

DRAFT

**TALAWANDA TO MCALESTER TRANSMISSION
LINE PROJECT**

HABITAT CONSERVATION PLAN

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Acronyms and Abbreviations

ABB	American burying beetle
AEP	American Electric Power Oklahoma Transmission Company
AMM	avoidance and minimization measure
CFR	Code of Federal Regulations
CPA	Conservation Priority Area
ESA	Endangered Species Act
FR	Federal Register
FWS	U.S. Fish and Wildlife Service
HCP	habitat conservation plan
kV	kilovolt
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
Plan Area	Habitat Conservation Plan Area
ROW	right-of-way
USC	U.S. Code

1.1 Overview

American Electric Power Oklahoma Transmission Company (AEP), is planning to invest approximately \$19 million in electrical infrastructure upgrades in order to meet capacity needs for the City of McAlester and the Steven Taylor Industrial Park in Oklahoma. Plans call for the addition of two new substations and approximately 9 miles of 138 kilovolt (kV) transmission line right-of-way (ROW). The enhancements will benefit the area by increasing system capacity, improving reliability, and allowing the company to more effectively isolate outages when they occur.

The proposed Talawanda to McAlester Transmission Line Project will be constructed and operated within the range and Conservation Priority Area (CPA) of the American burying beetle (*Nicrophorus americanus*) (ABB). The ABB is listed as endangered under the Endangered Species Act (ESA) of 1973, as amended. Project construction is expected to have permanent and temporary impacts on limited areas of occupied habitat for ABB. Therefore, AEP requires authorization from the U.S. Fish and Wildlife Service (FWS) for “take” of the species under the ESA. This habitat conservation plan (HCP) supports an application by AEP to FWS for take authorization under Section 10(a)(1)(B) of the ESA for impacts on the ABB from the construction of a portion of the Talawanda to McAlester Transmission Line Project.

1.2 Scope of the HCP

1.2.1 Plan Area

The HCP plan area (plan area) includes two segments (one 1.15 miles long and one 0.96 mile long) along the proposed 9-mile Talawanda to McAlester Transmission Line Project (Figure 1-1). ABB surveys along the line at these segments from June 2015 were positive. The area of the 100-foot ROW for the transmission line, where it intersects the 0.5-mile effective survey radius around these positive survey results, composes the plan area (Figures 1-2a and 1-2b). All activities covered by the plan and authorized by the incidental take permit will occur within the plan area, which totals 25.6 acres (Figures 1-2a and 1-2b).

1.2.2 Covered Activities

Covered activities are those projects or ongoing activities that will receive take authorization through the ESA permit. Covered activities associated with the construction of the Talawanda to McAlester Transmission Line Project include the following:

- **Site Preparation.** This activity includes clearing of the ROW for installation of the new transmission line. It will involve clearing of vegetation and limited grading within the plan area, installing the new transmission line, and cleanup following construction activities.

- **New Power Poles:** Eighteen new power poles will be installed in the plan area for the Talawanda to McAlester Transmission Line Project.

Chapter 2 provides a detailed description of the covered activities.

1.2.3 Covered Species

AEP is requesting incidental take coverage for the ABB for activities associated with the construction of the Talawanda to McAlester Transmission Line Project. The ABB is the only species covered under this HCP; it is described further in Chapter 3, *Environmental Setting*, and Appendix A, *American Burying Beetle Species Account*.

The ABB was federally listed as endangered in 1989 (54 Federal Register [FR] 29652). The ABB Recovery Plan was finalized in 1991 (U.S. Fish and Wildlife Service 1991) and a 5-year Review was completed in 2008 (U.S. Fish and Wildlife Service 2008). The most recent review found that the ABB remains endangered throughout its current range due to ongoing threats to known populations and the failure to discover or establish viable populations in the remaining Recovery Areas (U.S. Fish and Wildlife Service 2008).

1.2.4 Permit Duration

AEP is seeking a 3-year incidental take permit from FWS. The permit term of 3 years was selected because it covers the expected timeline for construction of the transmission line and the time expected to restore temporary impacts on vegetation. Any take of ABB associated with operation and maintenance of the transmission line will be covered by a separate programmatic HCP that AEP is preparing that will cover operations and maintenance activities throughout the range of ABB within AEP's service territory, including this project.

1.3 Regulatory Setting

1.3.1 Federal Endangered Species Act

Section 9 of the ESA prohibits the take of any endangered or threatened species of fish or wildlife listed under the ESA. Under the ESA, the term *take* means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect species listed as endangered or threatened or to attempt to engage in any such conduct. Under Section 10 of the ESA, FWS may authorize, under certain terms and conditions, any taking otherwise prohibited by Section 9(a)(1)(B) if such taking is incidental to, and not the purpose of, an otherwise lawful activity. This Section 10 take authorization is known as an *incidental take permit*.

In the ESA's regulatory definition of take, *harass* means an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns that include, but are not limited to, breeding, feeding, or sheltering. *Harm* in the ESA's definition of take means an act that actually kills or injures wildlife. Such acts may include significant habitat modification or degradation that, as a result, actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 Code of Federal Regulations [CFR] 17.3).

To receive an incidental take permit, a nonfederal landowner or land manager must develop, fund, and implement an FWS-approved HCP. The HCP must specify the following:

- The impact on the covered species that will likely result from such taking.
- The measures the applicant will undertake to monitor, minimize, and mitigate such impacts, the funding that will be available to implement such measures, and the procedures to be used to deal with unforeseen circumstances.
- The alternative actions the applicant considered that would not result in take and the reasons why such alternatives are not proposed to be used.
- Such other measures that FWS may require as necessary or appropriate for purposes of the HCP.

FWS may issue an incidental take permit if it finds that the following criteria of ESA Section 10(a)(1)(B), 50 CFR 17.22(b)(2), and 50 CFR 17.32(b)(2) are met:

- The taking will be incidental to otherwise lawful activities.
- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such takings.
- The applicant will ensure that adequate funding for the HCP and procedures to deal with unforeseen circumstances will be provided.
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.
- The applicant has met the measures, if any, required by the Director of FWS as being necessary or appropriate for the purposes of the plan.
- The Director of FWS has received such other assurances, as required, that the plan will be implemented.

1.3.1.1 Section 7

Section 7 of the ESA requires all federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of habitat critical to such species' survival. To ensure that its actions do not result in jeopardy to listed species or adverse modification of designated critical habitat, each federal agency must consult with FWS regarding federal agency actions.

Although this HCP constitutes a nonfederal project and will be permitted under Section 10 of the ESA, the issuance of a permit by FWS is considered a federal action. Therefore, prior to approval of the HCP, FWS must undertake an internal Section 7 consultation (ESA Section 7(a)(2) and 50 CFR 402.10–402.16). FWS will examine the HCP to ensure that it accurately documents the expected impacts of its federal action (i.e., issuance of a take permit) as well as the mitigation proposed to compensate for those impacts in the plan area. Elements specific to the Section 7 process include analysis of impacts on designated critical habitat, analysis of impacts on listed plant species, and analysis of indirect and cumulative impacts on listed species. These components are included in this HCP to meet the requirements of Section 7.

1.3.1.2 Section 10

In cases where federal land, funding, or authorization is not required for an action by a nonfederal entity, the take of listed species must be permitted by FWS and/or National Marine Fisheries Service through the Section 10 process. Private landowners, corporations, state agencies, local agencies, and other nonfederal entities must obtain a Section 10(a)(1)(B) incidental take permit for take of federally listed fish and wildlife species “that is incidental to, but not the purpose of, otherwise lawful activities.” Because ESA Section 9 prohibitions for listed plants apply only on lands under federal jurisdiction, Section 10 incidental take permits are only necessary for take of wildlife and fish species on nonfederal property.

To receive an incidental take permit, the nonfederal entity is required under Section 10(a)(2)(A) to prepare an HCP that identifies the following.

