Not drawn to scale

Revised June 2007
### BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 6 August 2010

**Project Name:** AEP - CO2  
**State:** WV  
**County:** MASON  
**Biologists:** D. Jeffcott, C. Murphy  
**Site name/#:** KM13  
**GPS Unit #:** A13  
**Camera #:** 61

#### WEATHER DATA

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<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From</th>
<th>% Cloud Cover (estimated)</th>
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#### MOON PHASE

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter
- Waning crescent

#### Net/Trap/Anabat Data

<table>
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<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
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<td>UN</td>
<td>38° 55' 01.0&quot; N</td>
<td>81° 56' 56.8&quot; W</td>
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<td>2030</td>
<td>0145</td>
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</tr>
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</table>

**Net Placement/Site Description:** A placed a FTV canopy and over ephemeral stream in forest. B placed in forested ATV corridor above and to the downstream side of stream.

### Bat Data

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
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<th>Comments</th>
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1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/L/PL; Male = M/R
* Refer to table on the back

---

Page 1 of 1
# BAT CAPTURE DATA

**Appendix F**

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<td>State:</td>
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<td>D. Jeff Cotty, C. Murphy</td>
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## MOON PHASE*

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From</th>
<th>to</th>
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## Net/Trap/Anabat #

<table>
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<th>Net/Trap Type¹</th>
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<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
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<th>Picture #</th>
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Net Placement/Site Description: Net A placed in ATV corridor and over ephemeral stream in forest. B placed in cleared ATV corridor

## Captures

<table>
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<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time (Age/Ad/Jr)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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</thead>
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NO CAPTURES

---

¹ M = Mono filament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
² Reproductive Condition: Female = NR/PG/PL; Male = T/L

* Refer to table on the back

---

Page 1 of 1
NET SITE HABITAT DESCRIPTION

Project #: 296.03          Date: 08/06/10          Biologists: mult-tile thorn
Project Name: AEP C02
State: WY          County: Mason
Camera #:            Picture #: 011, 017
Latitude: 38° 54', 28° 58' N
Distance to closest water source (meters): 0
Water source name: NA

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: < 1 meters      Channel Width: _______meters      Stream Width: _______meters
Substratum: __Bedrock __Boulder ___Cobble ___Gravel ___Sand X Silt/Clay
Still Water Present (Y/N): Y Average Water Depth: 1 m or cm Clarity (H,M,L): L

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)
Acer rubrum__
Quercus alba
Subdominant Canopy Species (< 40 cm/16" dbh)
willow spp.

Estimated dbh range: Lg: 15 Sm: 10
Estimated dbh range: Lg: 5 Sm: 3
Relative abundance of dominant vs. subdominant (ratio):

Estimated canopy closure: ___Closed X Moderate ___Open
Roost tree potential consists of: ___Large Trees ___Snags ___Both X Neither
Roost tree potential for the area is: ___High ___Moderate X Low
Roost potential comments:

Subcanopy clutter: ___Closed X Moderate ___Open
Subcanopy comprised largely of:       X Lower Branches of Canopy Trees X Saplings X Shrubs
Common Subcanopy Species: willow rhododendron

Habitat Description:
old field with path-through narrow grassland

Check all that apply:
___ Mature Upland Forest ___Recently Logged Forest ___Crop/Pasture Land ___Shrub/scrub Swamp
___ Young Upland Forest ___Pine Plantation Stream/River ___Vernal Pool
___ Mature Lowland Forest ___Woodlot/ForestEdge ___Emergent Wetland Deepwater Lake/Pond
X Young Lowland Forest      ___Old Field ___Forested Swamp Other
Herbaceous Cover: ___ Sparse X Moderate ___ Dense
##NET SITE HABITAT DESCRIPTION (continued)

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<th>Project #:</th>
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<th>State/County:</th>
<th>WV/monroe</th>
<th>Site Name/#:</th>
<th>ACV</th>
<th>Initials:</th>
<th>MLS</th>
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**SKETCH: NETS A and B**

![Sketch of NETS A and B]

###LEGEND

- Nets: [Circle symbol]

###COMMENTS

- [Blank line]
- [Blank line]
- [Blank line]
- [Blank line]

Revised June 2007
### BAT CAPTURE DATA

**Date**: 08/10/09

**Project #**: 296-03

**State**: WV

**County**: MASON

**Biologist**: M. O. DESPAN

**Site Name/##**: KM14

**GPS Unit #:** A-6

**Camera #:**

---

#### MOON PHASE
- __New moon__
- __Waxing crescent__
- __First quarter__
- __Waxing gibbous__
- __Full moon__
- __Waning gibbous__
- __Last quarter__

---

#### WEATHER DATA

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<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From ___ to ___</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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### NET/TRAP ANABAT

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<th>Net/Trap Type</th>
<th>Net Type</th>
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<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<tr>
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<td>38° 54' 28.5&quot; N</td>
<td>81° 57' 13.9&quot; W</td>
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<td>2030 0830</td>
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<td>NN</td>
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<td>6</td>
<td>2030 0830</td>
<td>012</td>
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---

**Net Placement/Site Description**: Net A is over second pool. Net B is open S. Track was 4th track.

---

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
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<th>Comments</th>
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</table>

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat

2 Reproductive Condition: Female = NR/PG/LPL; Male = ♂

* Refer to table on the back

---

Page 1 of ___
**BAT CAPTURE DATA**

**Project #:** 294.03  
**Date:** 08/07/10

**Project Name:** AEP CO

**State:** WY  
**County:** Roanoke

**Biologists:** little T. Herr

**Site name/#:** KM14

**GPS Unit #:** A-6  
**Camera #::**

---

**MOON PHASE**

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

---

**WEATHER DATA**

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
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**Net/Trap/Anabat #**  
**Net/Trap Type**

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<td>01:20</td>
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<td>NN</td>
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**Net Placement/Site Description:** Net A is over a small pond. Net B is on a grassy path.

