



December 23, 2020

Attn: Heather Osborn  
Incidental Take Authorization Coordinator

Illinois Department of Natural Resources (IDNR)  
Office of Resource Conservation, Division of  
Natural Heritage One Natural Resources Way  
Springfield, IL, 62702  
Heather.Osborn@illinois.gov  
DNR.ITAcoordinator@illinois.gov

**Re: Incidental Take Authorization  
Application Sugar Creek Wind  
One LLC  
Logan County, Illinois**

Dear Heather,

Further to IDNR's email dated June 11th, 2020, please find enclosed our Conservation Plan application submission for an Incidental Take Authorization.

Sugar Creek Wind One LLC is seeking a 30-year ITA for the state-listed species, Indiana Bat and Northern Long-eared Bat. The permit term is based on the expected life of the Project. At the expiration of the 30-year term, the ITA may be renewed or extended with the approval of the IDNR.

Please note that details to the Conservation Plan are covered within the Sugar Creek Wind Project Habitat Conservation Plan (HCP) as Appendix C. Where applicable, the section number of the HCP will be referenced and linked to provide the appropriate and detailed response.

Should you have any questions, please do not hesitate to contact me at (647) 382-0352 or [Riley.Griffin@algonquinpower.com](mailto:Riley.Griffin@algonquinpower.com).

Regards,

A handwritten signature in blue ink that reads "Riley Griffin".

Riley Griffin  
Sr. Manager, Environmental Permitting - Construction

CC: Derek Tomka, Liberty Power  
Molly Stephenson, Stantec  
Terry VanDeWalle, Stantec

Enclosed: Conservation Plan (Application for an Incidental Take  
Authorization) Habitat Conservation Plan

# Conservation Plan

## Application for an Incidental Take Authorization for Indiana Bat and Northern Long-eared Bat

Sugar Creek Wind  
Project Logan County,  
Illinois

December 23, 2021

Business Confidential



Sugar Creek Wind One LLC

354 Davis Road, Oakville, Ontario, Canada L6J 2X1

**Illinois Department of Natural  
Resources CONSERVATION PLAN**

*(Application for an Incidental Take Authorization)  
Per 520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080*

**150-day minimum required for public review, biological and legal analysis, and permitting**

PROJECT APPLICANT: **Sugar Creek Wind One LLC (subsidiary of Algonquin Power & Utilities Corp.)**

PROJECT NAME: **Sugar Creek Wind Project**

COUNTY: **Logan County, Illinois**

AREA OF IMPACT (acreage): **17,745 acres (See HCP, Section 1.3.2 - Covered Area)**

The incidental taking of endangered and threatened species shall be authorized by the Illinois Department of Natural Resources (IDNR) only if an applicant submits a Conservation Plan to the IDNR Incidental Take Coordinator that meets the following criteria:

- 1) A **description of the impact likely to result** from the proposed taking of the species that would be covered by the authorization, including but not limited to -

A) identification of the **area to be affected** by the proposed action, include a legal description and a detailed description including street address, map(s), and GIS shapefile. Include an indication of ownership or control of affected property. Attach photos of the project area.

*See KMZ File: "SU\_LAY\_61H 20191105.kmz"*

*See GIS Shapefiles in ZIP File: "SU\_LAY\_16H 20191105.zip"*

**Land Control Statement:** *Sugar Creek Wind has 94 leases with that have been recorded with the County. The terms of the lease during operations is a 30 year term with an option to extend for up to two (2) additional periods of ten (10) years.*

**Easement Status:** *Sugar Creek Wind has 10 easements that have been recorded with the County. Most are perpetual and others have a term of 35 years.*

B) **biological data** on the affected species including life history needs and habitat characteristics. Attach all biological survey reports.

*See HCP, Section 3.0 – Environmental Setting and Biological Resources*

C) **description of project activities** that will result in taking of an endangered or threatened species, including practices to be used, a timeline of proposed activities, and any permitting reviews, such as a USFWS biological opinion or USACE wetland review. Please consider

all potential impacts such as noise, vibration, light, predator/prey alterations, habitat alterations, increased traffic, etc.

*See HCP, Section 2.0 – Project Description and Covered*

*Activities See HCP, Section 3.2 Pre-Construction Surveys*

D) explanation of the anticipated **adverse effects on listed species**; how will the applicant’s proposed actions impact each of the species’ life cycle stages.

*See HCP, Section 5.0 – Effects of the Proposed Action*

2) Measures the applicant will take to **minimize and mitigate** that impact and the funding that will be available to undertake those measures, including, but not limited to -

A) plans to **minimize the area affected** by the proposed action, the estimated **number of individuals** of each endangered or threatened species that will be taken, and the **amount of habitat** affected (please provide an estimate of area by habitat type for each species).

*See HCP, Section 4.2 – Cut-in Speed Alternative (Proposed Scenario)*

*See HCP, Section 5.4.2 – Take Estimates for the Covered Species and Section 5.4.3 – Impacts of Estimated Take*

B) **plans for management of the area** affected by the proposed action that will **enable continued use** of the area by endangered or threatened species by maintaining/re-establishing suitable habitat (for example, native species planting, invasive species control, use of other best management practices, restored hydrology, etc.).

*n/a – no habitat will be impacted*

C) description of **all measures to be implemented to avoid, minimize, and mitigate** the effects of the proposed action on endangered or threatened species.

- Avoidance measures include working outside the species’ habitat.
  - *The proposed project is not impacting any habitat.*
- Minimization measures include timing work when species is less sensitive or reducing the project footprint.
  - *See HCP, Section 6.2.1 Minimization of Direct Bat Mortality*
- Mitigation is additional beneficial actions that will be taken for the species such as needed research, conservation easements, propagation, habitat work, or recovery planning.
  - *See HCP, Section 6.2.2 – Mitigation for Direct Bat Mortality*
  - *See HCP, Appendix B – Mitigation Plan*

- It is the **applicant's responsibility to propose mitigation measures**. IDNR expects applicants to provide species conservation benefits 5.5 times larger than their adverse impact.
  - *See HCP, Section 6.2.2 – Mitigation for Direct Bat Mortality*
  - *See HCP, Appendix B – Mitigation Plan*
  - *Sugar Creek Wind is also committed to providing all mitigation reporting to the State.*
  - *Sugar Creek Wind is also committed to conducting mist netting, telemetry, and roost emergence counts at the mitigation site around the halfway point in the permit term (~ Year 15).*

D) plans for **monitoring** the effects of the proposed actions on endangered or threatened species, such as **species and habitat monitoring** before and after construction, include a plan for follow-up **reporting to IDNR**.

- *See HCP, Section 6.3 – Mortality Monitoring and Reporting*
- *Sugar Creek Wind is committed to perform one mist-netting survey on Sugar Creek paired with an intensive survey year during the height of bat active season. Data used for indicating the assemblage of bat species present will be the highest quality habitat in the project area.*
- *Sugar Creek Wind is committed to providing the State with all monitoring reports.*
- *Sugar Creek Wind is committed to providing some carcasses found during post- construction monitoring to academic institutions to conduct genetic research on listed and non-listed bats in Illinois, at the request of the IDNR. The IDNR will provide Sugar Creek Wind with the institution(s) they would like Sugar Creek Wind to coordinate with and directions on which carcasses to provide.*

E) **adaptive management practices** that will be used to deal with changed or unforeseen circumstances that affect on endangered or threatened species. Consider environmental variables such as flooding, drought, and species dynamics as well as other catastrophes. Management practices should include contingencies and specific triggers. Note: Not foreseeing any changes does not qualify as an adaptive management plan.

- *See HCP, Section 6.4 – Adaptive Management*

F) **verification that adequate funding exists** to support and implement all mitigation activities described in the conservation plan. This may be in the form of bonds, certificates of insurance,

- *See HCP, Section 7.4 – Implementation Costs and Funding Assurances*

3) A description of alternative actions the applicant considered that would reduce take, and the reasons that each of those alternatives was not selected. A “no-action” alternative” shall be included in this description of alternatives. Please, describe the economic, social, and ecological tradeoffs of each action.

*See HCP, Section 4.0 – Alternatives Considered*

4) Data and information to indicate that the proposed taking will not reduce the likelihood of the survival or recovery of the endangered or threatened species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species existence in Illinois.

*See HCP, Section 3.3.1.8 – Illinois Status (Indiana bat)*

*See HCP, Section 3.3.2.7 – Illinois Status (Northern long-eared bat)*

*See HCP, Section 5.4.3.1. – Impacts to Indiana Bat*

*See HCP, Section 5.4.3.2 – Impacts to the Northern Long-Eared Bat*

*At the state level, the estimated 2019 population in Illinois was 78,403 Indiana bats (USFWS 2019). Based upon the 85 total female Indiana bat debits accrued over the 30-year life of the Project, this represents 0.1% of the estimated 2019 population and will be distributed over 30 years. Considering the overall low level of expected take and the compensatory mitigation measures Sugar Creek Wind will implement to compensate for the take, it is highly unlikely that the impact of the Project will appreciably reduce the likelihood of survival and recovery of the Indiana bat.*

*At the state level, the estimated adult northern long-eared bat population was 213,720 individuals, and the total population is estimated at 320,580 (USFWS 2016b). Based upon the 39 total female northern long-eared bat debits accrued over the 30-year life of the Project, this represents 0.01%% of the estimated population in Illinois (320,580 northern long-eared bats, including adults and pups; USFWS 2016b) and will be distributed over 30 years. Considering the overall low level of expected take and the compensatory mitigation measures Sugar Creek Wind will implement to compensate for the take, it is highly unlikely that the impact of the Project will appreciably reduce the likelihood of survival and recovery of the northern long-eared bat. Given that no restrictions are anticipated in the recruitment or distribution of northern long-eared bats within Illinois or in the species’ overall range, the action is not likely to jeopardize the continued existence of the northern long-eared bat.*

## SUGAR CREEK CONSERVATION PLAN

- 5) An **implementing agreement**, which shall include, but not be limited to (on a separate piece of paper containing signatures):
- A) the names and signatures of all participants in the execution of the conservation plan;
  - B) the obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities included in the conservation plan and a schedule for preparation of progress reports to be provided to the IDNR;
  - C) certification that each participant in the execution of the conservation plan has the legal authority to carry out their respective obligations and responsibilities under the conservation plan;
  - D) assurance of compliance with all other federal, State and local regulations pertinent to the proposed action and to execution of the conservation plan;
  - E) **copies of any final federal authorizations for a taking already issued to the applicant**, if any.