- Impacts likely to result from the proposed taking of the species for which permit coverage is requested
- Measures that will be implemented to minimize, and mitigate impacts
- Funding that will be made available to undertake such measures
- Alternative actions considered that would not result in take
- Additional measures FWS may require as necessary or appropriate for purposes of the plan

If FWS finds that the HCP and related permit application meet the following statutory criteria of Section 10(a)(2)(B), FWS shall issue the permit.

- The taking will be incidental.
- The impacts of incidental take will be minimized and mitigated to the maximum extent practicable.
- Adequate funding for the HCP and procedures to handle unforeseen circumstances will be provided.
- The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild.
- The applicant met additional measures, if any, that FWS requires as being necessary or appropriate.
- FWS has received assurances, as may be required, that the HCP will be implemented.

1.3.1.3 Low-Effect Habitat Conservation Plan

FWS has established and provided a categorical exclusion for a special category of HCP, called a low-effect HCP (516 DM 8.5.C(2)). A low-effect HCP is defined by FWS as one that has (1) minor or negligible effects on species and their habitats covered under the HCP both individually and cumulatively; and (2) minor or negligible effects on all other environmental values or resources considered under the National Environmental Policy Act (NEPA), both individually and cumulatively. In order to qualify as low effect, a plan must also be eligible for a categorical exemption under NEPA.

1.3.2 National Environmental Policy Act

NEPA is one of the primary laws governing the environmental protection process. It is a decision-making requirement that applies to proposals for federal actions. The Council on Environmental Quality regulations define major federal actions as those actions with “effects that may be major and which are potentially subject to Federal control and responsibility,” including “projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies.” NEPA states that any federal agency undertaking a major federal action likely to affect the human environment must prepare an environmental assessment (EA). If any impacts on the human environment are found to be significant, the federal agency must then prepare an environmental impact statement (EIS). Project proponents must disclose in these documents whether their proposed action will adversely affect the human or natural environment. NEPA’s requirements are primarily procedural rather than substantive in that NEPA requires disclosure of environmental effects and mitigation possibilities but includes no requirement to mitigate. The Council on Environmental Quality regulations allow an agency to establish “a category of actions which do not individually or cumulatively have a significant effect on the human environment...and for which, therefore, neither an environmental assessment nor an environmental impact statement is required” (40 CFR 1508.4). FWS has established a categorical exclusion for low-effect HCPs, as is described above under Section 1.3.1.3, *Low-Effect Habitat Conservation Plan*.

Issuance of an incidental take permit under the ESA, Section 10(a)(1)(B), is a federal action subject to NEPA compliance. Although ESA and NEPA requirements overlap considerably, the scope of NEPA goes beyond that of the ESA by considering the impacts of a federal action not only on fish and wildlife resources, but also on other resources such as water quality, air quality, and cultural resources. The purpose of these procedures is to ensure that the agency has before it the best possible information to make an “intelligent, optimally beneficial decision” and that the public is fully apprised of any environmental risks that may be associated with the preferred action. As discussed above, FWS has determined that this HCP qualifies for a low-effect HCP categorical exclusion under NEPA, in accordance with U.S. Department of the Interior Departmental Manual 6, Section 516, Chapter 8 (516 DM 8.5.C(2)). To satisfy NEPA requirements, FWS has prepared an Environmental Action Statement that serves as the FWS’s record of NEPA compliance for this categorically excluded action.

1.3.3 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S. Code [USC] 470 et seq.), requires federal agencies to take into account the effects of their actions proposed on properties eligible for inclusion in the National Register of Historic Places. *Properties* are defined as cultural resources, which include prehistoric and historic sites, buildings, and structures that are listed on or eligible to the National Register of Historic Places. An *undertaking* is defined as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license, or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency. The issuance of an incidental take permit is an undertaking subject to Section 106 of the NHPA. FWS has determined that the area of potential effects for the HCP is that area where covered activities may result in take of species. The NHPA and the potential effects of the

conservation program on resources subject to the NHPA are discussed in detail in the categorical exclusion associated with this HCP.

1.3.4 Oklahoma Wildlife Conservation Code

Oklahoma Department of Wildlife Conservation is the state agency responsible for managing wildlife and fish in the state of Oklahoma. There are no state-endangered or state-threatened species in the plan area.

1.4 Document Organization

This HCP and supporting information is presented in the chapters listed below.

- Chapter 1, *Introduction*, discusses the background, purpose, and objectives of the plan, summarizes plan framework, and reviews the regulatory setting.
- Chapter 2, *Covered Activities*, describes the activities covered under the plan.
- Chapter 3, *Environmental Setting*, discusses the existing conditions for ABB in the plan area, including species description, life history, habitat, and threats.
- Chapter 4, *Conservation Program*, includes the effects analysis, avoidance and minimization measures, mitigation, and monitoring for the plan.
- Chapter 5, *Plan Implementation, Assurances, and Cost and Funding*, describes implementation responsibilities, changed and unforeseen circumstances associated with plan implementation, funding assurances, revision and amendment processes, and alternatives to take of ABB.

2.1 Introduction

Activities occurring within the plan area with the potential to result in impacts on ABB are covered under this plan. Covered activities will receive take authorization under the plan's incidental take permit. The impacts from covered activities are minimized to the greatest extent feasible through application of avoidance and minimization measures and unavoidable impacts are mitigated, as described in Chapter 4, *Conservation Program*.

2.2 Covered Activities

The Talawanda to McAlester Transmission Line Project is 9 miles long, but only two segments (one 1.15 miles long and one 0.96 mile long), based on ABB presence-absence surveys during June of 2015, would result in impacts on the ABB. The 100-foot ROW associated with these segments composes the plan area, and activities within this plan area are covered under this HCP (Figures 1-2a and 1-2b). Activities that would occur within the plan area with the potential to affect ABB include site preparation and new poles installed in the ROW. These activities are described in further detail in the sections that follow. These descriptions are based on standard AEP procedures. The procedures employed may vary slightly from standard procedures; however, such activities are expected to have a level of impact similar to or lower than the covered activities that are presented below and further evaluated in Chapter 4, *Conservation Program*.

2.2.1 Site Preparation

The plan area encompasses two sections (1.15 miles and 0.96 mile) of the Talawanda to McAlester Transmission Line Project. These two areas represent occupied habitat based on surveys conducted during 2015. The line's 100-foot ROW in these two sections amounts to a total of 25.6 acres. The following activities would clear or modify vegetation and disturb soil within the plan area and are covered under this plan.

- Driving construction vehicles within the ROW
- Vegetation clearing and grading for temporary work and laydown areas
- Clearing or modifying vegetation (e.g., trimming) to adhere to transmission line vegetation clearance standards
- Site reclamation and/or cleanup

AEP will clear the ROW of incompatible vegetation (e.g., any vegetation, typically with woody stems, growing within the ROW that inhibits construction activities or has the potential, at maturity or at any other time in its lifecycle, to grow or fall within AEP minimum clearance distances). ROW clearing would occur either mechanically or manually and would typically involve cutting woody-stemmed vegetation and occasional stump removal, if necessary.

For the purposes of this plan, AEP assumes that the entire plan area (25.6 acres) would be subject to activities that would disturb vegetation and soil. AEP would then manage vegetation in the ROW in compliance with its transmission ROW management program, including maintaining vegetation within the ROW to minimum clearance distances from the transmission wires. These maintenance activities would be covered by a separate programmatic HCP that AEP is preparing.

2.2.2 New Power Poles

AEP would install a total of 18 poles in the plan area, 10 in the northern portion and 8 in the southern portion. In the northern plan area, the 10 poles would include 2 steel poles installed upon concrete footings and 8 steel poles drilled directly into the ground (also known as directly embedded). The southern plan area would include 4 steel poles installed upon concrete footings and 4 steel poles drilled directly into the ground. The concrete footing for steel poles is assumed to have an approximately 7-foot diameter where vegetation would be permanently removed; steel poles directly embedded are assumed to have a 4-foot diameter where vegetation would be permanently removed.

Activities associated with pole installation include excavating for and pouring concrete footings, assembling and setting support structures, installing hardware on support structures, installing new power lines, and final cleanup. Each pole would require a temporary work site and/or pole laydown area that would be located within the ROW. All of these activities would occur as part of site preparation and cleanup, described under 2.2.1, *Site Preparation*.