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<th>Net #</th>
<th>Species</th>
<th>Time (AdJv)</th>
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<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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</thead>
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---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat

² Reproductive Condition: Female = NR/PG/IPL; Male = T/F

* Refer to table on the back

---

Page 1 of ___
NET SITE HABITAT DESCRIPTION

Project #: 296-03  Date: 08 Aug 2010  Biologists: Dr. Wilson, C. Boggs
Project Name: AEP COZ  Site Name#: KM 15
State: WV  County: Mason
Camera #: 69  Picture #: 104-0421, 0427
Latitude: 38° 53' 59.6" N  GPS Unit #: A-Ce
Longitude: 81° 54' 53.2" W  Waypoint #: 82
Distance to closest water source (meters): 200  Type of water source: Stream
Water source name: UNK

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):

Bank Height: _______ meters  Channel Width: _______ meters  Stream Width: _______ meters
Substratum: _______ Bedrock  _______ Boulder  _______ Cobble  _______ Gravel  _______ Sand  _______ Silt/Clay
Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm  Clarity (H, M, L): _______

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)
- Quercus stellata
- Quercus rubra
- Pinus spp.

Subdominant Canopy Species (< 40 cm/16" dbh)
- Rhamnus pseudococcia
- Quercus alba
- Quercus rubra

Estimated dbh range: Lg: 39  Sm: 25
Estimated dbh range: Lg: 80  Sm: 41
Relative abundance of dominant vs. subdominant (ratio): 1:16

Estimated canopy closure: _______ Closed  _______ Moderate  _______ Open
Roost tree potential consists of: _______ Large Trees  _______ Snags  _______ Both  _______ Neither
Roost tree potential for the area is: _______ High  _______ Moderate  _______ Low
Roost potential comments: _______ Snags small with no exfoliating bark & in shaded areas
Subcanopy clutter: _______ Closed  _______ Moderate  _______ Open
Subcanopy comprised largely of: _______ Lower Branches of Canopy Trees  _______ Saplings  _______ Shrubs

Common Subcanopy Species:
- Corokia elongata
- Sassafras albidum
- Ulmus americana
- Diospyros virginiana
- Cornus Florida
- Rosa multiflora
- Sambucus virginiana

Habitat Description:
Rolling hills of upland forest adjacent to pasture land, young upland forest with mostly open understory

Check all that apply:
- Mature Upland Forest  - Recently Logged Forest  - Crop/Pasture Land  - Shrub/scrub Swamp
- Young Upland Forest  - Pine Plantation  - Stream/River  - Vernal Pool
- Mature Lowland Forest  - Woodlot/Forest Edge  - Emergent Wetland  - Deepwater Lake/Pond
- Young Lowland Forest  - Old Field  - Forested Swamp  - Other

Herbaceous Cover: _______ Sparse  _______ Moderate  _______ Dense
**BAT CAPTURE DATA**

**WEATHER DATA**

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<td>E-W</td>
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**MOON PHASE**

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Last quarter

**Net/Trap/Anabat**

<table>
<thead>
<tr>
<th>Net/Trap/Anabat</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<td>A</td>
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<td>38° 53' 59.6&quot; N</td>
<td>81° 57' 25.3&quot; W</td>
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<td>01:30</td>
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<td>104-0422</td>
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**Net Placement/Site Description:**

Nets stacked over area with sparse canopy

<table>
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<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro. 2</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index * (0-3)</th>
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1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2 Reproductive Condition: Female = NR/P/G/LPL; Male = 7/4
3 Refer to table on the back
# BAT CAPTURE DATA

**Project #:** 296-03  
**Date:** 07 Aug 2010  
**Project Name:** AEPC02  
**State:** IN  
**County:** Mason  
**Biologists:** J. Wilson, C. Baggs  
**Site Name/#:** Km 15  
**GPS Unit #:** A-C  
**Camera #:** 69

---

**MOON PHASE**
- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

---

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
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<td>---</td>
<td>---</td>
<td>---</td>
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</tr>
<tr>
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**Net Trap/Anabat #**  
**Net Trap Type**
- NN  

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<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
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**Net Placement/Site Description:** Nets stacked over road with some canopy

---

**Capt #**  
**Net #**  
**Species**  
**Time**  
**Age (Ad/Jv)**  
**Sex (M/F)**  
**Repro.**
- NR  
**Wt (g)**  
**RFA (mm)**  
**Belly (F/M/E)**
- M  
**Wing Index**
- 0  

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/LPL; Male = ?/F  
* Refer to table on the back

---

**Comments**  
**Picture # /Guano/Hair Sample**
NET SITE HABITAT DESCRIPTION

Project #: 296.03  Date: 6 Aug 2016  Biologists:  M. Michaela Sleaford
Project Name: AEP CO2  Site Name/#: KML6
State: WV  County: Mason  USGS Quad: Ohio River
Camera #: 0776D  Picture #: 4923-4927  GPS Unit #: A4  Waypoint #: KML6-NETA
Latitude: 38° 53' 11.1" N  Longitude: 81° 57' 34.8" W  Type of water source: River
Distance to closest water source (meters): 3000 m  Water source name: Ohio River

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS): N/A
Bank Height: _______ meters  Channel Width: _______ meters  Stream Width: _______ meters
Substratum:  Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay
Still Water Present (Y/N):  Average Water Depth: _______ m or cm  Clarity (H,M,L): _______

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)  Subdominant Canopy Species (< 40 cm/16" dbh)
Quercus alba  Robinia pseudoacacia
Quercus rubra
Carya tomentosa

Estimated dbh range: Lg: 140 Sm: 40cm  Estimated dbh range: Lg: 39cm Sm: 10cm
Relative abundance of dominant vs. subdominant (ratio): 1:100
Estimated canopy closure:  Closed  Moderate  Open
Roost tree potential consists of:  Large Trees  Snags  Both  Neither
Roost tree potential for the area is:  High  Moderate  Low
Roost potential comments:  
Subcanopy clutter:  Closed  Moderate  Open
Subcanopy comprised largely of:  Lower Branches of Canopy Trees  Saplings  Shrubs
Common Subcanopy Species:  Robinia pseudoacacia
Rhus typhina
Habitat Description: Young Upland Forest/Early Successional Forest
unimproved path through forest

Check all that apply:
Mature Upland Forest  Recently Logged Forest  Crop/Pasture Land  Shrub/scrub Swamp
Young Upland Forest  Pine Plantation  Stream/River  Vernal Pool
Mature Lowland Forest  Woodlot/ForestEdge  Emergent Wetland  Deepwater Lake/Pond
Young Lowland Forest  Old Field  Forested Swamp  Other Highway
Herbaceous Cover:  Sparse  Moderate  Dense