*See Appendix A – Implementation Agreement*

## **Appendix A – Implementation Agreement**





## **Implementing Agreement**

### **Conservation Plan for Indiana Bat and Northern Long-eared Bat**

#### **Sugar Creek Wind**

#### **Project Logan County, IL**

The Illinois Department of Natural Resources (IDNR) is responsible for the review of this Conservation Plan and for subsequent issuance of the Incidental Take Authorization (ITA). Upon approval of the Conservation Plan and issuance of the ITA, Sugar Creek Wind One LLC (Sugar Creek) will be responsible for meeting the terms and conditions of the ITA and will allocate sufficient personnel and resources to ensure the effective implementation of the plan. Sugar Creek will oversee all avoidance, minimization, and monitoring efforts identified within the Conservation Plan. Furthermore, Sugar Creek will be responsible for planning, contract execution and construction supervision for the entire project.

Sugar Creek will implement this Conservation Plan in coordination with the IDNR. Sugar Creek will be responsible for the plan's implementation, planning, and coordination with IDNR as specified in the plan as required in the ITA. Sugar Creek will retain a lead consultant who will be responsible for coordinating and overseeing any onsite work that requires knowledge, skills, and expertise related to the listed species.

The following schedule is planned for implementation of turbine cut-in speeds and feathering protocols, mitigation, monitoring and progress reports to be provided to the IDNR:

- Implement approved turbine cut-in speeds and feathering protocols – Upon permit issuance
- Summer bat habitat mitigation – After permit issuance
- Mitigation monitoring reporting - January 31 following each calendar year in which a mitigation action or monitoring is actively conducted
- Mortality monitoring – Annually, years 1-30 of operations post-ITA issuance
- Post-construction monitoring reporting – Annually by March 1 following each monitoring year

Sugar Creek hereby certifies that it has authority and funding to complete this project and to implement all proposed conservation measures included in this Conservation Plan for the two state-listed species covered by the ITA. Sugar Creek is in charge of this project and assures that all applicable federal, state, and local laws will be adhered to during the completion of the project. Federal authorizations for taking of listed species will also be obtained for this project.

The individual who will oversee implementation of the conservation plan as required by the ITA is:

Charles Ashman  
President  
Sugar Creek Wind One LLC  
2856 County Road 2000 N  
Minonk, IL 61760

SUGAR CREEK CONSERVATION PLAN

Sugar Creek acknowledges and agrees that it is responsible for the implementation of this Conservation Plan and the terms and conditions of the ITA.

Signature: Charles Ashman Date: 12/23/2021

Charles Ashman, President of Sugar Creek Wind One LLC

## **Appendix B – Habitat Conservation Plan**

# Habitat Conservation Plan for Indiana and Northern Long-Eared Bat

Sugar Creek Wind  
Project Logan County,  
Illinois

October 8, 2021

Business Confidential

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## SUGAR CREEK WIND HCP

Introduction  
October 7, 2021

# 1.0 INTRODUCTION

## 1.1 OVERVIEW AND BACKGROUND

### 1.1.1 Applicant Information

The Sugar Creek Wind Project (Project) is owned by Sugar Creek Wind One LLC (Sugar Creek Wind), a subsidiary of Algonquin Power & Utilities Corp. (Algonquin), and will be operated by Liberty Power.

### 1.1.2 Project Overview

The Project is a proposed wind farm located in Logan County, Illinois. The Project is located on private land and will include 57 wind turbine generators and associated facilities, including turbine access roads, underground electrical collector lines, a substation, two meteorological (MET) towers, and an operations and maintenance (O&M) building. The Project location and facilities are presented in Figure 1.

### 1.1.3 Purpose and Need

The purpose and need for the Project are:

- To provide an affordable and reliable source of renewable energy to serve the regional electrical grid and energy demand that neither emits pollutants, contributes to climate change and its effects, nor generates the adverse impacts that accompany fossil fuel extraction, processing, waste and by-product disposal, transportation, and combustion.
- To meet the renewable energy goals of the U.S. and Illinois (Illinois enacted legislation, Public Act 95-0481, established that electric utilities in Illinois are required to provide at least 25% of their retail electric supply from renewable energy sources, including wind, by 2025).
- To support and diversify the local and regional economies through job creation and increased tax revenue.

During the development process, Sugar Creek Wind (the Applicant) determined that operation of the Project turbines may result in incidental mortality of the federally protected northern long-eared bat (*Myotis septentrionalis*) and Indiana bat (*Myotis sodalis*), hereafter referred to as 'covered species.' Therefore, Sugar Creek Wind is requesting the issuance of a section 10(a)(1)(B) Incidental Take Permit (ITP) to authorize any incidental take of the covered species that may occur as a result of project operations.



# SUGAR CREEK WIND HCP

Introduction  
October 7, 2021

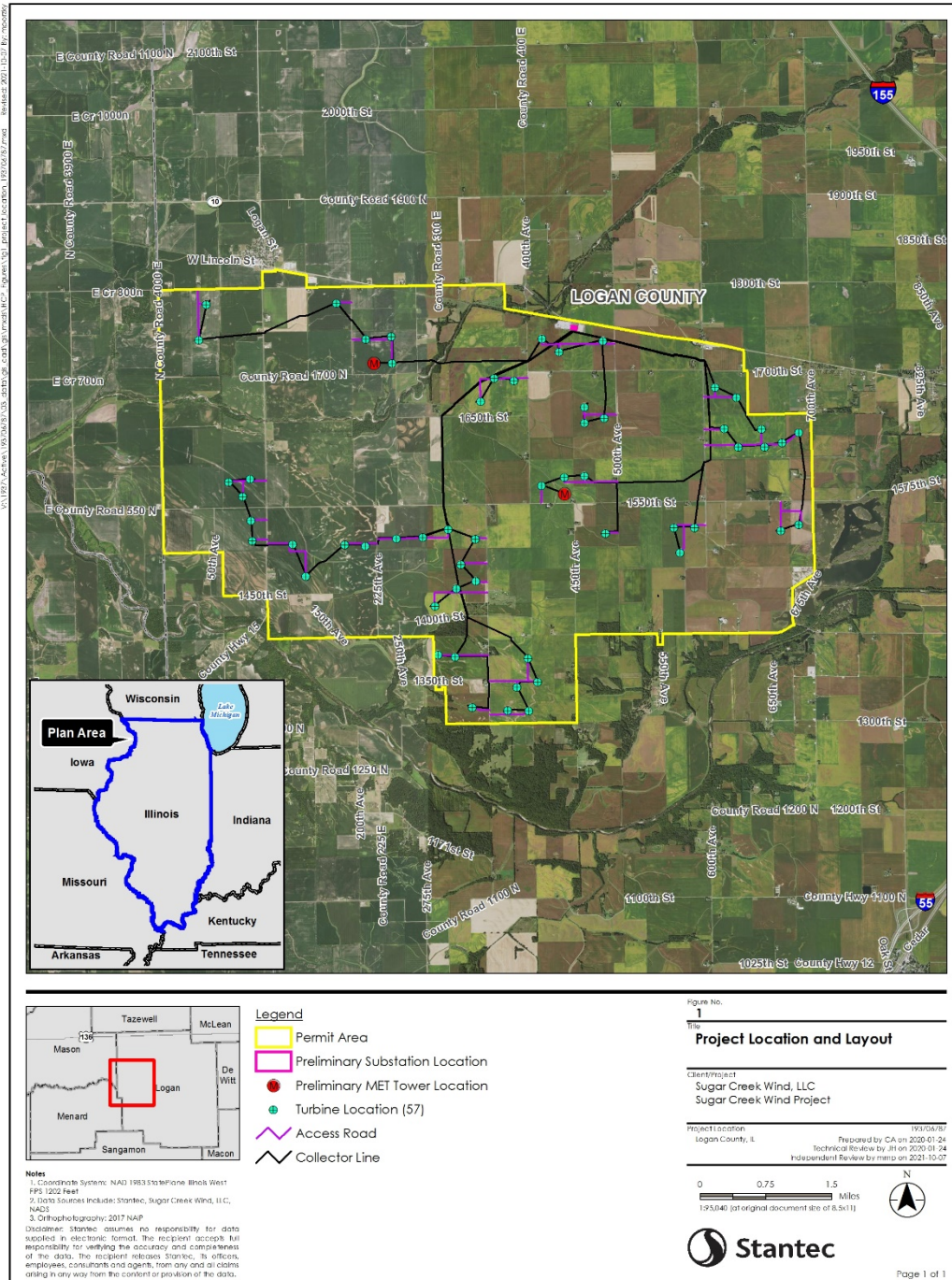


Figure 1. Project Location and Preliminary Layout

## SUGAR CREEK WIND HCP

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The Applicant has developed this Habitat Conservation Plan (HCP) in support of its ITP application. The purposes of this HCP are to: (1) assess the impacts of the Project on the covered species; (2) provide mechanisms to avoid, minimize, and mitigate to the maximum extent practicable the impacts of the taking of the covered species; and (3) ensure that incidental take from the Project will not appreciably reduce the likelihood that the covered species will survive and recover in the wild.

This HCP serves the purpose of documenting the steps taken by Sugar Creek Wind to avoid and minimize the impact of the Project on the covered species, to monitor the actual impact of the Project on the Covered Species, and to provide mitigation for the Project's projected and actual impacts.

## 1.2 REGULATORY SETTING

### 1.2.1 Endangered Species Act

#### 1.2.1.1 *Section 10 of the ESA*

Under section 10 of the Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (USFWS) may authorize, under certain terms and conditions, any taking otherwise prohibited by section 9(a)(1)(B) of the ESA, if such taking is incidental to, and not the purpose of, an otherwise lawful activity. Section 9 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. A section 10 take authorization is known as an ITP.

To receive an ITP, the Applicant must develop, fund, and implement an USFWS-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 the USFWS may require as necessary or appropriate for purposes of the HCP.

The USFWS may issue an ITP 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 taking.
- The applicant will ensure that adequate funding for the HCP and procedures to deal with unforeseen circumstances will be provided.

## SUGAR CREEK WIND HCP

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- 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 the USFWS as being necessary or appropriate for the purposes of the plan.
- The Director of the USFWS has received such other assurances, as required, that the plan will be implemented.

### 1.2.1.2 **Section 7 of the ESA**

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 the USFWS regarding Federal agency actions.

Although this HCP constitutes a non-Federal project and will be permitted under section 10 of the ESA, the issuance of a permit by the USFWS is considered a Federal action. Therefore, prior to approval of the ITP, the USFWS must undertake an internal section 7 consultation (ESA section 7(a)(2) and 50 CFR 402.10–402.16). The USFWS 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 the impacts from the Project.

### 1.2.2 **National Environmental Policy Act**

The National Environmental Policy Act (NEPA) is a decision-making requirement that applies to proposals for Federal actions. Issuance of an ITP 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.