3.1 Introduction

This chapter presents the environmental setting in the plan area, as it relates to ABB. It describes the baseline conditions on which the effects analysis and conservation program (Chapter 4, *Conservation Program*) are based. This chapter describes the broader environmental setting of the plan area and the existing land use and vegetation communities within the plan area as they relate to ABB. For a detailed description of the ABB's life history traits, range, and habitat and threats to the species' persistence, refer to Appendix A, *Species Account*.

3.2 Environmental Setting

The plan area is within the Lower Canadian Hills subset of the Arkansas Valley ecoregion of Oklahoma (37e). The Lower Canadian Hills are underlain by Pennsylvanian-age shale, sandstone, and coal. This ecoregion is a transition between the drier cross-timbers to the west and the more mesic Arkansas Valley to the east. Native vegetation of the ecoregion is a mixture of oak woodland, tallgrass prairie, oak-hickory forest, and oak-hickory-pine forest. Most streams are composed of a series of long pools that are interspersed with occasional, short riffle sections (Woods et al. 2005).

The vicinity of the plan area, in Pittsburg County, Oklahoma, is characterized by large areas of upland forest, improved and native grass pastures/hayfields, and riparian forest associated with tributaries of Eufaula Lake. The plan area is drained by Coal Creek, intermittent streams, and ephemeral drainages. Vegetative community types in the plan area include paved county roads and maintained county road ROW, mixed grass pasture, row crop agricultural fields, and riparian forest associated with Coal Creek and its intermittent tributaries (Figures 3-1a and 3-1b). The plan area is within the ABB CPA.

Land cover types in the plan area are shown on Figures 3-1a and 3-1b and listed in Table 3-1. Land cover types in the plan area were mapped based on aerial imagery and field surveys conducted in January 2016, and areas unsuitable to ABB were identified based on the criteria in *American Burying Beetle Impact Assessment for Project Reviews* (U.S. Fish and Wildlife Service 2016).

Table 3-1. Land Cover Types and ABB Habitat in the Plan Area

Land Cover Type	Amount (acres)		
	Northern Plan Area	Southern Plan Area	Total
ABB Habitat			
Mixed Forest	1.91	--	1.91
Mixed Grass Pasture	3.24	--	3.24
Native Grass and Scrub/Shrub	--	1.58	1.58
Native Grass Pasture	--	5.60	5.60
Riparian Forest	0.13	0.34	0.47
Upland Forest	0.27	--	0.27
Total ABB Habitat	5.55	5.72	13.07
Non-ABB Habitat			
Developed	2.25	0.05	2.30
Hay Bale Storage	0.40	--	0.40
Improved Grass Pasture	2.65	3.11	5.76
Maintained Lawn	1.92	--	1.92
Maintained ROW	1.16	0.87	2.03
Water	--	0.12	0.12
Total Non-ABB Habitat	8.38	4.15	12.53
Grand Total	13.93	11.67	25.60

Sources: U.S. Department of Agriculture National Agriculture Imagery Program 2015; U.S. Fish and Wildlife Service 2016

4.1 Introduction

This chapter contains the following elements.

- Effects analysis
- Conservation measures, including biological goals and objectives, avoidance and minimization measures (AMMs), and mitigation measures
- Monitoring

Effects are analyzed based on the covered activities described in Chapter 2. Adverse effects will be reduced or eliminated through the implementation of AMMs, described in Section 4.3.2. Unavoidable adverse effects on ABB habitat will be offset through mitigation. Together, AMMs and mitigation should achieve the biological goals and objectives of the plan. Monitoring helps to ensure that AMMs and mitigation are successfully implemented and that the biological goals and objectives are achieved.

4.2 Effects of Covered Activities

This plan quantifies the temporary and permanent impacts on ABB from covered activities by using ABB habitat as the surrogate for impacts on the species. Habitat is used as a surrogate because it is difficult to estimate the number of ABBs that will be taken. Take of the ABB is difficult to quantify because (1) individuals of the species are small in size, making them difficult to locate, which makes encountering dead or injured individuals very unlikely; (2) ABB losses may be masked by temporary fluctuations in numbers; (3) ABBs spend a substantial portion of their lifespan underground; and (4) the species is primarily active at night. These factors make it difficult to locate injured or dead individuals to quantify the direct effects from mortality, harassment, or harm to ABB. Furthermore, there is no reliable means to estimate ABB density within the plan area with which to compare estimates of take of individuals from covered activities. For these reasons, this plan quantifies the temporary and permanent impacts on ABB through analysis of the effects of the covered activities on ABB habitat. This approach is consistent with other HCPs prepared and approved for ABB (U.S. Fish and Wildlife Service 2014; Enercon Services, Inc. 2012).

4.2.1 Direct Effects

Direct impacts are impacts that are caused by and occur in the same time and place as covered activities. Direct impacts on ABB are anticipated to occur from covered activities in the form of mortality of or injury to adults, larvae, or eggs from crushing, collision, or exposure; degradation or loss of breeding, feeding, or sheltering habitat; and human activities that disrupt ABB behavior or increase energetic demands. As described above, this HCP uses habitat as the surrogate to impacts on the ABB; therefore, the following sections focus on quantifying the direct impacts on ABB habitat that will result from the covered activities.

FWS defines three types of habitat impacts for ABB (U.S. Fish and Wildlife Service 2016).

- **Temporary impacts** are those that affect ABB habitat for 5 years or less (areas affected by the project are restored to a condition suitable for ABB use within 5 years of the original impact).
- **Permanent cover change impacts** are defined as impacts that change the successional stage of an area to a different stage (e.g., forest or shrubland to grassland; grassland to forest), resulting in habitat that is possibly less preferable for ABB use.
- **Permanent impacts** are those that eliminate ABB habitat, as well as any impact on habitat that takes more than 5 years to re-establish as suitable for ABB use.

The following sections describe the habitat impacts that would occur from each covered activity.

4.2.1.1 Site Preparation

Site preparation will result in direct effects on ABB and its habitat. Construction of the project requires preparing the 100-foot ROW in the plan area for the transmission line through vegetation clearing. Most of the plan area consists of pastures and other grasslands, which will require minimal vegetation clearing. Small patches of woody vegetation are present within the plan area and these areas will be cleared. This is required to allow for construction access, movement of equipment, and installation of the transmission line, as well as for subsequent cleanup following project completion.

For the purposes of quantifying take, AEP estimates that site preparation would disturb vegetation or soil throughout the entire plan area during construction. Disturbance in mixed grass pasture (3.24 acres), native grass and scrub/shrub (1.58 acres), and native grass pasture (5.60 acres), where existing vegetation is low-growing and compatible with AEP's ROW vegetation management, would be returned to pre-disturbance conditions, resulting in a total of 10.42 acres of temporary ABB habitat impacts in the plan area (Figures 4-1a and 4-1b).

Forested ABB habitat in the plan area, including mixed forest (1.91 acres), riparian forest (0.47 acre), and upland forest (0.27 acre), may need to be modified to a lower-growing vegetation community (grassland or shrubland) in accordance with AEP's transmission ROW vegetation management standards, so AEP conservatively estimates that permanent cover change impacts would occur on a total of 2.65 acres within the plan area (Figures 4-1a and b).

AEP anticipates that vegetation would be restored to pre-construction density (or suitable ABB habitat where permanent cover change impacts occur) within the 3-year permit term of the plan, as described in Section 4.3.2.6, *Revegetation for Temporary Habitat Impacts*.

4.2.1.2 New Power Poles

Pole installation activities within the plan area would include three steps: (1) excavation for foundations, (2) pouring of concrete-reinforced steel foundations, and (3) installation of poles. Excavations for foundations require use of track or truck-mounted augers to remove soil. Following excavation, steel-reinforced cages are constructed within the holes. After this step the foundation is filled with concrete and allowed to cure. Poles are placed on the foundations with a crane and attached with anchor bolts. Any temporary disturbance of soil or vegetation occurring from these activities is included in the impacts quantified under Section 4.2.1.1, *Site Preparation*.