Revised June 2007
SKETCH: NETS A and B

LEGEND

Nets: ●●

COMMENTS

Not to scale

Revised June 2007
Appendix F
### BAT CAPTURE DATA

**Project #:** 291E.023  
**Date:** 6 Aug 2010

**Project Name:** AEP co2  
**State:** WV  
**County:** Mason  
**Biologists:** M. Michael S. Kramer  
**Site name/#:** KM 11-6  
**GPS Unit #:** A4  
**Camera #:** K7760

---

### WEATHER DATA

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<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
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### MOON PHASE

- **New moon**
- **Waxing crescent**
- **First quarter**
- **Waxing gibbous**
- **Full moon**
- **Waning crescent**
- **Waning gibbous**

---

### Net/Trap/Anabat

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<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
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<td>4925 - 4927</td>
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### Net Placement/Site Description

**Nets across moderately managed unimproved path**

---

### Capt # | Net # | Species | Time | Age (Ad/Jv) | Sex (M/F) | Repro. | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index | Comments
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<td>V</td>
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1. **M** = Monofilament, **ON** = Old Nylon, **NN** = New Nylon, **HT** = Harp Trap; **A** = Anabat
2. Reproductive Condition: Female = NR/PG/I/PL; Male = ¥/¥

* Refer to table on the back
# BAT CAPTURE DATA

**Project #:** 291603  
**Date:** 7 Aug 2010  
**Project Name:** AEP  
**State:** WV  
**County:** Mason  
**Biologists:** MMidwood, SPEEVE  
**Site name:** KM11c  
**GPS Unit #:** A41  
**Camera #:** KZ760

## WEATHER DATA

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### MOON PHASE

- New moon  
- Waxing crescent  
- First quarter  
- Waxing gibbous  
- Full moon  
- Last quarter

## Net/Trap/Anabat

<table>
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<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
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<th>Picture #</th>
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<td>4925-4927</td>
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</table>

### Net Placement/Site Description

Nets across unimproved road with moderate canopy

---

1. M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2. Reproductive Condition: Female = NR/PG/PL; Male = T/L  
* Refer to table on the back
NET SITE HABITAT DESCRIPTION

Project #: 296.03  Date: 8 Aug 2010  Biologists: M. Michaels, J. Reaves
Project Name: AEP CO2
State: WV  County: Mason
USGS Quad: Ohio River
Camera #: 47767  Picture #: 5071-5074
GPS Unit #: A4  Waypoint #: KY 11067A
Latitude: 38°52’58.9” N  Longitude: 81°57’01.5” W
Distance to closest water source (meters): 1900m  Type of water source: river
Water source name: Ohio River

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS): N/A

Bank Height: _______ meters  Channel Width: _______ meters  Stream Width: _______ meters
Substratum:  Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay
Still Water Present (Y/N):  Average Water Depth: _______ m or cm  Clarity (H,M,L): _______

VEGETATION:

Dominant Canopy Species (> 40 cm/16” dbh)

Quercus alba
Quercus coccinea

Subdominant Canopy Species (< 40 cm/16” dbh)

Asimina triloba
Carya tomentosa
Acer rubrum

Estimated dbh range: Lg: 200cm Sm: 40cm
Estimated dbh range: Lg: 39cm Sm: 15cm
Relative abundance of dominant vs. subdominant (ratio): 1:50

Estimated canopy closure:  Closed  Moderate  Open
Roost tree potential consists of:
Large Trees  Snags  Both  Neither
Roost tree potential for the area is:  High  Moderate  Low
Roost potential comments: N/A

Subcanopy clutter:
Closed  Moderate  Open
Subcanopy comprised largely of:
Lower Branches of Canopy Trees  Saplings  Shrubs

Common Subcanopy Species:
Robinia pseudoacacia  Acer saccharum  Asimina triloba

Habitat Description: young upland forest (w/ few large oaks) along gravel road, nearby power line right-of-way, rural residents nearby

Check all that apply:
- Mature Upland Forest  - Recently Logged Forest  - Crop/Pasture Land  - Shrub/scrub Swamp  - Young Upland Forest  - Pine Plantation  - Stream/River  - Vernal Pool  - Mature Lowland Forest  - Woodlot/ForestEdge  - Emergent Wetland  - Deepwater Lake/Pond  - Young Lowland Forest  - Old Field  - Forested Swamp  - Other Residential

Herbaceous Cover:  Sparse  Moderate  Dense

Revised June 2007
# BAT CAPTURE DATA

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From ___ to ___</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<td>0%</td>
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<td>21.1</td>
<td>1-3</td>
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</tr>
<tr>
<td>2330</td>
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<td>SW-NE</td>
<td>0%</td>
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</tr>
<tr>
<td>0000</td>
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<tr>
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<tr>
<td>0100</td>
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<td>0%</td>
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</table>

## MOON PHASE

- New moon
- Waxing crescent
- Full moon
- Waxing gibbous
- Last quarter
- Waning crescent

## Net/Trap/Anabat

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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## Net Placement/Site Description

Nets across gravel road w/ closed canopy in young upland forest

## Capt.

<table>
<thead>
<tr>
<th>Capt. #</th>
<th>Net #</th>
<th>Species</th>
<th>Time (Ad/Jv)</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro. 2</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* 0-3</th>
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Appendix F

**BAT CAPTURE DATA**

Project #: 296.03  
Date: 9 Aug 2015

Project Name: AEP CO2

State: WV  
County: Mason

Biologists: M. Michael, S. Reeves

Site name#: KY17

GPS Unit #: A4  
Camera #: KZJ200

**MOON PHASE**

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

**WEATHER DATA**

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<td></td>
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**Net/Trap/Anabat**

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Net Placement/Site Description: Nets across gravel road w/ closed canopy in upland forest

**Capt# Net # Species Time Age (Ad/Jv) Sex Repro. Wt (g) RFA (mm) Belly (F/M/E) Wing Index* (0-3) Comments**

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<tr>
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<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
</tr>
</thead>
</table>

1  B  Lasiurus borealis  2245  A  F  NR  11.8  42  E  0  Picture # /Guano/Hair Sample

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/LPL; Male = T/L  
* Refer to table on the back
NET SITE HABITAT DESCRIPTION