### 1.2.3 **National Historic Preservation Act**

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 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 (NRHP). Properties are defined as cultural resources, which include prehistoric and historic sites, buildings, and structures that are listed on or eligible to the NRHP. The issuance of an ITP is an undertaking subject to Section 106 of the NHPA. 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. Section 106 also requires government-to-government tribal consultation “with any Indian

## **SUGAR CREEK WIND HCP**

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tribe or ...that attach religious and cultural significance to historic properties that may be affected by an undertaking.” 800.2(c)(2)(B)(ii). Under this definition, and pursuant to Service Directorate Memo 062416 the “undertaking” here is the proposed issuance of an ITP for a wind energy facility and the associated covered activities.

### **1.2.4 Illinois Endangered Species Protection Act**

The Illinois Endangered Species Protection Act (ESPA) - 520 ILCS 10/1 is maintained by the Illinois Department of Natural Resources (IDNR). Any species or subspecies of animal or plant designated as endangered or threatened by the Secretary of the Interior pursuant to the ESA of 1973, as amended, shall be automatically listed as an endangered or threatened species under this Act and thereby placed on the Illinois List by the Illinois Endangered Species Protection Board without notice or public hearing. As a result, both Indiana and northern long-eared bat are protected under the Illinois ESPA. According to 17 Illinois Administrative Code, Chapter 1, Section 1080, “Incidental taking of endangered and threatened species shall be authorized by the Department of Natural Resources (Department) only if the applicant submits to the Department a conservation plan that satisfies all criteria established in [Section 1080.10]. The Department shall provide written notice to the applicant of the approval or denial of authorization for incidental taking. The written notice shall constitute the authorization for incidental taking or the denial of the authorization for incidental taking is effective as of the date of execution by the Director of the Department’s Office of Resource Conservation.”

Sugar Creek Wind will coordinate with the IDNR to remain in compliance with the ESPA.

### **1.2.5 Local Regulations**

No Logan County regulations govern the take of federal- or state-listed species.

## **1.3 SCOPE OF THE HABITAT CONSERVATION PLAN**

This HCP has been prepared in accordance with the requirements set forth under section 10(a)(1)(B) of the ESA, as amended, and applicable USFWS guidance documents. Incidental take authorized within the scope of a section 10(a)(1)(B) permit issued to Sugar Creek Wind would primarily include – under specific circumstances and limits – direct and indirect mortality of covered species from project operations.

Under section 10 of the ESA, applicants may be authorized, through issuance of an ITP, to conduct activities that may result in take of a listed species, as long as the take is incidental to, and not the purpose of, otherwise lawful activities.

### **1.3.1 Permit Duration**

Sugar Creek Wind is seeking a 30-year ITP for the covered species. The permit term is based on the expected life of the Project. At the expiration of the 30-year term, the ITP may be renewed or extended with the approval of the USFWS.

## SUGAR CREEK WIND HCP

Project Description and Covered Activities  
October 7, 2021

### 1.3.2 Covered Area

The HCP Handbook (USFWS and NMFS 2016) defines the “Plan Area” as where the HCP applies, and the “Permit Area” as where the incidental take authorization applies.

The Plan Area for the requested ITP includes the entire Permit Area as well as the areas of mitigation. The Permit Area is the geographic area within the project boundary where the impacts of the activities occur for which ITP coverage is requested (Figure 1). It includes all areas that will be affected directly and indirectly by activities associated with operation of the Sugar Creek Wind Project and envelops approximately 17,745 acres (7,181 hectares [ha]). The areas of mitigation are those lands of summer roosting and foraging habitat that were purchased by Sugar Creek Wind to offset the anticipated level of take at the Project for Indiana and northern long-eared bats and includes 101.3 acres, which are further described in Section 6.2.2. Any additional mitigation will occur within the state of Illinois; therefore, the Plan Area includes the entire state of Illinois (Figure 1).

### 1.3.3 Covered Species

- **Indiana Bat:** The Project’s location is within the range of the Indiana bat, a species listed as endangered under the ESA and the Illinois ESPA; regulatory authority under the state law lies with the IDNR. A detailed discussion of the Indiana bat is presented in Section 3.3.1.
- **Northern Long-eared Bat:** The Project’s location is also within the range of the northern long-eared bat, a species listed as threatened under the ESA and the Illinois ESPA. A detailed discussion of the northern long-eared bat is presented in Section 3.3.2.

## 2.0 PROJECT DESCRIPTION AND COVERED ACTIVITIES

### 2.1 PROJECT DESCRIPTION

The Project is a proposed wind farm located in Logan County, Illinois. The current project layout consists of 57 wind turbines and associated access roads, collector line systems, two MET towers, a collection substation, and an O&M building (Figure 1).

#### 2.1.1 Site Selection

The Project site was first identified through a review of available wind resource mapping. As a renewable resource, wind is classified according to wind power classes, which are based on typical wind speeds. These classes range from Class 1 (the lowest) to Class 7 (the highest). Strong wind resources were indicated in the Logan County area.

At this site, significant agricultural land use occurs throughout the Permit Area, comprising over 90% of the Permit Area (see Section 3.1.1 and Figure 2). Except for the immediate project footprint, this use would be expected to continue. The character of the overall landscape, therefore, will be minimally changed.

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Avoiding negative natural resource and community impacts is a priority for all Algonquin projects. Of the approximately 17,745 acres within the project boundary, only a small percentage will be affected by project infrastructure during operation. Throughout development of the project layout, the focus of turbine placement and permanent project infrastructure will be confined to the small areas of the overall Permit Area considered to have the least environmental and community impact. Each wind turbine typically requires less than 0.5 acre of land. Sugar Creek Wind avoided tree clearing during construction; therefore, no construction impacts to the covered species are anticipated.

### 2.1.2 Project Characteristics

The Permit Area is located southeast of the village of New Holland and northeast of the village of Middletown in Illinois (see Figure 1). Land use throughout much of the Permit Area is dominated by agriculture (i.e., row crops and pasture), interspersed with creeks and drainages.

The Project is designed to generate approximately 202 megawatts (MW) with 57 wind turbines and associated O&M building, access roads, collector line system, and substation. The Project is located on land leased from participating landowners. As a leaseholder, Sugar Creek Wind's rights are limited to those incorporated in the lease agreement to allow for safe and effective operation, maintenance, and decommissioning of the Project.

Additional detail of various project components is provided in the following sections.

#### 2.1.2.1 Wind Turbines

The Project will consist of 57 turbines, including 17 Vestas V110s (2.0 MW) and 40 Vestas V150s (4.2 MW), for a total generating capacity of 202 MW. There are currently 63 locations identified (57 primary locations, as well as 6 alternate locations), all of which are located greater than 1,000 feet from suitable summer roosting habitat for the covered bat species to avoid summer risk (Figure 1). Each wind turbine consists of three major components: the tower, the nacelle, and the rotor. The height of the tower, or "hub height" (height from foundation to top of tower) will be between 344 and 394 feet. The nacelle sits atop the tower, and the rotor hub is mounted to the front of the nacelle. The total turbine height (i.e., height at the highest blade tip position) will be between 574 to 590 feet. Descriptions of each of the turbine components are provided below.

**Tower:** The tubular towers used for this Project are conical steel structures manufactured in multiple sections. Each tower has an access door, internal lighting, and an internal ladder to access the nacelle. The towers are painted light gray to make the structure visible to aircraft (viewing against the ground) but decrease visibility against the sky. Steel reinforced concrete foundations were constructed to anchor each tower.

**Nacelle:** The main mechanical components of the wind turbine are housed in the nacelle. These components include the drive train, gearbox, and generator. The nacelle is housed in a steel reinforced fiberglass shell that protects internal machinery from the environment and dampens noise emissions. The housing is designed to allow for adequate ventilation to cool internal machinery. The nacelle is equipped with an external anemometer and a wind vane that signals wind speed and direction information to an

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electronic controller. The nacelle is mounted on a bearing that allows it to rotate (yaw) into the wind to maximize energy capture. Attached to the top of each nacelle located on the outside perimeter of the Permit Area and some additional locations within the Permit Area, per specifications of the Federal Aviation Administration (FAA), is a single, medium intensity aviation warning light. These lights are flashing red strobes (L-864) and operate only at night. Transformers are located in the nacelle.

Rotor: A rotor assembly is mounted to the nacelle to operate upwind of the tower. Each rotor consists of three composite blades with a rotor diameter of 361 feet (for the V110s) or 492 feet (V150s). The rotor attaches to the drive train at the front of the nacelle. Hydraulic motors within the rotor hub feather each blade according to wind conditions, which enables the turbine to operate efficiently at varying wind speeds. The rotor can spin at varying speeds to operate more efficiently at lower wind speeds.

Steel reinforced concrete foundations were constructed to anchor each wind turbine. A pad mounted transformer will be located at the base of each turbine tower which collects electricity generated by each turbine through cables routed down the inside of the tower.

### **2.1.2.2 Access Roads and Pads**

The Project includes new and improved roads to provide access to the turbines and substation site, including a ring-road around each turbine (i.e., the pad). The location of project access roads is shown in Figure 1. The roads are gravel-surfaced and approximately 16 feet in width.

### **2.1.2.3 Collection System and Substation**

The Project includes an underground power collection system between the pad mounted transformers and a collector substation (Figure 1). All collector lines are buried a minimum of 4 feet below the surface or 1 foot below existing drain tile. The Project will interconnect on-site at the Mason City–Fogarty 138-kV transmission line that runs adjacent to the north side of the Project.

### **2.1.2.4 Meteorological Towers**

Two permanent MET towers, with the possibility of a ground-based lidar system to be used in place of a MET tower, will be installed (Figure 1) to collect wind data and support performance testing of the Project. The towers would be unguyed, would match the hub height of the final turbine model chosen, and would have a triangular base that is about 50 feet on each side enclosed within a fence and gravel pad that is about 75 feet on each side. The lidar unit would be an approximate 2-foot wide cube surrounded by a gravel pad and fence approximately 15-feet wide on each side.

### **2.1.2.5 Operations and Maintenance Building**

An O&M facility will be constructed within a 5-acre area (Figure 1). The O&M building will be used to store equipment and supplies required for operations and maintenance of the Project and will provide office space for O&M personnel.

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### **2.2 COVERED ACTIVITY - OPERATIONS**

The potential for take of covered species exists during the operation phase of the Project. The covered species may be injured or killed due to collision with rotating turbine blades. Based on the pre-construction bat surveys and general understanding of the covered bat species' risk profiles, the highest period of risk for Indiana and northern long-eared bats is during the fall migratory period (August 1 – October 15), though the potential exists for impacts during the entire bat active season (March 15 – October 31).

The impacts from covered activities have been avoided and minimized to the greatest extent practicable through application of appropriate design measures, construction practices, and operational measures. Unavoidable impacts have been mitigated consistent with applicable policies as described in Section 6.2. The primary method to minimize impacts to bats will be feathering turbine blades to slow the rotor below specific turbine cut-in speeds (i.e., the wind speed at which turbines begin rotating and producing power) based on time of year and temperature (see Section 6.2.1).