New power poles would result in permanent habitat impacts, because a small amount of vegetation will be permanently removed where the new poles will be installed. Within the plan area, AEP will

install 18 steel poles, 9 of which will be in ABB habitat and result in 0.006 acre of permanent impacts.

4.2.2 Indirect Effects

Indirect effects are impacts that are reasonably certain to occur and are caused by covered activities, but occur later in time. Indirect effects may include introduction of nonnative plant species via construction equipment, which could lead to ABB habitat loss or degradation. Indirect effects may also include inadvertent burying of carrion by construction equipment, which may interrupt ABB reproduction by making suitable carcasses unavailable. If construction equipment inadvertently buries carrion, this impact would only last one breeding season and in a very limited area (the plan area). Although the plan area is long and linear, it is narrow (only 100 feet wide). Therefore, ABBs are likely to have access to other carrion sources nearby, outside the plan area.

4.3 Conservation Measures

This section describes actions that AEP will implement to reduce impacts from the covered activities and mitigate the impacts on the ABB in the plan area as described in Section 4.2, *Effects of Covered Activities*.

4.3.1 Biological Goals and Objectives

This HCP establishes the following biological goals and objectives as required under FWS's "five-point policy" (65 FR 35242). The AMMs and mitigation measures described in the plan, including measures to conserve and enhance ABB habitat, are consistent with the long-term survival and recovery of the ABB. Specifically, the goals and objectives of the HCP over the 3-year permit term are as follows.

Goal 1: Minimize impacts on ABB from covered activities of the Talawanda to McAlester Transmission Line Project.

Objective 1A: Implement the AMMs of the HCP, as described in Section 4.3.2.

Objective 1B: Restore vegetation in ABB habitat to pre-disturbance density where temporary impacts occur (10.42 acres) and to vegetation conditions suitable for ABB habitat where permanent cover change impacts occur (2.65 acres).

Goal 2: Mitigate the loss of ABB habitat from the Talawanda to McAlester Transmission Line Project based on established mitigation ratios and within CPAs for the species.

Objective 2B: Mitigate 13.07 acres of (Temporary/Permanent Cover Change/Permanent) impacts on ABB habitat through purchase of 7.87 credits at an FWS-approved ABB conservation bank (Table 4-1).

AEP will measure progress toward achieving these goals and objectives as described in Section 4.4, *Monitoring*.

4.3.2 Avoidance and Minimization

4.3.2.1 Stormwater Best Management Practices

AEP will ensure that activities associated with the Talawanda to McAlester Transmission Line Project in the HCP plan area will employ a state Department of Environmental Quality approved stormwater management plan utilizing best management practices to control the volume, rate, and water quality of post-construction stormwater runoff. Implementing the stormwater management plan will minimize the effects of soil erosion on ABB habitat within and adjacent to the plan area.

4.3.2.2 Limit Clearing in Temporary Work Areas

AEP will limit clearing around structure locations in the HCP plan area to the 100-foot construction ROW to limit temporary impacts on ABB habitat from vegetation and soil disturbance.

4.3.2.3 Limit Use of Motor Vehicles, Machinery, or Heavy Equipment

AEP will limit off-road use of motorized vehicles, machinery, and heavy equipment in the plan area to the degree practicable to reduce the potential for soil compaction and crushing ABB brood chambers.

4.3.2.4 Limit Use of Artificial Lighting

Artificial lighting (i.e., from construction at night) can cause take of ABBs by interfering with normal behavior patterns. Beetles can be attracted to artificial lights at night, disrupting their foraging or breeding behavior. Beetles attracted to artificial lighting can also be injured or killed by predators that are also attracted to night lighting. To avoid this indirect effect, AEP will limit construction activities in the plan area to daylight hours during the ABB active season.

4.3.2.5 Relief of Soil Compaction

Following construction, AEP will rip temporary work sites and laydown areas and other heavily used or traveled areas in the plan area where soil compaction has occurred to a depth of up to 24 inches to relieve soil compaction, facilitate revegetation, and help restore soil conditions for use by ABB.

4.3.2.6 Revegetation for Temporary and Cover Change Habitat Impacts

Following covered activities involving removal or killing of vegetation within the plan area, AEP will re-establish vegetation with a native species composition similar to the surrounding area (typically warm season grasses) or the same vegetation type that existed prior to impacts. If construction/soil disturbance ends during the dormant vegetation season, bare soil will be temporarily stabilized, if necessary, to prevent erosion by broadcasting cool season species such as annual rye grass or wheat seed and, where necessary, using clean, weed-free wheat straw as mulch to protect seed and increase soil moisture. At the beginning of the next growing season (preferably prior to the start of the ABB active season in mid to late May), these areas will be re-established with vegetation. ABB habitat with low-growing vegetation that existed in the plan area prior to project construction (mixed grass pasture, native grass and scrub/shrub, and native grass pasture) will be re-established to the original density (based on visual comparison of before/after photographs of the plan area and

comparison to adjacent undisturbed areas) within the permit term years. If forest vegetation in ABB habitat in the plan area (mixed forest, riparian forest, and upland forest) is removed, these areas will be restored to a condition suitable for ABB use within the 3-year permit term. Seeds used during vegetation re-establishment will be free of invasive species seeds.

4.3.2.7 Training

Construction personnel will attend a training course and be issued a fact sheet with color photographs of the ABB and its larvae. Personnel will be instructed to immediately cease ground disturbance activities if ABBs or their larvae are observed. This training will help to minimize risks to beetles active during the day from construction equipment.

4.3.3 Mitigation

ABB habitat impacts from covered activities will be offset through conservation and management of ABB habitat in perpetuity. To offset these impacts, AEP will purchase ABB credits at an FWS-approved conservation bank with a service territory that includes the plan area. Conservation banks are mitigation lands that are established by a bank sponsor, often the landowner. These sites are usually established to mitigate for the effects of multiple projects. By definition, an FWS-approved conservation bank meets the minimum standards and other requirements described in the FWS guidelines, *American Burying Beetle Conservation Strategy for the Establishment, Management, and Operations of Mitigation Lands and Guidance for the Establishment, Use, and Operation of Conservation Banks* (U.S. Fish and Wildlife Service 2014). Conservation banks are established through a conservation bank agreement with FWS and a conservation easement for the bank that must be approved by FWS. When AEP mitigates habitat impacts through the purchase of credits at an FWS-approved conservation bank, the bank sponsor is responsible for ensuring the success of and managing the mitigation land in perpetuity upon sale of the credits. AEP will purchase appropriate credits prior to any habitat impacts that could result in take of the ABB.

4.3.3.1 Mitigation Ratios

Mitigation ratios are established to provide appropriate mitigation for the type, duration, and location of project-related impacts and related take or effects of take. FWS has established mitigation ratios for ABB impacts in Oklahoma according to the type of impact and where it occurs (U.S. Fish and Wildlife Service 2016). For example, higher mitigation ratios are required for impacts that occur within CPAs. This plan applies these ratios to calculate the necessary mitigation for the Talawanda to McAlester Transmission Line Project (Table 4-1). Based on these FWS-approved ratios, AEP will mitigate all temporary ABB habitat impacts at ratio of 1.0 acre of impact to 0.5 acre of mitigation, all permanent cover change impacts at a ratio of 1.0 acre of impact to 1.0 acre of mitigation (1:1), and all permanent ABB habitat impacts at a ratio of 1.0 acre of impact to 2.0 acres of mitigation (1:2).

FWS has defined impacts that remove occupied ABB habitat for less than 5 years as a “temporary impact.” Although these habitat impacts are not permanent, they cause take of ABBs that may negatively and permanently affect the ABB population in the area. Loss of individuals and their potential offspring, even during a 5-year or less timeframe, reduces the number of ABBs in the area and may decrease genetic diversity of the population. Because the ABB is an annual species (the offspring of one year overwinter to become the reproductive adults the following year), ABBs that

are removed from the reproductive population will cause a temporary decrease in the overall population. Therefore, FWS requires mitigation to be provided in perpetuity for these “temporary impacts” on habitat, though at a lower ratio than for permanent impacts on habitat.