Project #: 296.03  Date: Aug 8, 2010  Biologists: M. Little, T. Herr
Project Name: ACP  Site Name#: Km 18
State: WV  County: Mason  USGS Quad:
Camera #:  Picture #: 013, 014  GPS Unit #: 13  Waypoint #:
Latitude: 38°.58'.45"N  Longitude: 81°.59'.18.9"W
Distance to closest water source (meters):  N/A  Type of water source:
Water source name:

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: ______ meters  Channel Width: ______ meters  Stream Width: ______ meters
Substratum: ___Bedrock ___Boulder ___Cobble ___Gravel ___Sand ___Silt/Clay
Still Water Present (Y/N): ______  Average Water Depth: _____m or cm  Clarity (H,M,L):____

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)  Subdominant Canopy Species (< 40 cm/16" dbh)
    Acer rubrum                             Ficus Pumila

Estimated dbh range: Lg: 12  Sm: 10                             Estimated dbh range: Lg: 7  Sm: 5
Relative abundance of dominant vs. subdominant (ratio): 50/50
Estimated canopy closure: ___Closed  XModerate  ___Open
Roost tree potential consists of: XLarge Trees  ___Snags  ___Both  ___Neither
Roost tree potential for the area is: ___High  XModerate  ___Low
Roost potential comments:
Subcanopy clutter: ___Closed  ___Moderate  XOpen
Subcanopy comprised largely of: XLower Branches of Canopy Trees  ___Saplings  ___Shrubs
Common Subcanopy Species: Acer rubrum

Habitat Description: Large to medium trees along roadside
near houses and open fields

Check all that apply:
   Mature Upland Forest  ___Recently Logged Forest  XCrop/Pasture Land  ___Shrub/scrub Swamp
   Young Upland Forest  ___Pine Plantation  ___Stream/River  ___Vernal Pool
   Mature Lowland Forest  ___Woodlot/ForestEdge  ___Emergent Wetland  ___Deepwater Lake/Pond
   Young Lowland Forest  ___Old Field  ___Forested Swamp  ___Other
Herbaceous Cover: ___Sparse  XModerate  ___Dense

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NET SITE HABITAT DESCRIPTION (continued)

<table>
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<th>State/County:</th>
<th>WV/monson</th>
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<th>KM17</th>
<th>initials:</th>
<th>ML</th>
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SKETCH: NETS A and B

---

**LEGEND**

- Nets: ● ●

**COMMENTS**

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<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
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Revised June 2007

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Appendix F
## BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 08 Aug 2010

**Project Name:** REPB

**State:** WV  
**County:** Mason

**Biologists:** m. Little, J. Hern

**Site name/#:** Kms  
**GPS Unit #:** 13  
**Camera #::**

### MOON PHASE
- [ ] New moon
- [ ] Waxing crescent
- [X] First quarter
- [ ] Waxing gibbous
- [ ] Full moon
- [ ] Waning gibbous
- [ ] Waning crescent

### WEATHER DATA

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<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>0</td>
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### Net/Trap/Anabat Details

<table>
<thead>
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<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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</thead>
<tbody>
<tr>
<td>A</td>
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<td>81° 57' 139&quot; W</td>
<td>9</td>
<td>10</td>
<td>2030</td>
<td>0130</td>
<td>013</td>
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<tr>
<td>B</td>
<td>NN</td>
<td>38° 52' 46.0&quot; N</td>
<td>81° 57' 139&quot; W</td>
<td>10</td>
<td>10</td>
<td>2030</td>
<td>0130</td>
<td>013</td>
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</table>

### Net Placement/Site Description
- On Route 20 near houses

### Capt 
<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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<tr>
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<td>F</td>
<td>M/F</td>
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<td>E</td>
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<td>D</td>
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1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/UPL; Male = ↑↓  
* Refer to table on the back

Page 1 of
BAT CAPTURE DATA

Project #: 296.03  Date: 9 Aug 2010
Project Name: A-4
State:  County: Mason
Biologists: M. Lyman, T. Hosen
Site name#: 2M18
GPS Unit #: 13  Camera #:

MOON PHASE*

___ New moon  ___ Waxing crescent  ___ First quarter
___ Waxing gibbous  ___ Full moon  ___ Waning gibbous
___ Last quarter  ___ Waning crescent

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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</thead>
<tbody>
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Net Placement/Site Description:

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<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
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<th>Comments</th>
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</table>

1 M = Monofilament, CN = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2 Reproductive Condition: Female = NR/PG/LPL; Male = T↓
* Refer to table on the back
NET SITE HABITAT DESCRIPTION

Project #: 2960-03  Date: 07 Aug 2000  Biologists: J. Wilson, C. Priggs
Project Name: AEP Co2
State: WV  County: Mason
Camera #: 69  Picture #: 124, 129, 145a, 148a
Latitude: 38° 51' 42.9"N  Longitude: 81° 56' 20.7"W
Distance to closest water source (meters): 1 km  Type of water source: Tributary of Ohio River
Water source name: unk

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: ______ meters  Channel Width: ______ meters  Stream Width: ______ meters
Substratum: __Bedrock  __Boulder  __Cobble  __Gravel  __Sand  __Silt/Clay
Still Water Present (Y/N): ______ Average Water Depth: _____ m or cm  Clarity (H, M, L):_____

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)  Subdominant Canopy Species (< 40 cm/16" dbh)
Acer saccharum  Acer saccharum
Liriodendron tulipifera  Liriodendron tulipifera
Robinia pseudoacacia  Fraxinus americana
Estimated dbh range: Lg: 63  Sm: 41  Estimated dbh range: Lg: 29  Sm: 25
Relative abundance of dominant vs. subdominant (ratio): 1:25
Estimated canopy closure:  ______ Closed  ______ X Moderate  ______ Open
Roost tree potential consists of:  ______ Large Trees  ______ X Snags  ______ Both  ______ Neither
Roost tree potential for the area is:  ______ High  ______ ______ Moderate  ______ X Low
Roost potential comments: few large trees and minimal snags present in forest
Subcanopy clutter:  ______ X Closed  ______ Moderate  ______ Open
Subcanopy comprised largely of:  ______ X Lower Branches of Canopy Trees  ______ Saplings  ______ X Shrubs
Common Subcanopy Species:
Robinia pseudoacacia  Cornus sarvis, Quercus alba
Lindera benzoin  Pinus virginiana, Acer rubrum
Habitat Description:
Young upland forest, rolling hills adjacent to Row