Post-construction mortality monitoring will occur during the life of the ITP to ensure compliance with the ITP (see Section 6.3) and to inform adaptive management responses (see Section 6.4).

### **2.3 MITIGATION**

This HCP includes mitigation actions that will be completed to offset the impacts of take of covered species that may result from the Project. Mitigation for bats will include protection and/or enhancement of summer roosting and foraging habitat. The mitigation options are described in Section 6.2.2.

## **3.0 ENVIRONMENTAL SETTING AND BIOLOGICAL RESOURCES**

### **3.1 ENVIRONMENTAL SETTING**

The Permit Area is located in central Illinois, within the Till Plains section of the Central Lowland physiographic province (Illinois State Geological Survey 2015). This region is characterized by flat to gently rolling topography produced by glacial processes. Logan County is primarily agricultural but includes small towns with residential, commercial, and industrial activity, connected by a comprehensive network of local and state roads, interstate highways, active railways, and major and minor transmission lines. Forested areas are limited to fragmented, linear tracts and small forested bands associated with larger streams in this county.

#### **3.1.1 Land Cover**

Land cover in Logan County was historically dominated by prairie ecosystems with small forested areas along the rivers and streams (Illinois Natural History Survey [INHS] 2015). Based on the NLCD, land cover within Logan County is dominated by agriculture (86.3%), mostly row crops of corn and soybeans.



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The Permit Area is even more heavily agricultural, with 93% of land cover being cultivated crops (Table 3-1). Developed lands and hay/pasture cover nearly all of the remaining land within the parcels.

Forested areas are limited to fragmented, linear tracts and small forested bands associated with larger streams. Figure 2 shows the distribution of land cover within the project boundary.

**Table 3-1. National Land Cover Data within the Sugar Creek Wind Permit Area, Logan County, Illinois.**

Land Cover Type	Acres	Approximate Percent Composition (%)
Cultivated Crops	16,474.9	92.8
Developed, Urban Open Space	579.9	3.3
Deciduous Forest	207.8	1.2
Developed, Low Intensity	177.3	1.0
Hay/Pasture	151.4	0.9
Wood Wetlands	89.1	0.5
Developed, Medium Intensity	26.6	0.1
Total	17,745.4	100

Source: NLCD 2011

### 3.1.2 Topography

Logan County is located in parts of both the Springfield Plain and Bloomington Ridge Plain regions of Illinois. The plains formed when the bedrock and topographic features of the region were covered by glacial till deposits during the Wisconsin glaciations 70,000 years ago (Illinois State Geological Survey 2015). The plains are crossed by several low, poorly developed end moraines, which provide the only topographic relief (Luman et al. 2015). Elevation within Logan County ranges from 510 to 771 feet above mean sea level.

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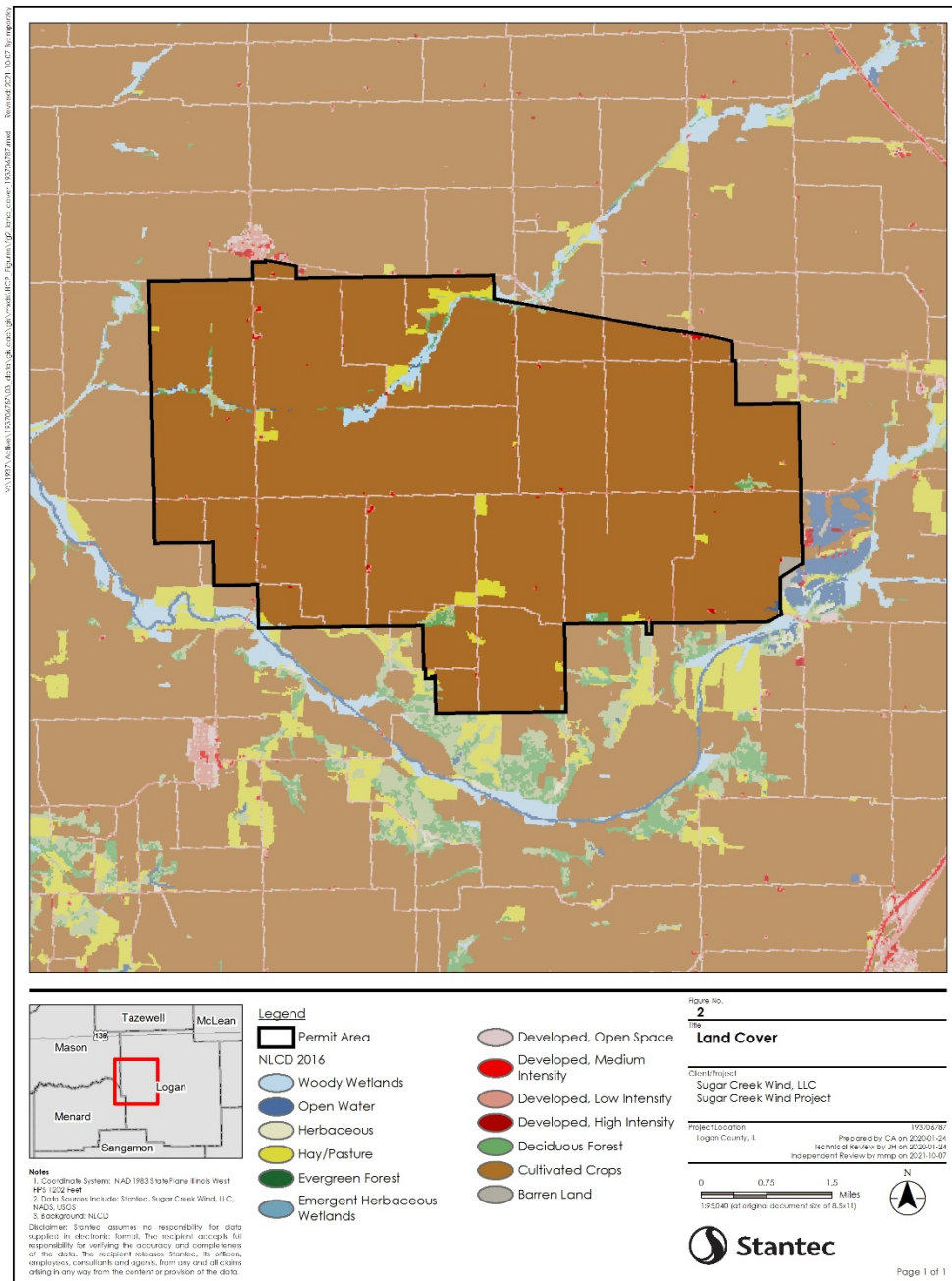


Figure 2. Land Cover

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### 3.1.3 Geology

The geology of the northern half of Illinois is the product of the Wisconsin glaciations. Bedrock within Logan County includes formations of the Pennsylvanian period (Kolata 2005). Pennsylvanian rocks consist of limestone, sandstone, clay, and shale and contain the bituminous coal resources of Illinois; these rocks formed approximately 323 to 290 million years ago (Illinois State Geological Survey 2015).

### 3.1.4 Soils

Logan County is comprised primarily of Sable silty clay loam (20.0%), Ipava silt loam (19.6%), Osco silt loam (4.3%), Sawmill silty clay loam (3.7%), and small acreages of many other soil types. Most of the soils in the county are hydric. The Sable series is prime farmland if drained. The Ipava and Osco series are prime farmland, and the Sawmill series is prime farmland if drained and either protected from flooding or not frequently flooded during the growing season. Most of the smaller acreage soils in the county are prime farmland, farmland of statewide importance, or prime farmland if drained (U.S. Department of Agriculture [USDA]-Natural Resource Conservation Service [NRCS] 2015).

The Sable series consists of very deep, poorly drained soils formed in loess on nearly level broad summits of moraines and stream terraces. The Ipava series consists of very deep, somewhat poorly drained soils formed in loess on uplands. The Osco series consists of very deep, well drained soils formed in loess on crests and shoulders of hills on loess covered till plains and on treads and risers of stream terraces in river valleys. The Sawmill series consists of very deep, poorly drained and very poorly drained soils formed in alluvium on flood plains (USDA-NRCS 2015).

### 3.1.5 Hydrology

The Permit Area is in the Sangamon River watershed. Smaller watersheds within the Permit Area include Sugar Creek, Kickapoo Creek, and Prairie Creek; however, Sugar Creek is the only waterway located within the Permit Area.

National Wetlands Inventory (NWI) data indicate that few, small wetlands are scattered throughout the Permit Area, occurring along the waterways. There are approximately 219.7 acres of NWI wetlands located within the Permit Area, comprising approximately 1.24% of the Permit Area.

### 3.1.6 Wildlife in the Permit Area

Wildlife in the Permit Area is likely typical of the region and adapted to a landscape dominated by agriculture, fragmented natural habitats (e.g., forest or prairie), and human disturbance. Disturbance-tolerant mammalian species, such as white-tailed deer (*Odocoileus virginianus*), raccoons (*Procyon lotor*), squirrels (*Sciurus* spp.), and coyotes (*Canis latrans*), are common and widespread in the region. Common species of vultures, hawks, owls, and various songbirds are expected to represent the majority of avian species within the Permit Area. Species of fish, amphibians, reptiles, and waterfowl may occur in the creeks and drainages of the Permit Area and surrounding landscapes.

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### 3.1.6.1 **Bald and Golden Eagles**

The bald eagle (*Haliaeetus leucocephalus*) was listed as an endangered species in 1966 under the Endangered Species Preservation Act. It was delisted in 2007 when recovery objectives were met (USFWS 2009). The bald eagle is still protected under the federal Bald and Golden Eagle Protection Act (BGEPA) (16 USC §§668-668d). Bald eagles have been noted by the USFWS to occur in many Illinois counties (USFWS 2008). The bald eagle was officially delisted by the state of Illinois in 2009 (IDNR 2009).

Golden eagles (*Aquila chrysaetos*) are not federally-listed or state-listed in Illinois, but they are protected under the BGEPA. Golden eagles have never been common in the eastern U.S. and are not currently known to occur in Illinois except as occasional transient visitors.

Eagle use surveys for bald and golden eagles were initiated within the Permit Area in May 2016 and were completed in February 2019. Information from the surveys will be used in the preparation of an Eagle Conservation Plan (ECP). Sugar Creek is pursuing an eagle take permit through the Migratory Bird Program at USFWS, and information on eagles will be included through that process.