Permanent cover change impacts change the successional stage of an area of ABB habitat to a different stage (e.g., forest to shrubland). Similar to temporary impacts, these areas will be restored to a condition suitable for ABB use within the 3-year permit term; however, these areas will be permanently maintained at a different successional stage that can increase threats to ABB in perpetuity (U.S. Fish and Wildlife Service 2016). Therefore, these impacts are mitigated at a higher rate (1:1) than temporary impacts.

Permanent impacts on occupied ABB habitat have higher mitigation ratios (see Table 4-1) because they are expected to result in the highest level of effects over the longest period of time. FWS has established that each acre of permanent impact within a CPA requires 2 acres of mitigation (1:2) to fully offset the impact of the take.

Permittees will estimate which type of habitat impact will occur on each portion of the project area and mitigate appropriately, with FWS approval, prior to any ground-disturbing activities likely to result in take of ABBs in occupied ABB habitat. Permittees estimating permanent impacts will mitigate at the permanent ratio prior to impacts. No additional post-construction restoration measures are required for areas mitigated under the permanent mitigation ratio.

According to the FWS-established ratios, AEP will mitigate the temporary and permanent habitat impacts from the Talawanda to McAlester Transmission Line Project by purchasing credits for 7.87 acres at an FWS-approved conservation bank (Table 4-1).

Table 4-1. Mitigation for the Talawanda to McAlester Transmission Line Project

Impact Type	Mitigation Ratio¹ (impacts:mitigation)	Project Impacts on ABB Habitat (acres)	Required Mitigation (acres)
Temporary	1:0.5	10.42	5.21
Permanent Cover Change	1:1	2.65	2.65
Permanent	1:2	0.006	0.012
Total	--	13.07	7.87

¹Source: U.S. Fish and Wildlife Service 2016

There are two FWS-approved conservation banks that include the Talawanda to McAlester Transmission Project site in their service area and have ABB conservation credits available: the Muddy Boggy Conservation Bank (<http://msusa.com/conservation-banks/conservation-oklahoma/about-muddy-boggy/>) and the American Burying Beetle Conservation Bank (<http://commongroundcapital.com/american-burying-beetle/>).

In addition to mitigating temporary habitat impacts by conserving ABB habitat in perpetuity, AEP will implement post-construction restoration measures described in Section 4.3.2.6 to restore the affected area to a condition suitable for ABB use within the 3-year permit term.

4.4 Monitoring

Compliance monitoring verifies that AEP is fully implementing the HCP and meeting terms and conditions of its permit. Compliance monitoring requires that AEP prepare and submit an annual report for FWS review and comment during the 3-year permit term. AEP will monitor restoration in the plan area to ensure that restoration goals are achieved, as described in Section 4.3.2.6, *Revegetation for Temporary and Cover Change Habitat Impacts*. Results will be included in the annual report. Annual report requirements are further described in Section 5.2.1.1, *Reporting*. The FWS-approved conservation bank where AEP purchases credits is responsible for the management, monitoring, and reporting for the land mitigated under this plan in order to achieve the requirements of the *American Burying Beetle Conservation Strategy for the Establishment, Management, and Operations of Mitigation Lands* (U.S. Fish and Wildlife Service 2014).

Adaptive management is a component of FWS's "five point policy" (65 CFR 35242) and is typically required in HCPs. However, FWS acknowledges that an adaptive management strategy is not needed for HCPs where the effects of the HCP are minor and well understood and when implementation of the HCP would not pose a significant risk to the species at the time the incidental take permit is issued. Due to the minor and short-term impacts that would result from this HCP, no adaptive management strategy is needed. However, AEP will implement measures to address any changed and unforeseen circumstances described in Section 5.2 that could affect revegetation in order to meet its goals for restoring ABB habitat where temporary impacts have occurred from the covered activities.

Plan Implementation, Assurances, and Cost and Funding

5.1 Introduction

This chapter details the administrative requirements associated with plan implementation and the roles and responsibilities of FWS and the permittee (AEP). This chapter also describes the regulatory assurances sought by AEP, reviews the costs associated with plan implementation and the funding sources proposed to pay for those costs, and the procedures for modifying or amending the plan.

5.2 Implementation

5.2.1 American Electric Power

Under this HCP, AEP is responsible for funding and implementing all:

- avoidance and minimization measures (Chapter 4),
- mitigation (Chapter 4),
- monitoring (Chapter 4),
- remedial measures, if changed circumstances occurs (Chapter 5), and
- reporting procedures (Chapter 5).

5.2.1.1 Reporting

AEP will report annually to FWS on the status of HCP implementation. The annual report will be due 1, 2, and 3 years after permit issuance and will consist of the following elements.

- Status of project construction
- Amount of ABB habitat permanently and temporarily removed in the reporting year and cumulatively
- Location, amount, and timing of restoration actions
- Status of credit purchase in FWS-approved conservation bank for ABB (e.g., location of conservation bank, number of credits purchased, date of purchase)
- Results of monitoring of restoration sites

The last annual report will be due at permit expiration and will report on the entire permit period.

5.2.2 U.S. Fish and Wildlife Service

FWS is responsible for monitoring AEP's compliance with this HCP and the permit. The primary means of compliance monitoring is through AEP's annual report provided to FWS. FWS may also

conduct site visits to the project site or the conservation bank where credits are purchased to verify compliance with the terms of this HCP. FWS is also responsible for identifying any unforeseen circumstances, should they occur, and notifying AEP of their occurrence.

5.3 Changed and Unforeseen Circumstances

ESA regulations provide for regulatory and economic assurances to entities covered by approved HCPs concerning their financial obligations under the HCP (63 FR 8859). These assurances, called “no surprises,” are intended to provide a degree of certainty regarding the overall costs associated with implementation. If unforeseen circumstances occur that adversely affect species that are covered by an HCP, FWS will not require of that HCP permittee any additional land, water, or financial compensation or impose additional restrictions on the use of land, water, or other natural resources as long as the HCP is being properly implemented.¹ Because of the short duration of the permit (3 years), changed or unforeseen circumstances are highly unlikely to occur. However, changed circumstances are a required element of an HCP.

5.3.1 Definitions

Properly implemented means that the commitments and provisions of the HCP and permit are being fully implemented.

Changed circumstances are defined by federal regulation as those circumstances affecting a species or geographic area covered by the HCP that can be reasonably anticipated by the applicant or FWS and to which the parties can plan a response (50 CFR 17.3).

Unforeseen circumstances are defined by federal regulation as changes in circumstances affecting a species or geographic area covered by an HCP that could not reasonably have been anticipated by the applicant or FWS at the time of the HCP’s development and that result in a substantial and adverse change in the status of the covered species (50 CFR 17.3).

Changed circumstances that could arise in the plan area have been identified and are described below. If AEP becomes aware of a changed circumstance in the plan area, AEP will notify FWS immediately. At that time, AEP will modify implementation of the plan in the manner described below, to the extent necessary to address the effects of the changed circumstances on the plan’s conservation program. AEP will make the modifications without awaiting notice from FWS and will report to FWS on its actions.

5.3.2 Species Delisted

If the ABB is delisted during the term of the permit, the delisting would be made partly as a result of mitigation and conservation actions in approved HCPs, including this plan. Consequently, operation and maintenance of the conservation bank utilized for this HCP would continue into perpetuity and AEP may not seek any refund for bank credits purchased.

¹ 63 FR 35 (1998) (amending 50 CFR 17.22(b)(5), and 222.307(g)).

Delisting would remove the prohibition for new project-related incidental take to occur. If delisting occurs during construction, AEP may choose to continue the AMMs to reduce threats to the species. This voluntary conservation may be especially important during FWS's required monitoring of the species' status for the first 5 years after delisting.