Check all that apply:
________ Mature Upland Forest  ______ Recently Logged Forest  ______ X Crop/ Pasture Land
________ Young Upland Forest  ______ Pine Plantation  ______ Stream/River
________ Mature Lowland Forest  ______ X Woodlot/Forest Edge  ______ Emergent Wetland
________ Young Lowland Forest  ______ Old Field  ______ Forested Swamp
________ Shrub/scrub Swamp  ______ Vernal Pool  ______ Deepwater Lake/Pond
Herbaceous Cover:  ______ Sparse  ______ X Moderate  ______ Dense

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Appendix F
## NET SITE HABITAT DESCRIPTION (continued)

<table>
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<th>State/County: WV/Mason</th>
<th>Site Name/#: KM19</th>
<th>Initials: JW</th>
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**SKETCH: NETS A and B**

### LEGEND

- **Nets:** [••]
- **Trees:** [•]
- **Shrubs:** ✓ ✓ ✓
- **Grassy Area:** ✓

### COMMENTS

- 
- 
- 

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Appendix F
BAT CAPTURE DATA

Project #: 296-03    Date: 08 August 2010
Project Name: AEP COZ
State: WV    County: Mason
Biologists: J. Wilson, C. Biggs
Site name#: km19
GPS Unit #: A-4    Camera #: 109

MOON PHASE*

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated - see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<tr>
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Net/Trap/Anabat

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<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
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<td>NN</td>
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<td>6</td>
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<td>6</td>
<td>0200 0130</td>
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Net Placement/Site Description: Nets stuck over road - heavily canopied

Capt #    Net # | Species | Time (Ad/Jv) | Age (M/F) | Sex (M/F | Repro. 2 | Wt (g) | RFA (mm) | Belly (F/M/E) | Wing Index* (0-3) |
<table>
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1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2 Reproductive Condition: Female = NR/PG/LPL; Male = ?/I
* Refer to table on the back
# BAT CAPTURE DATA

**Project #: 296-03**  
**Date: 09 August 2010**  
**Project Name:** AEPCOZ  
**State:** WV  
**County:** Mason  
**Biologists:** J. Wilson, C. Buggs  
**Site name/#:** KM19  
**GPS Unit #: A-16**  
**Camera #: 69**  

**MOON PHASE**
- [X] New moon  
- [ ] Waxing crescent  
- [ ] First quarter  
- [ ] Waxing gibbous  
- [ ] Full moon  
- [ ] Waning gibbous  
- [ ] Last quarter  
- [ ] Waning crescent

**WEATHER DATA**

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<th>Time (0000 h)</th>
<th>Temp (°C)</th>
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<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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**Net/Trap/Anabat #**  
**Net/Trap Type**  
**Latitude**  
**Longitude**  
**Length (m)**  
**Height (m)**  
**Time Up (0000 h)**  
**Time Down (0000 h)**  
**Picture #**

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<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<tbody>
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<td>81° 56' W</td>
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<td>6</td>
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<td>81° 56' W</td>
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<td>6</td>
<td>2030</td>
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<td>104-0433</td>
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**Net Placement/Site Description:** Nets strung over road, heavily canopied

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<th>Net #</th>
<th>Species</th>
<th>Time (Ad/Jv)</th>
<th>Age (M/I)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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<tbody>
<tr>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/LPL; Male = T/L

* Refer to table on the back

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Page 1 of 1
NET SITE HABITAT DESCRIPTION

Project #: 2960.03  Date: 09 August 2010  Biologists: D. Jeffcott, C. Murphy
Project Name: AEP-COP  Site Name/#: KM20
State: WV  County: Mason  USGS Quad: 
Camera #: G1  Picture #s:  GPS Unit #: A13  Waypoint #: KM20B
Latitude: 38° 51' 22.4" N  Longitude: 81° 55' 57.8" W
Distance to closest water source (meters): 3M  Type of water source: ephemeral stream
Water source name: NA

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: _______ meters  Channel Width: _______ meters  Stream Width: _______ meters
Substratum: _____Bedrock _____Boulder _____Cobble _____Gravel _____Sand _____Silt/Clay
Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm  Clarity (H,M,L): _______

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)  Subdominant Canopy Species (< 40 cm/16" dbh)
__Platanus occidentalis  __Robinia pseudoacacia
__Acer saccharum  __Juglans nigra
__Arceclus flavus
Estimated dbh range: Lg: 45cm Sm: 40cm  Estimated dbh range: Lg: 35cm Sm: 10cm
Relative abundance of dominant vs. subdominant (ratio): 1:30
Estimated canopy closure:  ___Closed  ___X Moder ate  ___Open
Roost tree potential consists of:  ___Large Trees  ___Snags  ___Both  ___X Neither
Roost tree potential for the area is:  ___High  ___Moderate  ___X Low
Roost potential comments:
Subcanopy clutter:  ___X Closed  ___Moderate  ___Open
Subcanopy comprised largely of:  ___X Lower Branches of Canopy Trees  ___Saplings  ___Shrubs
Common Subcanopy Species:  Ulmus rubra  __Carpinus caroliniana
__Cercis canadensis
Habitat Description: County Rd 62/19 running adjacent to ephemeral stream w/ standing water. Subcanopy is dense. Field adjacent to stream w/ tall grasses.

Check all that apply:
___Mature Upland Forest  ___Recently Logged Forest  ___Crop/Pasture Land  ___Shrub/scrub Swamp
___Young Upland Forest  ___Pine Plantation  ___Stream/River  ___Vernal Pool
___Mature Lowland Forest  ___Woodlot/ForestEdge  ___Emergent Wetland  ___Deepwater Lake/Pond
___Young Lowland Forest  ___Old Field  ___Forested Swamp  ___Other ______
Herbaceous Cover:  ___X Sparse  ___Moderate  ___Dense

Revised June 2007
NET SITE HABITAT DESCRIPTION (continued)

| Project #: 296.03 | State/County: WV/MASON | Site Name/#: #1870 | Initials: CM |

**SKETCH: NETS A and B**

---

**LEGEND**

<table>
<thead>
<tr>
<th>Nets: ● — —</th>
<th>COMMENTS</th>
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</thead>
<tbody>
<tr>
<td>● — — —</td>
<td>Dense tree-line on both sides of ephemeral stream.</td>
</tr>
<tr>
<td>● — — —</td>
<td>Canopy along road is sporadic with coverage over both nets. Still water present in stream.</td>
</tr>
<tr>
<td>● — — —</td>
<td>NOT DRAWN TO SCALE</td>
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</table>