### 3.1.6.2 **Threatened and Endangered Species**

Logan County is within the range of two federally-listed wildlife species, the Indiana bat and northern long-eared bat, and one federally-listed plant species, the Eastern prairie fringed orchid (*Platanthera leucophaea*; USFWS 2018a). The two species of bats may potentially be affected by the activities covered under this HCP and are thus treated as covered species. The biology, habitat requirements, and status within the Permit Area of these two species are discussed in detail in Section 3.3. Expected impacts from the Project's covered activities are discussed in Section 5.0 and the conservation plan for these two species are described in Section 6.0. Since no potential impacts will occur to the federally-listed plant species as result of covered activities, it is not included as a covered species and is not discussed further in this HCP.

### 3.1.6.3 **Bats**

The IDNR and University of Illinois Extension (IDNR 2017) list 12 bat species that occur in Illinois. They categorize each species as year-round residents, potential year-round residents, or summer residents. According to Bat Conservation International (BCI), ten of these species have geographic distributions that could include Logan County, Illinois (BCI 2018; Table 3-2). All ten species use woodland habitat for feeding or roosting at some time during the year. In addition, many species of bats feed along stream corridors or over water. Some species, such as the little brown bat (*Myotis lucifugus*) and big brown bat (*Eptesicus fuscus*), are known to roost in attics or the peaks of other large outbuildings (BCI 2018). Natural habitat features or resource areas that typically attract bats are limited within the Permit Area. Large outbuildings associated with farmsteads and rural residences within the Permit Area may provide suitable roosting locations for some bat species. Limited linear tracts of woodland are associated with streams in the Permit Area. While these areas may provide suitable foraging habitat for bats, only approximately 2.3% of the Permit Area is made up of suitable woodlands for both the Indiana bat and northern long-eared bat (Figure 3).

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**Table 3-2. Bat species and their potential to occur within the Sugar Creek Wind Permit Area, Logan County, Illinois (IDNR 2017, BCI 2018).**

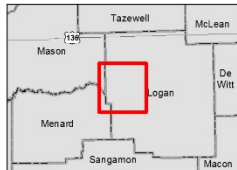
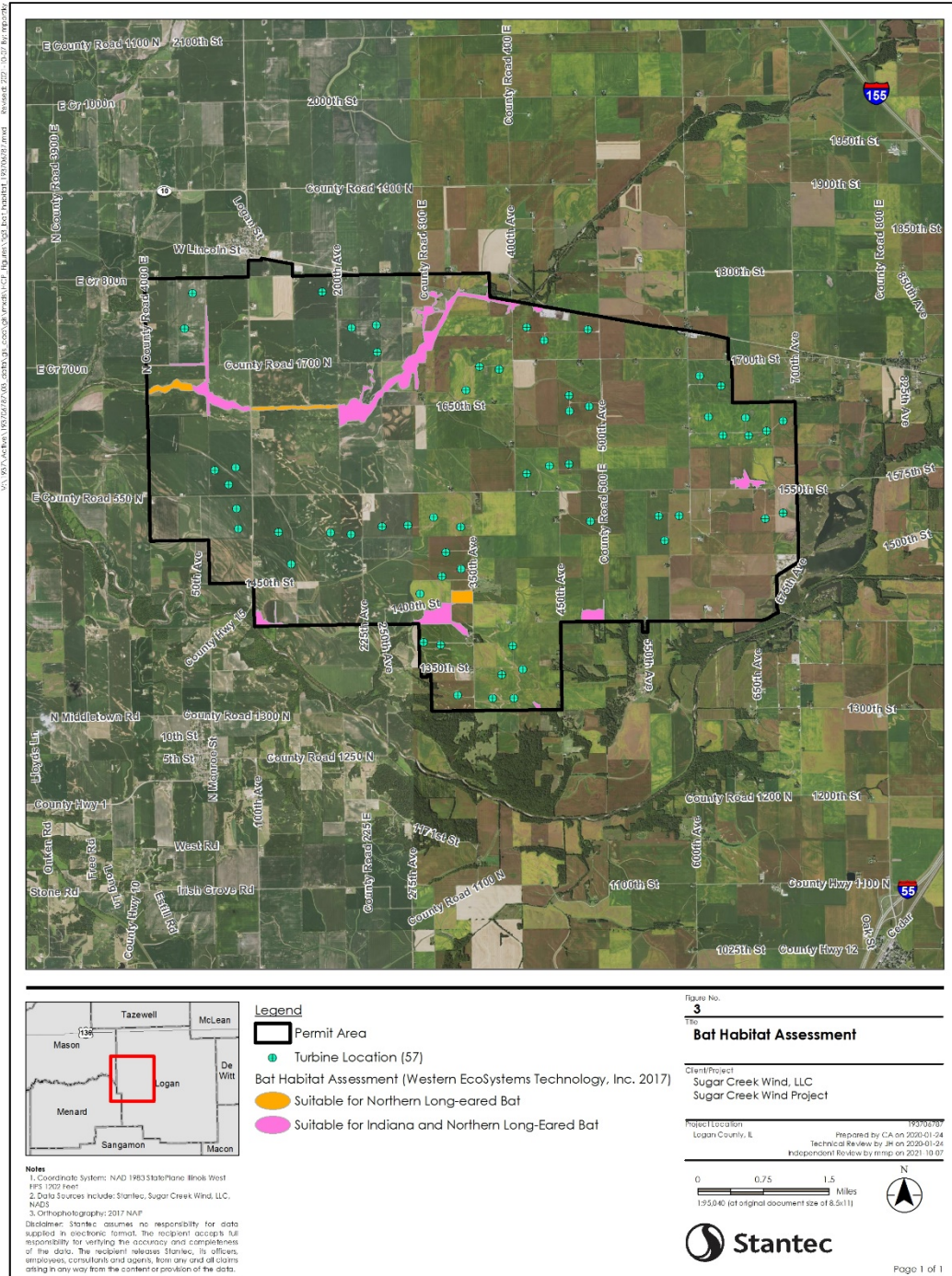
Species (federal status)	Illinois Residency	Seasons in Permit Area
Indiana Bat (Endangered)	Year-Round	Summer, Migration
Northern Long-eared Bat (Threatened)	Year-Round	Summer, Migration
Little Brown Bat	Year-Round	Summer, Migration
Tricolored Bat	Year-Round	Summer, Migration
Big Brown Bat	Year-Round	Summer, Migration
Southeastern Bat	Year-Round	None
Gray Bat	Potentially Year-Round	Summer, Migration
Red Bat	Potentially Year-Round	Summer, Migration
Silver-haired Bat	Potentially Year-Round	Migration
Rafinesque's Big-eared Bat	Potentially Year-Round	None
Evening Bat	Summer	Summer, Migration
Hoary Bat	Summer	Summer, Migration

Bats may migrate through the Permit Area during the spring and fall, although spring migration for *Myotis* species may be concentrated along river/wooded corridors (Hicks et al. 2012). There are no publicly available records of hibernacula in Logan County for the bat species that could occur within the Permit Area. Based upon the geology and lack of caves in the project vicinity, it is not anticipated that a natural bat hibernaculum is present within or near the Permit Area.

Although the Indiana bat and northern long-eared bat are the only bat species covered under this HCP, it is expected that the avoidance and minimization measures implemented under this HCP will benefit other bat species occurring in the Permit Area as well, such as big brown bats, silver-haired bats (*Lasionycteris noctivagans*), red bats (*Lasiurus borealis*), hoary bats (*Lasiurus cinereus*), evening bats (*Nycticeius humeralis*), and tri-colored bats (*Perimyotis subflavus*), all of which were identified during the 2015 acoustic survey (Boyles & Boyles 2015).

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**Legend**

- Permit Area
- Turbine Location (57)
- Bat Habitat Assessment (Western EcoSystems Technology, Inc. 2017)
- Suitable for Northern Long-eared Bat
- Suitable for Indiana and Northern Long-Eared Bat

**Notes**

1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 feet
2. Data Sources include: Starline, Sugar Creek Wind, LLC, NAD83
3. Orthophotography: 2017 NAF

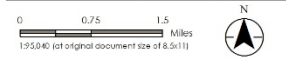
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Figure No. **3**  
 The **Bat Habitat Assessment**

Client/Project  
 Sugar Creek Wind, LLC  
 Sugar Creek Wind Project

Project Location  
 Logan County, IL

Prepared by CA on 2020-01-04  
 Technical Review by JH on 2020-01-24  
 Independent Review by rmp on 2021-10-07



## 3.2 PRE-CONSTRUCTION SURVEYS

### 3.2.1 Bat Habitat Assessment

Desktop and on-site habitat assessments were performed by WEST in 2017 to determine the presence of suitable habitat for Indiana bats and/or northern long-eared bats. A minimum forest patch size of 15 acres was used. Isolated trees and small forest plots were not considered suitable habitat for Indiana bats or northern long-eared bats (WEST 2017a). Suitable habitat was defined for each species as follows:

- Northern long-eared bat – Forests and woodlands containing potential roost trees with a diameter at breast height (DBH) greater than or equal to 3 inches with exfoliating bark and/or cavities. Buildings, barns, bridges, and bat houses may also be considered potential summer habitat. Linear forested features, including shelterbelts and other loose aggregates of trees, may also represent suitable habitat and must be connected to suitable habitat within 1,000 feet (USFWS 2017a).
- Indiana bat – Roost trees including snags or live trees with a DBH greater than or equal to 5 inches, with exfoliating bark, cracks, crevices, or hollows. Individual trees may be considered roosting habitat when they exhibit the characteristics of a potential roost and are within 1,000 feet of other forested/wooded habitat (USFWS 2017a).

A total of 401.86 acres within the Permit Area was considered suitable habitat for both northern long-eared bats and Indiana bats, representing 2.3% of the Permit Area. An additional 71.9 acres were considered suitable habitat for the northern long-eared bat, for a total of 473.76 acres of suitable northern long-eared bat habitat and 401.86 acres of suitable Indiana bat habitat (Figure 3; WEST 2017a). Note – the Project is designed in response to the USFWS recommendation to site turbines at least 1,000 feet from suitable habitat to minimize risk of impact to Indiana bats and northern long-eared bats during summer.

### 3.2.2 Acoustic Monitoring

Acoustic surveys were conducted in the Permit Area to assess bat activity and to detect the presence of various bat species from July 22 to 24, 2015, and from July 20 to November 4, 2016. This section provides a summary of the survey results; the full survey reports are included in Appendix A.

#### 3.2.2.1 Acoustic Presence/Absence Surveys (2015)

Acoustic presence/absence surveys for Indiana bats and northern long-eared bats were conducted from July 22 to 24, 2015, in accordance with the 2015 Range-wide Indiana Bat Summer Survey Guidelines (USFWS 2015b, Boyles & Boyles 2015). Three sites were sampled for two nights using two detectors per site. Call files were run through two automated call programs (BCID and EchoClass), and any files identified as a *Myotis* species were qualitatively reviewed by a qualified biologist. Three potential Indiana bat and no northern long-eared bat calls were identified, suggesting potential summer presence of the Indiana bat and probable summer absence of the northern long-eared bat.