5.3.3 Fire, Flood, or Tornado

A natural event such as fire, flood, or tornado is unlikely to occur within the short duration of this permit. However, if one occurs, it could substantially decrease the success of restoration and vegetation re-establishment efforts onsite. If a fire, flood, or tornado occurs in the plan area during the permit term and restoration sites are damaged, AEP will repeat restoration actions as necessary to restore ABB habitat as described in Chapter 4. If a natural event affects a restoration site that had already been fully restored to ABB habitat and that had met success criteria, no additional restoration or vegetation re-establishment efforts are necessary.

5.3.4 Other Land-Use Activities Occurring in the Plan Area

The Talawanda to McAlester Transmission Line Project crosses private property. AEP holds a ROW easement over the project site that allows construction and ongoing maintenance of the transmission line. Landowners or other easement holders may conduct activities in the plan area that could decrease the success of restoration and vegetation re-establishment. For example, landowners could drive off-highway vehicles through the ROW. AEP will notify landowners of restoration activities within the ROW and post signs to identify restoration sites. If, despite these efforts, damage occurs, AEP will repeat restoration actions as necessary to restore ABB habitat in the plan area as described in Chapter 4. AEP will also repeat communications to landowners or other easement holders (e.g., via signage or other means of notification) to help reduce the potential for activities that could affect restoration efforts in the plan area.

5.3.5 Emergency Repair

Emergency repair situations are highly unlikely to occur during the short construction period of this project. However, if an emergency repair situation occurs, it could represent a changed circumstance. The transmission line may be damaged by weather, malfunction of equipment, or other unexpected events and may require emergency repairs. If the damage occurs within the HCP plan area, damaged structures or emergency repair operations could affect occupied ABB habitat. Quick action to repair damaged or threatened structures or equipment may be necessary to protect the safety of people and property without prior notification of FWS. In such cases, AEP will notify FWS within 7 days of the emergency repair that occurs in the HCP plan area.

If the damage occurs within on-site restoration areas, AEP will remediate the damage by replanting damaged vegetation. If the damage occurs outside of on-site restoration areas, no further action is required because it would be within an area already considered temporarily affected and mitigated.

5.3.6 No Surprises Assurances

AEP requests no surprises assurances consistent with ESA regulations and as described above. If a changed circumstance as defined by this plan occurs within the plan area, AEP will implement the appropriate remedial actions as described above to the extent necessary to address the effects of the

changed circumstance on the HCP's conservation strategy. AEP will also report on its actions to FWS. In the case of an unforeseen circumstance, FWS or any other entity may take any actions necessary in order to conserve ABB, as long as the actions are at the expense of that entity. AEP may choose voluntarily to implement additional actions to conserve ABB.

In the event of an unforeseen circumstance, FWS will provide at least a 30-day notice of a proposed finding of unforeseen circumstance to AEP. FWS will then work with AEP to develop an appropriate response to the new conditions. AEP will have the opportunity to submit information to FWS to rebut the proposed finding, if it deems necessary. Any action taken by AEP to address an unforeseen circumstance will be done voluntarily.

5.4 Funding

Section 10(a)(2)(A)(ii) of the ESA requires that HCP permittees must specify the funding that will be available to implement actions that will be enacted to minimize and mitigate the impacts of the taking. The ESA also requires that FWS must find that "the applicant will ensure that adequate funding for the plan will be provided" (Section 10(a)(2)(B)(iii)).

AEP commits to funding and implementing all conservation measures described in Chapter 4. The cost of the avoidance and minimization measures is expected to be minimal compared to the capital cost of construction of the new transmission line. These avoidance and minimization costs will be incorporated into the project's capital costs. The cost of on-site restoration to be performed in the plan area is estimated to be \$90,000, including monitoring and remediation, if necessary. AEP will negotiate with one of the FWS-approved ABB conservation banks to achieve the most cost-effective credit price.

Prior to issuance of the permit and prior to impacts on ABB, AEP will provide to FWS a letter documenting the reservation or purchase of credits at an FWS-approved conservation bank for ABB. The amount of credits reserved or purchased will be consistent with the amounts required in Chapter 4. If AEP purchases credits prior to issuance of the incidental take permit, no further funding guarantees are necessary to document funding assurances to FWS.

If AEP reserves credits prior to issuance of the permit, AEP will purchase those credits no more than 3 months after issuance of the permit or before ground-disturbing activities begin in the plan area, whichever comes first. If AEP reserves credits prior to issuance of the permit, AEP will also provide a funding guarantee to FWS in the form of either a letter of credit or a performance bond consistent with the procedures required by the *American Burying Beetle Conservation Strategy for the Establishment, Management, and Operations of Mitigation Lands* (U.S. Fish and Wildlife Service 2014). If a letter of credit is used, the letter of credit must meet the following criteria.

- The letter of credit must be an irrevocable standby letter of credit submitted to and approved by FWS prior to issuance of the permit.
- The letter of credit must become effective before initiation of any impacts that may result in take of the ABB. The issuing institution must be an entity that has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a federal or state agency.

- The letter of credit must establish a standby trust fund. Under the terms of the bond, all payments made thereunder will be deposited by the surety directly into the standby trust fund and must be reported to FWS.
- The letter of credit must be accompanied by a letter from AEP referring to the letter of credit by number, issuing institution, and date, and providing the amount of funds assured by the letter of credit equal to or greater than the estimated cost of the conservation bank credits.
- The letter of credit must be irrevocable and issued for the permit duration.

If AEP provides a performance bond, the performance bond must meet the following criteria.

- The bond must be effective before approval of the permit. The company issuing the bond must be among those listed as acceptable sureties on federal bonds in Circular 570 of the U.S. Department of the Treasury.
- AEP must also establish a standby trust fund. Under the terms of the bond, all deposits made thereunder will be deposited by the surety directly into the standby trust fund and must be reported to FWS. An originally signed duplicate of the trust agreement must be submitted to FWS with the performance bond.
- The bond must guarantee that AEP will fund the standby trust fund in an amount equal to or greater than the estimated cost of the conservation bank credits before any impacts under the permit occur that may result in take of the ABB.
- Under the terms of the performance bond, the surety will become liable on the bond obligation if AEP fails to perform as guaranteed by the bond.

The credit price paid by AEP will include the long-term cost of all ABB management and monitoring actions at the conservation bank. Therefore, the conservation bank sponsor will be responsible for implementing all management and monitoring actions to maintain ABB habitat at the conservation bank.

AEP will be responsible for funding any remedial actions during the term of the permit that may be necessary in response to changed circumstances described in Section 5.2.

5.5 Plan Revisions and Amendments

The incidental take permit may be renewed at the discretion of the FWS Regional Office where the permit is issued. If the permittee (AEP) files a renewal request and the request is on file with the issuing FWS office at least 30 days prior to the permit's expiration, the permit will remain valid while the renewal is being processed. The permittee may not take listed species beyond the quantity authorized by the original permit. A renewal request must:

- be in writing;
- reference the permit number;
- certify that all statements and information in the original application are still correct and include a list of changes;
- provide specific information concerning what take has occurred under the existing permit and what portions of the project are still to be completed; and

- request renewal.

If AEP fails to file a renewal request 30 days prior to permit expiration, the permit becomes invalid after the expiration date. If AEP seeks extension of the expiration date only and proposes no additional taking, a public comment period generally is required. Compliance with annual reporting requirements is required to qualify for renewal.

Because of the short duration of this permit and the narrow focus of the covered activities, a plan amendment is highly unlikely. Substantive changes to the plan will require an amendment of the Section 10(a)(1)(B) incidental take permit. Following is a summary of the types of changes that may require a plan amendment and the procedures for approval.

- ESA listing of a species that may be taken by covered activities and cannot be avoided
- Modification of a covered activity, mitigation action, or other action under the HCP, including funding, that may significantly affect authorized take levels, effects of the covered activities, or the nature or scope of the conservation program
- Any other modification of the covered activities or actions likely to result in a significant adverse effect on ABB not addressed in the original HCP

A major amendment requires amending the HCP and the incidental take permit through the same formal review process as the original HCP and permit, including the internal Section 7 consultation, and may result in a change to the low-effect HCP designation. Should the HCP be re-designated because it no longer meets the impact criteria of a low-effect HCP, compliance with NEPA will be required. AEP will submit an application for a major amendment to FWS in a report that will include a description of the need for the amendment, an assessment of its impacts, and any alternatives by which the objectives of the proposal might be achieved. In this report, AEP will describe appropriate changes to the mitigation measures such that ABB are appropriately protected.