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Revised June 2007

Appendix F
# BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 08 August 2010

**Project Name:** AEPCO2

**State:** WV  
**County:** MASON

**Biologists:** D. Jeffcoat, C. Murphy

**Site name/#:** KM20  
**GPS Unit #:** A13  
**Camera #:** G1

## MOON PHASE*

- [ ] New moon  
- [ ] Waxing crescent  
- [x] Full moon  
- [ ] Waxing gibbous  
- [ ] Last quarter  
- [x] Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<td>2130</td>
<td>20.4</td>
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<td></td>
<td>0%</td>
<td></td>
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<tr>
<td>2230</td>
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<tr>
<td>2330</td>
<td>18.2</td>
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<td>0%</td>
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## Net/Trap/Anabat #

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<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<td>38° 51' 25.2&quot; N</td>
<td>81° 55' 55.8&quot; W</td>
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<td>6</td>
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<td>0130</td>
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**Net Placement/Site Description:** Nets placed in road corridor between forest and wooded ephemeral stream.

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<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
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# BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** 09 August 2010  
**Project Name:** AEP-C09  
**State:** WV  
**County:** Mason  
**Biologists:** D. Jeffcott, C. Murphy  
**Site name/#:** KM 20  
**GPS Unit #:** A13  
**Camera #:** 61

---

## Weather Data

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<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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**MOON PHASE**

- New moon
- Waxing crescent
- Full moon
- Waning crescent
- Last quarter

---

## Net/Trap/Anabat Table

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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Net Placement/Site Description: Nets placed in road corridor between forest and wooded ephemeral stream.

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## Species Table

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<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
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<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index*</th>
<th>Comments</th>
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<td>M</td>
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</tbody>
</table>

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PGL/PL/; Male = ↑↓  
* Refer to table on the back
Appendix F

NET SITE HABITAT DESCRIPTION

Project #: 396-03  Date: 16 August 2010  Biologists: J. Wilson, C. Veggs
Project Name: AEP COZ  Site Name/#: kmz21
State: WV  USGS Quad:
County: Mason
Camera #: 109  Picture #: 104-0423, 0527
Latitude: 39° 50' 31.0" N  GPS Unit #: A10  Waypoint #: 42
Distance to closest water source (meters): 1 Km  Longitude: 81° 55' 14.1" W  Type of water source: River
Water source name: Ohio River

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):

Bank Height: ______ meters  Channel Width: ______ meters  Stream Width: ______ meters
Substratum:  Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay
Still Water Present (Y/N): ______  Average Water Depth: ______ m or cm  Clarity (H,M,L):

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)  Subdominant Canopy Species (< 40 cm/16" dbh)
Acer saccharum  Quercus rubra  Campestris  Acer dromedaria
Robinia pseudoacacia  Quercus rubra  Populus grandidentata  Ageratina altissima
Quercus rubra  Robiniapseudoacacia  Phytolacca americana

Estimated dbh range: Lg: 60  Sm: 40

Relative abundance of dominant vs. subdominant (ratio): ______

Estimated canopy closure:  ______ Closed  ______ Moderate  ______ Open
Roost tree potential consists of:  ______ Large Trees  ______ Snags  ______ Both  ______ Neither
Roost tree potential for the area is:  ______ High  ______ Moderate  ______ Low
Roost potential comments:  no big trees w/ exfoliating bark

Subcanopy clutter:  ______ X Closed  ______ Moderate  ______ Open
Subcanopy comprised largely of:  ______ X Lower Branches of  ______ Saplings  ______ X Shrubs
Canopy Trees

Common Subcanopy Species:  Oxydendrum arboreum  Rubus spp., Lonicera spp.
Populus grandidentata  Ageratina altissima  Cercis canadensis
Sasada oligodon  Rhus typhina  Robinia pseudoacacia  Acer rubrum

Habitat Description:  Often area off of road with multiple trails leading to forest, pasture, upland land...

Check all that apply:
____ Mature Upland Forest  ______ Recently Logged Forest  ______ Crop/Pasture Land  ______ Shrub/scrub Swamp
____ Young Upland Forest  ______ Pine Plantation  ______ Stream/River  ______ Vernal Pool
____ Mature Lowland Forest  ______ Woodlot/Forest Edge  ______ Emergent Wetland  ______ Deepwater Lake/Pond
____ Young Lowland Forest  ______ Old Field  ______ Forested Swamp  ______ Other ______
Herbaceous Cover:  ______ Sparse  ______ Moderate  ______ X Dense

Revised June 2007

1
NET SITE HABITAT DESCRIPTION (continued)

| Project #: 296-03 | State/County: WV / Mason | Site Name/#: KMA1 | Initials: Ju |

**SKETCH: NETS A and B**

- House
- Pasture
- Road
- Net A
- Net B

**LEGEND**

- Nets: ●●●
- Forest: XXX

**COMMENTS**

- Little canopy over roadway

Revised June 2007
Appendix F
# BAT CAPTURE DATA

**Project #:** 2916-03  
**Date:** 10 August 2010

**Project Name:** AEP C02  
**State:** WV  
**County:** Mason  
**Biologists:** J. Wilson, C. Baggs  
**Site name #:** KMA1  
**GPS Unit #:** A-14  
**Camera #:** 69

---

### MOON PHASE*

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

---

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From</th>
<th>To</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<tbody>
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<tr>
<td>2100</td>
<td>25.8</td>
<td>___</td>
<td>___</td>
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<td>5%</td>
<td></td>
</tr>
<tr>
<td>2130</td>
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<td>___</td>
<td>___</td>
<td>5%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>2200</td>
<td>26.1</td>
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<td>5%</td>
<td>5%</td>
<td></td>
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<tr>
<td>2230</td>
<td>24.8</td>
<td>___</td>
<td>___</td>
<td>5%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>2300</td>
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<td>5%</td>
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<tr>
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<table>
<thead>
<tr>
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<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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<td>39° 50' 31.0&quot; N</td>
<td>81° 55' 44.1&quot; W</td>
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<td>60</td>
<td>2030</td>
<td>0130</td>
<td>104-0428</td>
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**Net Placement/Site Description:** Nets stacked over unimproved road with canopy