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### 3.2.2.2 *Acoustic Monitoring (2016)*

Additional bat acoustic surveys were conducted by WEST from July 20 to November 4, 2016, to further evaluate bat activity and species composition in the Permit Area (WEST 2017b). SM3BAT units were placed at two fixed ground stations at forest edges near high quality habitat for tree roosting bats. Paired detector microphones were also deployed at 2 MET tower stations located in agricultural fields typical of planned turbine locations (approximately 16 feet and 148 feet above ground level). Zero Indiana bat calls and six northern long-eared bat calls were recorded, all of which were recorded during August and September at ground-based microphones. Thus, migratory risk exists for northern long-eared bats within the Permit Area. While no Indiana bats were recorded in 2016, the Project is still within their migratory range, and risk is still assumed for Indiana bats due to their summer presence during the acoustic survey in 2015 (Boyles & Boyles 2015).

## 3.3 COVERED SPECIES

Logan County is within the range of three federally-protected wildlife species that may be affected by the covered activities: two federally-listed bats, the endangered Indiana bat and threatened northern long-eared bat (USFWS 2018a). The biology, habitat requirements, and status within the Permit Area of these two species are discussed in detail below. Expected impacts from the Project's covered activities and the conservation plan for these two species are described in Sections 5.0 and 6.0, respectively.

### 3.3.1 Indiana Bat

The Indiana bat was originally listed on March 11, 1967, as being in danger of extinction under the Endangered Species Preservation Act of 1966 (32 FR 4001). The species is currently listed as endangered under the ESA of 1973, as amended.

A USFWS Indiana Bat Recovery Plan was first developed and signed on October 14, 1983 (USFWS 1983). An agency draft of the Revised Recovery Plan was released in March 1999 (USFWS 1999) but was never finalized. The "Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision" (the "draft Revised Recovery Plan") was made available for public comment on April 16, 2007 (72 FR 19015-19016) (USFWS 2007). The draft Revised Recovery Plan describes three recovery objectives for reclassification of the species as threatened (USFWS 2007):

1. Permanent protection of 80% of Priority 1 hibernacula.
2. A minimum overall population number equal to the 2005 estimate (457,000).
3. Documentation of a positive population growth rate over five sequential survey periods.

In addition, the draft Revised Recovery Plan describes three recovery objectives for delisting of the species (USFWS 2007):

1. Permanent protection of 50% of Priority 2 hibernacula.
2. A minimum overall population number equal to the 2005 estimate.



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3. Continued documentation of a positive population growth rate over an additional five sequential survey periods.

Information regarding the species' characteristics, habitat requirements, range, and status in the vicinity of the Project is provided in the sections below.

### 3.3.1.1 *Species Description*

Indiana bats are medium-sized, grayish brown bats with a forearm length of 1.4 to 1.6 inches and a total length of 2.8 to 3.8 inches. The tragus (a fleshy projection arising from the base of the inner ear that directs sound into the ear) is short and blunt and measures slightly less than half the height of the ear. The tail is approximately 80% of the length of the head and body. The skull has a small sagittal crest and a small, narrow braincase. Indiana bats may be distinguished from the similar little brown bat and the northern long-eared bat by the presence of a keeled calcar and toe hairs on the hind feet that are shorter than the claws.

### 3.3.1.2 *Habitat Description*

Indiana bats require specific hibernacula conditions (e.g., stable temperature, humidity and air movement), and typically hibernate in large, dense clusters that range from 300 individuals per square foot (Clawson et al. 1980) up to 100,000 individuals per cluster. Studies have found that over 90% of the range-wide population of Indiana bats hibernate in just five states: Indiana, Missouri, Kentucky, Illinois, and New York (USFWS 2007).

The summer habitat requirements of Indiana bats are not fully understood. Until recently, it was believed that floodplain and riparian forests were the preferred habitats for roosting and foraging (Humphrey et al. 1977); however, recent studies have shown that upland forests are also used by Indiana bats for roosting and that suitable foraging habitats may include upland forests, old fields (clearings with early successional vegetation), edges of croplands, wooded fencerows, and pastures with scattered trees and/or farm ponds (USFWS 2007).

The presence of Indiana bats in a particular area during the summer appears to be determined largely by the availability of suitable, natural roost structures. The suitability of a particular tree as a roost site is determined by its condition (live or dead), the amount of exfoliating bark, the tree's exposure to solar radiation, its relative location to other trees, as well as presence of a permanent water source and foraging areas (USFWS 2007).

Thirty-three species of trees have been documented as roosts for female Indiana bats and their young, with 87% of documented roosts located in various ash (*Fraxinus*), elm (*Ulmus*), hickory (*Carya*), maple (*Acer*), poplar (*Populus*), and oak (*Quercus*) species (USFWS 2007). However, the species of the roost tree appears to be a less important factor than the tree's structure (i.e., the availability of exfoliating bark with roost space underneath) and local availability. Studies show that Indiana bats have strong fidelity to summer habitats. Females have been documented returning to the same roosts from one year to the next (USFWS 2007).

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### 3.3.1.3 **Reproduction and Maternity Roost Habitat Requirements**

Indiana bats mate during the fall, just prior to hibernation. Male and female bats congregate near the opening of a cave (usually their hibernaculum) and swarm, a behavior in which large numbers of bats fly in and out of cave entrances from dusk to dawn, while relatively few roost in the caves during the day (Cope and Humphrey 1977). Swarming lasts over a period of several weeks, with mating occurring during the latter part of that period. Once females have mated, they enter the hibernacula and begin hibernation, whereas males will remain active longer, likely attempting to mate with additional females as they arrive at the hibernacula. Adult females store sperm during the winter with fertilization delayed until soon after they emerge from hibernation.

Females emerge from the hibernacula ahead of the males, usually by mid-to-late April, and migrate by the beginning of May to their summer roost habitats, where they form small maternity colonies (Whitaker and Hamilton 1998). Maternity colonies generally have several separate roost areas located near one another that collectively provide the colony with the necessary roosting resources (including cover and correct temperature provided by exfoliating bark) needed during different environmental conditions. These colonies typically utilize one to a few primary roost trees (Callahan et al. 1997), which provide the proper roosting conditions most of the time, and are normally large, dead trees with exfoliating bark that are exposed to abundant sunlight (Miller et al. 2002, Whitaker and Brack 2002).

The habitat in which the primary roosts have been found varies considerably. Roost trees have been found in dense or open woods, strips of riparian forest, small patches of woods, as well as open land; however, the roosts are normally located in open areas subjected to prolonged sunlight (Whitaker and Brack 2002, Miller et al. 2002). During extreme environmental conditions, such as rain, wind, or temperature extremes, the maternity colony may use alternate roost trees, which likely provide the bats with microclimate conditions that the primary roost trees cannot during times of sub-optimal environmental conditions. The locations of these alternate roosts vary from open areas or in the interior of forest stands. A study of bats in northern Missouri revealed that usage of dead trees in the forest interior increased significantly in response to unusually warm temperatures, and the usage of both interior live and dead trees increased during periods of precipitation (Miller et al. 2002). The primary roosts are typically inhabited by many females and young throughout the summer, whereas alternate roost trees receive only intermittent use by individuals or a small number of bats. Females give birth to a single young in June or early July (USFWS 2007).

### 3.3.1.4 **Foods and Feeding**

Indiana bats are nocturnal insectivores that feed exclusively on flying insects, with both terrestrial and aquatic insects being consumed. Diet varies seasonally, and variation is seen between different ages, sexes, reproductive status groups, and geographic regions (USFWS 2007). A number of studies conducted on the diet of Indiana bats have found the major prey groups to include moths (*Lepidoptera*); caddisflies (*Trichoptera*); flies, mosquitoes and midges (*Diptera*); bees, wasps, and flying ants (*Hymenoptera*); beetles (*Coleoptera*); stoneflies (*Plecoptera*); leafhoppers and treehoppers (*Homoptera*); and lacewings (*Neuroptera*) (USFWS 1999), with Coleoptera, Diptera, Lepidoptera, and Trichoptera contributing most to the diet (USFWS 2007).

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Studies indicate that Indiana bats typically forage from 6 to 100 feet above the ground and hunt primarily around, not within, the canopy of trees (USFWS 2007). Foraging areas are most often located in closed to semi-open forested habitats and forest edges, with radio-telemetry data consistently indicating that wooded areas are preferred as foraging sites, although open habitats such as old fields and agricultural areas may also be used (USFWS 2007). Sparks et al. (2005) found that woodlands were used by foraging Indiana bats nearly twice as often as availability alone would suggest, supporting the idea that Indiana bats preferentially forage in and around woodlands.

### 3.3.1.5 *Migration*

The timing of spring emergence from hibernacula varies across the range of the species, but in general, females emerge first, from mid-to-late April, and males emerge later, from late April to mid-May (USFWS 2007). Females may leave for summer habitat immediately after emerging or shortly thereafter and often travel quickly to where they will spend the summer. Some individuals may travel several hundred miles from their hibernacula, but studies in Indiana and New York found Indiana bats using summer habitat only 30 to 50 miles from their hibernacula (USFWS 2007). Maternity colonies begin breaking up in early August, at which time females head back to their hibernacula (USFWS 2007).

### 3.3.1.6 *Range-wide Status*

A population decrease of 28% over the Indiana bat's total range was reported from 1960 to 1975 (Thomson 1982). The rangewide population estimate dropped 57% from 1965 to 2001 (USFWS 2007). As of 2006, the USFWS had records of extant winter populations at approximately 281 hibernacula in 19 states and 269 maternity colonies in 16 states (USFWS 2007). Since then, this number has dropped to 229 hibernacula in 17 states as of 2017 (USFWS 2017b). The estimated rangewide Indiana bat population in 2015 was 523,636 bats (USFWS 2015c), and in 2017 was 559,781 bats (USFWS 2017b). The closest known occupied hibernaculum to the Project is Blackball Mine located in LaSalle County, Illinois, approximately 57 miles to the northeast of the site (USFWS 2007). As of 2007, this hibernaculum was considered a Priority 2 site<sup>1</sup>, containing a population of 1,804 Indiana bats.

Current threats to the Indiana bat include modifications to hibernacula that change airflow and alter the microclimate, human disturbance and vandalism during hibernation resulting in direct mortality, natural events during winter affecting large numbers of individuals, disease, and habitat degradation and loss (USFWS 2007).