5.6 Alternatives to Take

The ESA requires that applicants for an incidental take permit specify which alternative actions to the take of federally listed species were considered and the reasons why those alternatives were not selected. The *Habitat Conservation Planning Handbook* (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1996) identifies two alternatives commonly used in HCPs: (1) any specific alternative that would reduce take below levels anticipated for the proposed project and (2) an alternative that would avoid take and therefore not require a permit from FWS.

Per the requirements of the ESA, this section describes the alternatives that were considered but, for reasons described below, were not selected.

5.6.1 No Action Alternative

Under the No Action Alternative, the project would not be implemented and a Section 10(a)(1)(B) incidental take permit from FWS would not be issued. The sites where covered activities would occur would remain in their existing conditions.

While this alternative would avoid impacts on ABB and its habitat, it is inconsistent with AEP's project goals and electricity needs for its customers. The proposed project is designed to provide

power to the McAlister Industrial Park. Consequently, although this alternative would ensure that ABB would not be disturbed, it was rejected because of its incompatibility with AEP's project goals and local requirements for electrical power.

5.6.2 Alternative Alignment

Under this alternative, AEP would avoid habitat with positive occurrences of ABB and route through unsuitable or unoccupied habitat. This alternative is not feasible for several reasons. Firstly, AEP has secured the ROW for the current route and re-routing would impose a significant economic and logistical hardship. More importantly, alternate routes are constrained in several ways. The current route follows established roads within the northern portion of the plan area, and any re-routing would result in greater ground disturbance than the currently proposed route. In the southern portion of the plan area, a new road is proposed in association with the ROW. Routing farther east along Mitchell Road would reduce ground disturbance. However, an easterly re-orientation is precluded by the McAlester State Penitentiary and higher-density housing developments along Mitchell Road. Routing west of State Highway 1/Route 271 is not practicable and would increase ABB fragmentation. For these reasons, the proposed route minimizes impacts on ABB relative to other alignments. Therefore, this alternative is rejected.

6.1 American Electric Power

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Chapter 7

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Appendix A

American Burying Beetle Species Account

Status

The ABB was federally listed as endangered in 1989 (54 FR 29652) by FWS in accordance with the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.). The ABB Recovery Plan was finalized in 1991 and a 5-year review was completed in 2008. The most recent review found that the ABB remains endangered throughout its current range because of ongoing threats to known populations and the failure to discover or establish viable populations in the remaining Recovery Areas (U.S. Fish and Wildlife Service 2008). Because of its federal listing as endangered, activities that may affect the ABB, whether adverse or completely beneficial, are regulated to ensure conservation and persistence of the species.

Species Description

The ABB is the largest carrion beetle (silphid) in North America, reaching 1.0 to 1.8 inches (2.5 to 4.6 centimeters) in length (Backlund and Marrone 1997). ABBs are black with orange-red markings. The most diagnostic feature of the ABB is the large orange-red marking on the raised portion of the pronotum (the upper surface of the first segment of the body that lies between the head and the abdomen), a feature shared with no other members of the genus in North America (U.S. Fish and Wildlife Service 2008). The ABB also has orange-red frons (the upper, anterior part of the head) and a single orange-red marking on the clypeus (the lower face located just above the mandibles). Antennae are large, with notable orange club-shaped tips.

Life History

The ABB is a nocturnal species active in the summer months (active season) when ambient nighttime air temperatures consistently exceed 60 °F (15.5 °C) (U.S. Fish and Wildlife Service 1991). They are most active from 2 to 4 hours after sunset (Walker and Hoback 2007). During the daytime, ABBs are believed to bury themselves in vegetation litter. Some weather conditions, including rain and strong winds, reduce ABB activity (Bedick et al. 1999).

ABBs fly and have been reported moving nightly distances ranging from 0.16 to 30 kilometers (km) (0.10 to 18.6 miles) in various parts of their range (Bedick et al. 1999; Creighton and Schnell 1998; Jurzenski et al. 2011; Schnell et al. 1997–2006). In Oklahoma, ABBs have been recorded to move approximately 10 km (6.2 miles) in 6 nights (Creighton and Schnell 1998). In Nebraska, one ABB was reported to move, wind-aided, approximately 30 km (18.6 miles) in one night (Jurzenski et al. 2011).

Individuals typically live for one year. Adults and larvae are dependent on carrion (flesh of dead animals) for food and reproduction. The ABB competes with other invertebrate species, as well as vertebrate species, for carrion. They are active in the active season and bury themselves in the soil during the winter months (inactive season) (Table 3-2). Adult ABBs burrow into the soil during the inactive season when ambient nighttime air temperatures consistently fall below 60 °F (15.5 °C) (U.S. Fish and Wildlife Service 2008). In Oklahoma, this typically occurs for approximately 8 to 9 months from late September until mid-May (U.S. Fish and Wildlife Service 2014). The length of the

active and inactive periods, however, fluctuates with temperature. Recent studies indicate that ABBs in Arkansas burrow to depths ranging from 0 to 8 inches (0 to 20 centimeters) during the inactive season (Schnell et al. 2007). Others have reported overwintering depths ranging from 0 to 27 inches (0 to 68.6 centimeters) (Hoback 2011).

The ABB begins reproduction soon after emergence from the inactive season, finding and securing a mate and carcass for reproduction. Adults bury a small vertebrate carcass and lay eggs beside it. When selecting carrion for burying in larval brood chambers, birds and mammals weighing from 1.7 to 10.5 ounces (oz.) (48.19 to 297.67 grams) are preferred, with an optimum weight of 3.5 to 7.0 oz. (99.22 to 198.45 grams; U.S. Fish and Wildlife Service 1991). Kozol (1990) found no significant difference in ABB preference for avian versus mammalian carcasses. ABB larvae use the carcass as a food source until they emerge. The entire reproductive process takes approximately 48 to 65 days (Kozol 1990). Following metamorphosis from larva to adult, teneral (adult ABBs newly emerged from the pupal case) typically emerge from underground in late summer; although timing can vary based on latitude and weather conditions, and some presence/absence surveys in Oklahoma have documented tenerals in early summer (U.S. Fish and Wildlife Service 2016).

Adults locate carcasses using chemoreceptors on their antennae. ABBs are capable of finding carrion at a distance of up to 18.6 miles (30 km; Jurzenski et al. 2011). Success in finding carrion depends upon many factors including availability of optimal habitats for small vertebrates, density of competing invertebrate and vertebrate scavengers, individual searching ability, reproductive condition, and temperature (Ratcliffe 1996). Once a carcass has been found, inter-specific and intra-specific competition may occur until a dominant male and female remain (Scott and Traniello 1989). Competition between *Nicrophorus* species can lead to injuries; burying beetles were commonly found with multiple appendages missing. Kozol (1990) reported that the ABB typically out-competes other burying beetles as a result of its larger size.

ABB larvae receive parental care during the entire time they are feeding and growing. This is an extremely rare behavior in insects, a condition normally found only in the social bees, wasps, ants, and termites. Both adults regurgitate food to begging larvae. The larvae grow rapidly and are soon able to feed themselves. The adults continually tend the carcass, removing fungi and covering the carrion ball with an antibacterial secretion. Sometimes the size of the brood is too large to be successfully reared on a small carcass, and both adults will cannibalize small larvae. After about a week, the larvae have consumed all but the bones of the carcass, and the adults fly away. Adults live only one season. The young pupate in the nearby soil and emerge as adults about a month later. Beetles overwinter in the adult stage.