---

<table>
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<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index* (0-3)</th>
<th>Comments</th>
<th>Picture # / Guano/Hair Sample</th>
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<tr>
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<td>Ad</td>
<td>m</td>
<td>↓</td>
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<td>47</td>
<td>E</td>
<td>0</td>
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</table>

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¹ M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
² Reproductive Condition: Female = N/R/G/L/U; Male = ↑↓  
* Refer to table on the back

---

**Appendix F**

---

**Property of:** Environmental Solutions & Innovations, Inc.  
781 Need Road, Cincinnati, OH 45233 (Phone: 513-451-1777)

---

**Page 1 of [Page Number]**
# BAT CAPTURE DATA

**Project #:** 296-03  
**Date:** 11 August 2010

**Project Name:** AEP COZ  
**State:** WV  
**County:** Mason  
**Biologists:** J. Wilson, C. Bosgs  
**Site name/#:** Kme  
**GPS Unit #:** A-10  
**Camera #:** 69

---

## MOON PHASE
- [ ] New moon
- [ ] Waxing crescent
- [ ] First quarter
- [ ] Waxing gibbous
- [ ] Full moon
- [ ] Waning gibbous
- [ ] Waning crescent

---

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<td>2100</td>
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<td>1-3</td>
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<tr>
<td>2130</td>
<td>24.9</td>
<td>1-3</td>
<td>W-E</td>
<td>100%</td>
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## Net/Trap/Anabat #

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<th>Longitude</th>
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<th>Height (m)</th>
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<th>Picture #</th>
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<td>104-0428</td>
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## Net Placement/Site Description:
Nets stacked over unimproved road with canopy

---

## Bat Capture Data

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<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
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<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
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</tr>
</tbody>
</table>

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/LPL; Male = ↑↓  
* Refer to table on the back

---

Page 1 of 1
NET SITE HABITAT DESCRIPTION

Project #: 296.04 Date: 10-Aug-2010 Biologists: M.M. Jordan & S. Recco
Project Name: ARD COA
State: WV County: Mason
USGS Quad:
Camera #: k2760 Picture #: 5129-5132 GPS Unit #: A4 Waypoint #: k4922.075
Latitude: 38° 51' 14.6"N Longitude: 81° 55' 49.3"W
Distance to closest water source (meters): Type of water source:
Water source name:

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS): NA
Bank Height: _______ meters Channel Width: _______ meters Stream Width: _______ meters
Substratum: ____Bedrock ____Boulder ____Cobble ____Gravel ____Sand ____Silt/Clay
Still Water Present (Y/N): _______ Average Water Depth: _______ m or cm Clarity (H,M,L):

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh) Subdominant Canopy Species (< 40 cm/16" dbh)

Estimated dbh range: Lg: _______ Sm: _______
Estimated dbh range: Lg: 38 Sm: 18
Relative abundance of dominant vs. subdominant (ratio):

Estimated canopy closure: _______Closed _______Moderate X Open
Roost tree potential consists of: _______Large Trees _______Snags _______Both X Neither
Roost tree potential for the area is: _______High _______Moderate X Low
Roost potential comments:

Subcanopy clutter: _______Closed X Moderate _______Open
Subcanopy comprised largely of: X Lower Branches of Canopy Trees _______ Saplings _______Shrubs

Common Subcanopy Species:
Picea strobus	Quercus alba

Habitat Description: Picea strobus plantation along old forest edge lining a gravel road.

Check all that apply:
____ Mature Upland Forest _______ Recently Logged Forest _______ Crop/Pasture Land _______ Shrub/scrub Swamp
____ Young Upland Forest _______ Pine Plantation _______ Stream/River _______ Vernal Pool
____ Mature Lowland Forest _______ Woodylot/ForestEdge _______ Emergent Wetland _______ Deepwater Lake/Pond
____ Young Lowland Forest _______ Old Field _______ Forested Swamp _______ Other Picea strobus Plantation
Herbaceous Cover: _______ Sparse X Moderate _______ Dense

Revised June 2007
## NET SITE HABITAT DESCRIPTION (continued)

<table>
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<th>Project #:</th>
<th>296.04</th>
<th>State/County:</th>
<th>WV</th>
<th>Site Name/#:</th>
<th>KM22</th>
<th>Initials:</th>
<th>SR</th>
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</table>

### SKETCH: NETS A and B

![Sketch of NETS A and B]

### LEGEND

| Nets: | ![Image of Nets] |

### COMMENTS

<table>
<thead>
<tr>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
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<tr>
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</table>
# BAT CAPTURE DATA

**Project #:** 296.04  
**Date:** 10 Aug 2015  
**Project Name:** AEP Co.  
**State:** WV  
**County:** Mason  
**Biologists:** M. Michaels & S. Reeves  
**Site Name:** KIM 32  
**GPS Unit #:** A4  
**Camera #:** K4-160

## MOON PHASE
- **New moon**
- **Waxing crescent**
- **First quarter**
- **Waxing gibbous**
- **Full moon**
- **Waning gibbous**
- **Waning crescent**

## WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<td></td>
</tr>
<tr>
<td>2030</td>
<td>26.3</td>
<td>O</td>
<td>1</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>2130</td>
<td>26.0</td>
<td>O</td>
<td>1</td>
<td>40%</td>
<td></td>
</tr>
<tr>
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<td>1</td>
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<tr>
<td>0330</td>
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<td>40%</td>
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<tr>
<td>0330</td>
<td>25.1</td>
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<tr>
<td>0230</td>
<td>24.9</td>
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<td>0030</td>
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## Net/Trap/Anabat

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<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
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<th>Picture #</th>
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<td>81° 58' 44.2&quot; W</td>
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<td>6</td>
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<td>2030</td>
<td>5130-5139</td>
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</table>

Net Placement/Site Description:  
Pinus strobus Plantation (young) with young sprout forest on E. Grand Rod interface

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Lv)</th>
<th>Sex (M/F)</th>
<th>Repro.</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
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<td>Ad</td>
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</table>

1. M = Monotillament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap, A = Anabat  
2. Reproductive Condition: Female = NR/F/G/L/PL; Male = T/T

* Refer to table on the back
### BAT CAPTURE DATA

**Project #**: 296.04  
**Date**: 11 Aug 2010  
**Project Name**: AEP CO2  
**State**: WV  
**County**: Mason  
**Biologists**: M. Michael Stevens  
**Site name/#**: KM 22  
**GPS Unit #:** AG  