A relatively recent, and potentially devastating, threat to Indiana bats is a disease known as white-nose syndrome (WNS). WNS is a fungal infection that was first identified in eastern New York during the winter of 2006–2007. It was named for the visible presence of a white fungus around the muzzles, ears, and wing membranes of affected bats. A previously unreported species of cold-loving fungus (*Pseudogymnoascus destructans*), which thrives in the darkness, low temperatures (40–50°F), and high levels of humidity (>90%) characteristic of bat hibernacula, is now known to be the primary pathogen (USGS 2018). Bats afflicted with WNS wake more frequently from hibernation, causing them to lose fat reserves that are needed to survive hibernation (USGS 2018). It is thought that WNS is transmitted

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<sup>1</sup> A Priority 2 hibernaculum is defined as contributing to the recovery and long-term conservation of the Indiana bat, with a current or observed historic population of 1,000 – 10,000 bats.

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primarily from bat to bat; however, the possibility exists that it may also be transmitted by humans inadvertently carrying the fungus from cave to cave on their clothing and gear.

Since first being reported in New York, WNS has been confirmed to be present in 33 states (USFWS 2018b). As of 2018, WNS had been confirmed present in 14 counties in Illinois, including Alexander, JoDavies, Madison, LaSalle, Carroll, Adams, Pike, Jackson, Union, Johnson, Pope, Hardin, Saline, and Monroe counties (USFWS 2016a, 2018c). The nearest known hibernaculum, Blackball Mine, approximately 57 miles to the northeast of the site, is in a county with confirmed WNS and/or the causative fungus (USFWS 2016a, 2018c).

Most species of bats that hibernate in the east are now known to be affected, with the little brown bat, northern long-eared bat, and Indiana bat particularly hard hit (USGS 2018). The USFWS estimates the Indiana bat population in the USFWS's Appalachian Region, where WNS has more recently spread, dropped 53.8% from 2015 to 2017 based on the 2017 count of Indiana bats (USFWS 2017b). Previously, between 2013 and 2015, this region dropped 69%. Within the Northeast Region, the population estimate declined 18.8% from 2015 to 2017 (USFWS 2017b).

### 3.3.1.7 *Ozark-Central Recovery Unit Status*

The draft Revised Recovery Plan for the Indiana bat divides the species' range into four recovery units based on several factors, such as traditional taxonomic studies, banding returns, and genetic variation (USFWS 2007). The Permit Area is located within the Ozark-Central Recovery Unit (OCRU), which includes the range of Indiana bat within the states of Illinois, Missouri, Arkansas, and Oklahoma (USFWS 2007; Figure 4).

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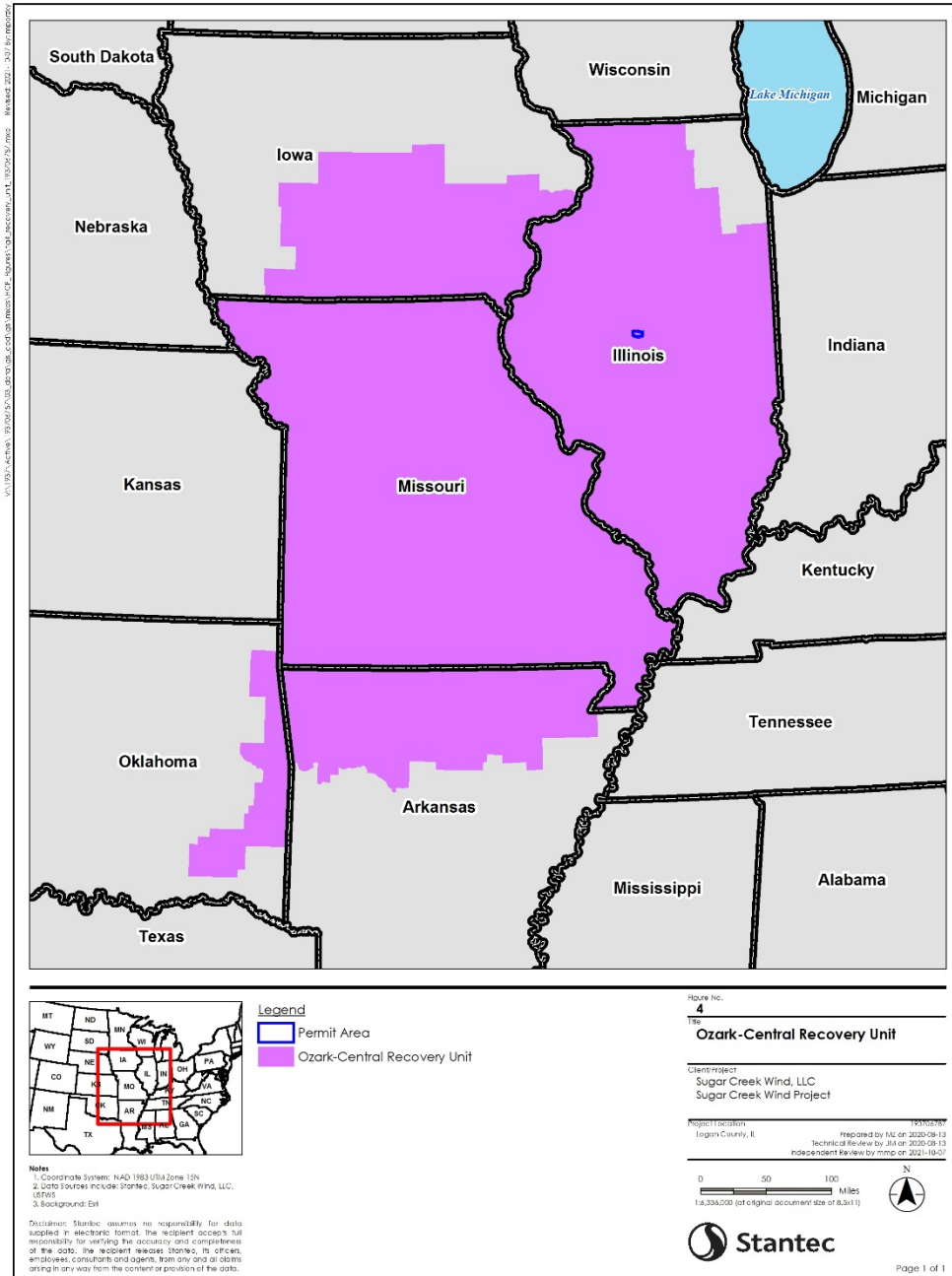


Figure 4. Ozark-Recovery Unit

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According to the 2019 Rangewide Population Estimate (USFWS 2019), the overall Indiana bat population in Illinois was approximately 78,403 in 2019 (Table 3-4; USFWS 2019). This represents approximately 14.6% of the overall 2019 population estimate for Indiana bats and 28.4% of the Indiana bat population in the OCRU (276,317; USFWS 2019). The overall population estimate for the OCRU increased by approximately 0.3% between 2015 and 2017, and by another 8.3% between 2017 and 2019 (Table 3-4; USFWS 2017b, 2019).

**Table 3-3. Indiana bat population estimates for the Ozark-Central Recovery Unit (USFWS 2017b, 2019).**

State	2009	2011	2013	2015	2017	2019
Illinois	53,353	57,212	66,817	69,924	81,143	78,403
Missouri <sup>1</sup>	211,107	212,942	214,453	216,924	217,884	195,157
Arkansas	1,480	1,206	856	1,398	1,722	2,749
Oklahoma	0	13	5	5	8	8
<b>Total</b>	<b>265,940</b>	<b>271,373</b>	<b>282,131</b>	<b>287,616</b>	<b>300,757</b>	<b>276,317</b>

<sup>1</sup>A previously unknown Indiana bat hibernaculum was discovered in Missouri in 2012, which contained 123,000 bats when surveyed in January 2013, and over 167,000 when more completely surveyed in 2015. This hibernaculum has been added to each previous survey year due to first-hand accounts of large clusters/numbers of hibernating bats for the past several decades prior to discovery by bat biologists.

Source: USFWS 2017b

### 3.3.1.8 *Illinois Status*

The Indiana bat is listed as state endangered in Illinois. State-listed species are protected under the Illinois Endangered Species Protection Act-520 ILCS 10/1, with regulatory authority under state law the responsibility of the IDNR. Estimates of the size of Indiana bat hibernating populations vary across the state of Illinois. Within the southern portion of the state, estimates ranged from 14,700 in 1965 to 19,491 in 2001, with the most recent estimate (2005) at 42,539 (USFWS 2007). Within the northern portion of the state, estimates ranged from 100 in 1965 to 1,562 in 2001, with the most recent estimate (2005) at 1,804 (USFWS 2007). Recorded maternity colonies are known from 20 counties, not including Logan County (USFWS 2007), with Macoupin and Cass counties being the closest counties with known maternity colonies, both of which are approximately 30 miles from Logan County. In addition, there are 22 previously recorded hibernacula, 16 of which have recorded at least one bat since 1995 (USFWS 2007). Known hibernacula in Illinois include:

- 1 – Priority 1 Site (current and/or observed historic winter populations of  $\geq 10,000$  bats and currently have suitable and stable microclimates)
- 6 – Priority 2 Sites (current or observed historic population of 1,000–10,000 bats)

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- 7 – Priority 3 Sites (current or observed historic population of 50–1,000 bats)
- 8 – Priority 4 Sites (current or observed historic population of <50 bats)

WNS was confirmed in the Illinois population in 2013 (IDNR 2015). The closest known occupied Illinois hibernaculum to the Project is Blackball Mine located in LaSalle County, Illinois, approximately 57 miles to the northeast of the site (USFWS 2007). As of 2007, this hibernaculum was considered a Priority 2 site, containing a population of 1,804 Indiana bats. The other known hibernacula records in Illinois are located in the southern and western tier of counties (USFWS 2007).

### 3.3.1.9 *Status within the Permit Area*

No known hibernacula occur within the Permit Area. The closest known hibernaculum is located in LaSalle County, Illinois, approximately 57 miles to the northeast of the site (USFWS 2007). No maternity colonies are known for Logan County, but summer records exist for adjacent Sangamon County to the southwest (USFWS 2007).

The Permit Area (approximately 17,745 acres) consists primarily of cropland (92.8%). As described in Section 3.2.3, approximately 402 acres of woodland were considered suitable Indiana bat habitat (WEST 2017a). The majority of habitat consisted of riparian areas along Salt Creek and Sugar Creek. Additional suitable habitat is also present in areas surrounding the Permit Area (WEST 2017a; Appendix A).

Acoustic surveys were conducted in the Permit Area to assess bat activity and to detect the presence of various bat species from July 22 to 24, 2015, and from July 20 to November 4, 2016 (Boyles and Boyles 2015 and West 2017b; Appendix A). The 2015 study confirmed potential summer presence of the Indiana bat within the Permit Area, with three potential Indiana bat calls identified from July 2015 at acoustic detectors located along and within woodlands in the Permit Area; however, no Indiana bat calls were recorded in 2016. The results of the acoustic surveys suggest that if Indiana bats are using the Permit Area during the summer or fall migration period, then it is likely at very low levels. Little is known about the migration patterns of Indiana bats, specifically where they disperse across the landscape during migration. Therefore, the Indiana bat does have the potential to be at risk of collision with operating turbines and is consequently considered a covered species in this HCP.