Range

The historic range of the ABB included over 150 counties in 35 states, including most of temperate eastern North America and the southern portions of three eastern Canadian provinces (U.S. Fish and Wildlife Service 2008). Documentation confirming the species' presence is not uniform throughout this broad historical range. More records exist from the Midwest into Canada and in the northeastern United States than from the southern Atlantic and Gulf of Mexico region (U.S. Fish and Wildlife Service 2008). Its absence throughout much of its former range became apparent in the 1980s, and by 1989 the ABB was thought to occur only on Block Island, Rhode Island, and at one location in Oklahoma (U.S. Fish and Wildlife Service 2008). The last ABB specimens along the mainland of the Atlantic seaboard were collected in the 1940s (U.S. Fish and Wildlife Service 2008).

Currently, the ABB can be found in less than 10% of its historic range, with localized, extant populations discovered known to occur in six states (U.S. Fish and Wildlife Service 2008). These locations include Block Island off the coast of Rhode Island, eastern Oklahoma, western Arkansas, the Sand Hills and Loess Hills regions in Nebraska, the Chautauqua Hills region of southeastern Kansas, south-central South Dakota, and northeastern Texas. Additionally, a reintroduced population on Nantucket Island off the coast of Massachusetts is thought to be stable and a recent reintroduction attempt in Missouri in 2012 has reported successful brood.

Habitat

The ABB is a habitat generalist and its habitat requirements, particularly for reproduction, may not be fully understood at present. ABBs have been successfully live-trapped in several vegetation types including native grassland, grazed pasture, riparian zone forest, coniferous forest, mature forest, and oak-hickory forest, as well as on a variety of soil types (Lomolino et al. 1995; U.S. Fish and Wildlife Service 2008). Habitat requirements include soils suitable for the burial of carcasses; xeric, saturated, or loose sandy soils are not suitable (U.S. Fish and Wildlife Service 1991, 2005). Although feeding mainly on a wide variety of carrion, this species may also capture and consume live insects (Scott and Traniello 1989).

Ecosystems supporting ABB populations are diverse and include primary forest, scrub forest, forest edge, grassland prairie, riparian areas, mountain slopes, and maritime scrub communities (U.S. Fish and Wildlife Service 2008). The ABB readily moves between different habitats (Creighton and Schnell 1998; Lomolino et al. 1995). However, it is believed to have more selective breeding habitat (suitable soils and vegetation layer) compared to its feeding habitat. Soil conditions must be conducive to excavation by ABBs (Lomolino and Creighton 1996). Soil moisture is also a factor because ABBs die quickly when desiccated (Bedick et al. 2006). Soils in the vicinity of captures are all well drained and include sandy loam and silt loam, with a clay component noted at most sites. Level topography and a well-formed detritus layer at the ground surface are common (U.S. Fish and Wildlife Service 2008).

Lomolino and Creighton (1996) found that ABB reproductive success was higher in forest versus grassland habitat in part because of the near absence of a leaf litter layer in grassland and the increased difficulty to bury carcasses, as grassland soils tend to be more compact than forest soils. However, of the carcasses buried, habitat characteristics did not significantly influence brood size. Furthermore, Holloway and Schnell (1997) found significant correlations between the numbers of ABBs caught in traps and the biomass of mammals and birds, irrespective of the predominant vegetation (U.S. Fish and Wildlife Service 2008).

Habitat in the HCP Plan Area

The HCP plan area is located within the Conservation Priority Area (CPA) of the ABB range in Oklahoma. The CPA includes areas with recent (within 10 years) documented ABB presence that FWS believes are likely to contain important elements for ABB conservation and recovery, such as documented presence over multiple years, relatively high density populations, breeding, feeding, and sheltering habitat, and carrion resources.

Because the ABB is a habitat generalist, it can potentially occur in any non-urbanized portion of the plan area. FWS has designated specific habitat conditions that are considered unfavorable, as listed below (U.S. Fish and Wildlife Service 2016).

- Land that is tilled on a regular basis, is planted in monoculture, and does not contain native vegetation.
- Pasture or grassland that has been maintained through frequent mowing, grazing, or herbicide application at a height of 20 centimeters (8 inches) or less.
- Land that has already been developed and no longer exhibits surficial topsoil, leaf litter, or vegetation.
- Urban areas with maintained lawns, paved surfaces, or roadways.
- Stockpiled soil without vegetation.
- Wetlands with standing water or saturated soils (defined as sites exhibiting hydric soils and vegetation typical of saturated soils, and/or wetland hydrology).

Land cover types in the plan area were mapped based on aerial imagery and field surveys conducted in January 2016, and areas unsuitable to ABB were identified based on the criteria in *American Burying Beetle Impact Assessment for Project Reviews* (U.S. Fish and Wildlife Service 2016). Based on this assessment, an estimated 51% (13.07 acres) of the plan area is considered suitable ABB habitat. The remaining 49% (12.53 acres) of the plan area was considered unsuitable for ABB habitat.

Threats

Populations of the ABB have been extirpated from 90% of its original range. In the 1980s, entomologists documented the decreasing abundance of the ABB across its range. East of the Appalachian Mountains, the ABB declined in a generally north to south direction, and the decline was well underway, if not complete, by 1923. West of the Appalachians, the decline occurred later. In the Midwest, the decline appears to have proceeded generally from the center of the range outward, with all collections since 1960 occurring at the western and eastern peripheries of the range (U.S. Fish and Wildlife Service 2008).

While the cause for the decline of this species is not clearly understood, it could be a result of habitat fragmentation, habitat loss, carcass limitation (i.e., reduced availability of optimally sized carrion), pesticides, disease, light pollution, interspecific competition for carcasses, or a combination of these factors. The ABB Recovery Plan (U.S. Fish and Wildlife Service 1991) and the 5-year Species Status Review (U.S. Fish and Wildlife Service 2008) identify potential threats to the ABB, including disease/pathogens, pesticides, direct habitat loss and alteration, interspecific competition, loss of genetic diversity in isolated populations, increase in competition for prey, increase in edge habitat, decrease in abundance of prey, agricultural and grazing practices, and invasive species. The primary cause, however, has been habitat loss and fragmentation (U.S. Fish and Wildlife Service 1991).

Land use changes that fragmented native forest and grasslands and created edge habitats (such as the edge between forest and grassland, or grassland and cropland), in addition to the removal of top-level carnivores such as grey wolf (*Canis lupus*) and eastern cougar (*Puma concolor*), during the westward expansion of settlement in North America caused a decrease of indigenous species and an increase in meso-carnivores that thrive in areas disturbed by humans. These species include American crow (*Corvus brachyrhynchos*), raccoon (*Procyon lotor*), red fox (*Vulpes fulva*), opossum

(*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), feral cats (*Felis domesticus*), and other opportunistic predators (Wilcove et al. 1986). A number of these species, especially the raccoon and striped skunk, have undergone dramatic population increases over the last century (Garrott et al. 1993), and the coyote and opossum have expanded their ranges. These generalist predators have increased in abundance where edge habitats allow increased foraging opportunities (Ray 2000). Therefore, as habitat for species in the favored weight range for ABB reproduction decreased, populations of its predators (ABB competitors) increased, potentially further limiting ABB reproductive potential.

ABBs are attracted to artificial lighting (Kozol 1990), which can lead to disruptions of the species' normal behavior patterns. The species has been shown to respond differently to varying light sources, and ultraviolet or mercury vapor lights elicit stronger responses while sodium vapor lights are the least attractive to ABBs (Anshutz et al. 2007).

The red imported fire ant (*Solenopsis invicta*) has become a formidable competitor for carrion and a potential source of mortality for burying beetles when they co-occur at a food source (Warriner 2004). Scott et al. (1987) studied *Nicrophorus carolinus*, a burying beetle closely related to the ABB, in Florida and concluded that the inability of this species to successfully bury carrion was due to red imported fire ant interference. Collins and Scheffrahn (2005) noted that red imported fire ants may reduce ground-nesting populations of rodents and birds. Of the states containing populations of the ABB, red imported fire ants now occur in Arkansas, Oklahoma, and Texas, mainly in the Arkansas River valley and southward (U.S. Department of Agriculture 2003).

Fire may cause direct mortality of individuals during the ABB's active season (approximately May through July) (Howard et al. 2012), and can affect ABB habitat during the active or inactive seasons through loss of habitat and loss of food sources.

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