#### MOON PHASE*
- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

#### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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<tr>
<td>2030 24.8</td>
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<td>20%</td>
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<td>30%</td>
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<tr>
<td>2130 22.0</td>
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<td>40%</td>
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#### Net/Trap/Anabat #
- **Net/Trap Type**: NN  
- **Latitude**: 38° 51’ 14.6” N  
- **Longitude**: 81° 55’ 44.3” W  
- **Length (m)**: 6  
- **Height (m)**: 6  
- **Time Up (0000 h)**: 2030 0130  
- **Time Down (0000 h)**: 0130 2030  
- **Picture #**: 5130-S122

**Net Placement/Site Description**: Net A4B across Shinsky Rd. (grown) in young Pine plantation

#### Capt 
- **Species**:  
- **Time**:  
- **Age (Ad/Jv)**:  
- **Sex (M/F)**:  
- **Repro.**:  
- **Wt (g)**:  
- **RFA (mm)**:  
- **Belly (F/M/E)**:  
- **Wing Index*:  
- **Comments**:  

---

1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat
2 Reproductive Condition: Female = NR/PG/L/PL; Male = T/F
* Refer to table on the back
NET SITE HABITAT DESCRIPTION

Project #: 296103  Date: Aug 11, 2010  Biologists: M. Little, T. Heron
Project Name: AEP
State: WV  County: Mason  USGS Quad: 
Camera #:  Picture #: 015_016  GPS Unit #: 13  Waypoint #: 
Latitude: 0° 0' 0" N  Longitude: 0° 0' 0" W
Distance to closest water source (meters): N/A  Type of water source: 
Water source name: 

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS):
Bank Height: _______ meters  Channel Width: _______ meters  Stream Width: _______ meters
Substratum:  Bedrock  Boulder  Cobble  Gravel  Sand  Silt/Clay
Still Water Present (Y/N): _____  Average Water Depth: _____ m or cm  Clarity (H,M,L): _____

VEGETATION:
Dominant Canopy Species (> 40 cm/16" dbh)  Subdominant Canopy Species (< 40 cm/16" dbh)
Saplen nigra  black locust
---tree of heaven

Estimated dbh range: Lg: _______ Sm: _______  Estimated dbh range: Lg: _______ Sm: _______
Relative abundance of dominant vs. subdominant (ratio): ______/
Estimated canopy closure:  Closed  Moderate  Open
Roost tree potential consists of:  Large Trees  Snags  Both  Neither
Roost tree potential for the area is:  High  Moderate  Low
Roost potential comments: 
Subcanopy clutter:  Closed  Moderate  Open
Subcanopy comprised largely of:  Lower Branches of Canopy Trees  Saplings  Shrubs
Common Subcanopy Species:  black locust

Habitat Description: Forest edge along roadside

Check all that apply:
  Mature Upland Forest  Recently Logged Forest  Crop/Pasture Land  Shrub/scrub Swamp
  Young Upland Forest  Pine Plantation  Stream/River  Vernal Pool
  Mature Lowland Forest  Woodlot/ForestEdge  Emergent Wetland  Deepwater Lake/Pond
  Young Lowland Forest  Old Field  Forested Swamp  Other
 Herbaceous Cover:  Sparse  Moderate  Dense
NET SITE HABITAT DESCRIPTION (continued)

Project #: 296.03  State/County: WV/Mason  Site Name/#: KM23  Initials: ML

SKETCH: NETS A and B

LEGEND

Nets: ●—●

COMMENTS

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Revised June 2007
## BAT CAPTURE DATA

**Project #:** 296.03  
**Date:** Aug 10, 2010  
**State:** WV  
**County:** Mason  
**Biologists:** K, E, P  
**Site name/ #:** KM 23  
**GPS Unit #:**  
**Camera #::**  

### MOON PHASE*
- [ ] New moon  
- [ ] Waxing crescent  
- [ ] First quarter  
- [ ] Waxing gibbous  
- [ ] Full moon  
- [ ] Waning gibbous  
- [ ] Waning crescent

### WEATHER DATA

<table>
<thead>
<tr>
<th>Time (0000 h)</th>
<th>Temp (°C)</th>
<th>Wind Speed (estimated – see chart)*</th>
<th>Wind Direction: From to</th>
<th>% Cloud Cover (estimated)</th>
<th>Comments</th>
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### Net/Trap/Anabat #

<table>
<thead>
<tr>
<th>Net/Trap/Anabat #</th>
<th>Net/Trap Type</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Length (m)</th>
<th>Height (m)</th>
<th>Time Up (0000 h)</th>
<th>Time Down (0000 h)</th>
<th>Picture #</th>
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<tbody>
<tr>
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<td>2030 0130</td>
<td>116</td>
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### Net Placement/Site Description:

Both nets on roadway.

### Capt.

<table>
<thead>
<tr>
<th>Capt #</th>
<th>Net #</th>
<th>Species</th>
<th>Time</th>
<th>Age (Ad/Jv)</th>
<th>Sex (M/F)</th>
<th>Repro.²</th>
<th>Wt (g)</th>
<th>RFA (mm)</th>
<th>Belly (F/M/E)</th>
<th>Wing Index (0-3)</th>
<th>Comments</th>
<th>Picture # /Guano/Hair Sample</th>
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<tbody>
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1 M = Monofilament, ON = Old Nylon, NN = New Nylon, HT = Harp Trap; A = Anabat  
2 Reproductive Condition: Female = NR/PG/JPL; Male = T/J  
* Refer to table on the back
# BAT CAPTURE DATA

**Project #:** 29603  
**Date:** Aug 11, 2010

**State:** WV  
**County:** Mason

**Biologists:** Mr. David McKeen

**Site name #:** KM23

**GPS Unit #:** 13  
**Camera #::**

### MOON PHASE*

- New moon
- Waxing crescent
- First quarter
- Waxing gibbous
- Full moon
- Waning gibbous
- Waning crescent

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### Net Placement/Site Description:

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* Refer to table on the back

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Page 1 of ___
APPENDIX E
MIST NET SITE PHOTOGRAPHS
Site KM17 – Net A

Site KM18 – Net A
Site KM19 – Net A

Site KM20 – Net B
Site KM21 – Net A

Site KM22 – Net B
Site KM25 – Net B

Site KM26 – Net A