### 3.3.2 Northern Long-eared Bat

On April 2, 2015, the USFWS published a final rule in the Federal Register (80 FR 17974) designating the northern long-eared bat as a threatened species under the ESA throughout its geographic range. The listing became effective on May 4, 2015, and the final 4(d) Rule became effective on January 14, 2015. The final 4(d) Rule exempts incidental take occurring at wind projects from section 9 take prohibitions with minor exceptions (81 FR 1900). On January 28, 2020, the D.C. District Court held that the listing of the northern long-eared bat as threatened was arbitrary and capricious and not based on the best available science and remanded the listing rule to the USFWS for a new determination. However, the court did not vacate the listing rule, leaving the species' threatened status as well as the 4(d) rule in effect until a new listing rule is finalized. The northern long-eared bat is also listed as state threatened in Illinois.

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### **3.3.2.1 *Species Description***

Northern long-eared bats are medium-sized yellowish-brown bats with a forearm length of 1.3 to 1.5 inches and a total length of 3.0 to 3.4 inches. The tragus is long, pointed, and measures more than one-half the height of the ear and is not obviously curved. Northern long-eared bats may be distinguished from the similar little brown bat and Indiana bat by longer ears and a longer, pointed tragus. The calcar is usually slightly keeled, and the toe hairs are medium-long and sparse.

### **3.3.2.2 *Habitat Description***

Suitable summer habitat for northern long-eared bats is quite variable. They will utilize a wide variety of forested habitats for roosting, foraging, and traveling and may also utilize some adjacent and interspersed non-forested habitat, such as emergent wetlands and edges of fields. Males and non-reproductive females may utilize cooler roost spots, such as caves or mines.

Winter habitat includes underground caves and cave-like structures, such as mines and railroad tunnels. These hibernacula typically have high humidity, minimal air current, large passages with cracks and crevices for roosting, and maintain a relatively cool temperature (32–48 degrees Fahrenheit [°F]; USFWS 2014a). The hibernation season in Illinois is November 1 through March 31 (USFWS 2014b). Currently, 21 hibernacula sites with one or more winter records are known in Illinois, mostly in the southern portion of the state (USFWS 2015a).

### **3.3.2.3 *Reproduction and Maternity Roost Habitat Requirements***

Roosting habitat includes forested areas with live trees and/or snags with a DBH of at least 3 inches and exfoliating bark, cracks, crevices, and/or other cavities. Trees are considered suitable if they meet those requirements and are located within 1,000 feet of a suitable roost tree, woodlot, or wooded fencerow (USFWS 2014a). Maternity habitat is defined as suitable summer habitat that is used by juveniles and reproductive females. The summer maternity season in Illinois is April 1 through September 30 (USFWS 2014b).

### **3.3.2.4 *Foods and Feeding***

Northern long-eared bats begin foraging at dusk, focusing on upland and lowland woodlots and tree-lined corridors, catching insects in flight. They will also feed by gleaning insects from vegetation and water surfaces (USFWS 2014a). Prey includes moths, flies, leafhoppers, caddisflies, and beetles.

### **3.3.2.5 *Migration***

Northern long-eared bats migrate between their winter hibernacula and summer habitat, typically between mid-March and mid-May in the spring and mid-August and mid-October in the fall. They are considered a short-distance migrant, with migration distances documented between 35 miles and 55 miles (USFWS 2015a), and the IDNR considers them a short-distance migrant limited to approximately 60 miles (IDNR 2015).



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### **3.3.2.6 Range-wide Status**

The northern long-eared bat is a commonly encountered species throughout the majority of the Midwest and was historically commonly captured in mist-net surveys (USFWS 2013a). However, their distribution among hibernacula in the Midwest is not very well known. The northern long-eared bat is less common in the southern and western portions of its range than in the north, though they are considered abundant in the Black Hills National Forest of South Dakota. In Canada, the species occurs throughout a majority of the forested regions; however, similar to the U.S., it is more commonly encountered in the eastern portions of its range (USFWS 2013a).

Disease is the principal factor currently affecting the population status of northern long-eared bats throughout their range in the U.S. and Canada (Frick et al. 2010, USFWS 2013a). Of the 39 states with northern long-eared bat populations, 22 have confirmed cases of WNS (USFWS 2013a). Within four years of initial WNS detection, northern long-eared bats have been documented to experience up to 100% decline at some hibernacula (Turner et al. 2011). Other factors, such as habitat loss and modification, wind farm and urban development, and disturbance at hibernacula, likely also impact this species, but no other single factor has had the profoundly devastating impact to northern long-eared bat populations as WNS. The USFWS (2013a) estimates that WNS will eventually spread throughout the entire known North American population of northern long-eared bats, and they estimate that impacts from WNS could lead to extinction of this species by 2026.

### **3.3.2.7 Illinois Status**

The northern long-eared bat is currently listed as threatened within the state of Illinois. Northern long-eared bats are commonly captured in the Shawnee National Forest in southern Illinois and have been captured fairly consistently during surveys between 1999 and 2011 at Oakwood Bottoms in the Shawnee National Forest (USFWS 2013a). The estimated adult northern long-eared bat population in Illinois is 213,720 individuals (USFWS 2016b). There are 21 known hibernacula (sites with one or more winter records) in the state, none of which occur in or near the Permit Area (USFWS 2015a).

The Illinois Natural Heritage Database (INHD) includes 87 records for extant populations of northern long-eared bats, scattered throughout the state (IDNR 2015).

### **3.3.2.8 Status within the Permit Area**

Because the northern long-eared bat has only recently been federally listed, public records of captures are limited. Within Illinois, most records are from the Shawnee National Forest, which is located in southern Illinois. However, the Permit Area does fall within the known range of the northern long-eared bat, and they are present at certain times of the year.

The 17,745 acres Permit Area consists of unsuitable cropland (92.8%) and developed space (i.e. developed open spaces, low, medium, and high intensity; 4.4%). Deciduous forest composes approximately 1.2% of the Permit Area and is typically associated with homesteads, few shelterbelts, forested fence lines, and riparian areas near Sugar Creek (Figure 2). Outside the Permit Area, the Barton-Sommer Woodland Nature Preserve, which includes wet-mesic floodplain forest and is located

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approximately one mile southwest of the Permit Area (approximately 1.3 miles from the nearest turbine), provides the closest area of suitable habitat.

The Permit Area (approximately 17,745 acres) consists primarily of cropland (93%). As described in Section 3.2.3, approximately 474 acres (2.7%) within the Permit Area were considered suitable northern long-eared bat habitat (WEST 2017a).

Acoustic presence/absence surveys in 2015 did not confirm the presence of the northern long-eared bat within the Permit Area (Boyles & Boyles 2015); however, six potential northern long-eared bat calls were recorded during the 2016 acoustic survey, all of which were recorded at ground-based microphones during August and September (West 2017b). Four of the six calls were recorded at forest edge within the Permit Area, with the remaining two calls recorded at MET tower locations. The results of the acoustic surveys suggest that if northern long-eared bats are using the Permit Area, it is at very low levels during the fall migration period. Little is known about the migration patterns of northern long-eared bats, specifically where they disperse across the landscape during migration. Therefore, the northern long-eared bat does have the potential to be at risk of collision with operating turbines during migration and is consequently considered a covered species in this HCP.

## 4.0 ALTERNATIVES CONSIDERED

Section 10(a)(2)(A) of the ESA and federal regulation 50 CFR 17.22(b)(1) and 17.32(b)(1) require an HCP to provide a description of alternative actions that were considered to reduce impacts to listed species, in this case, the Indiana and northern long-eared bats. The Habitat Conservation Planning Handbook (USFWS and NMFS 2016) states that at least two types of alternatives are commonly included in HCPs:

- A No-Action Alternative, which means that federal action (i.e., issuance of an ITP by the USFWS), will not occur because take of listed species will not occur, and no HCP will be needed to minimize and mitigate impacts to the listed species, and
- Any alternative that will reduce incidental take below levels anticipated as a result of covered activities.

Each of the alternatives Sugar Creek Wind considered is discussed below.

### 4.1 NO-ACTION ALTERNATIVE (TAKE AVOIDANCE FOR BATS ALTERNATIVE)

Under this alternative, take of Indiana and northern long-eared bats will be completely avoided by:

- Raising cut-in speeds to 15.4 miles per hour (mph; 6.9 m/s) from sunset to sunrise, for the period from August 1 to October 15 each year for the life of the Project. The hub will not be locked, but blades will be feathered to the wind such that revolutions per minute (rpm) will be minimal during periods when wind speed is less than 15.4 mph (6.9 m/s).

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Because take of the Covered Species will be completely avoided, no HCP will be implemented, no mitigation will be implemented, and no ITP will be issued. This alternative was considered but rejected because it did not meet the Project's purpose and need (see Section 1.1.3), and because it was determined to be not practicable or economically sustainable over the projected operating life of the Project. However, Sugar Creek Wind will commit to implementing measures to avoid or minimize potential impacts to the Covered Species during project planning/design, construction, operations and decommissioning as described in our Bird and Bat Conservation Strategy (BBCS) report. Sugar Creek will also commit to conducting post-construction mortality monitoring to understand potential impacts to the Covered Species during operations of the Project. Adaptive management will be implemented, if necessary, to further avoid, minimize, or mitigate for unexpected impacts to the Covered Species. The BBCS will also be updated on an on-going basis, if necessary.

### **4.2 5.0 M/S CUT-IN SPEED ALTERNATIVE (PROPOSED SCENARIO)**

The 5.0 m/s Cut-In Speed Alternative is the result of consideration of the range of alternatives to select a Project scenario that meets Project goals while minimizing potential threats to the Indiana and northern long-eared bat.

Under the 5.0 m/s Cut-In Speed Alternative:

- From sunset to sunrise, August 1 through October 15, turbine cut-in speeds will be 11.2 mph (5.0 m/s) when temperatures are above 50°F. The hub will not be locked, but the blades will be feathered (i.e., to reduce the blade angle to the wind to slow or stop the turbine from spinning, preventing the turbine from freewheeling) to the wind such that rpm will be minimal during periods when wind speed is less than 11.2 mph (5.0 m/s). From March 15 through July 31, and from October 15 through November 15, turbines will be feathered below the manufacturer's cut-in speed (3.0 m/s) from sunset to sunrise when temperatures are above 40°F (in accordance with operational needs). The feathering/cut-in process will be computer-controlled and based on 10-minute rolling average wind speed data. Accordingly, turbines will cut in or feather throughout the night as the wind speed fluctuates above and below the specified cut-in speeds.
- Post-construction monitoring will be completed for the life of the Project, consisting of intensive monitoring for bats during spring (April 1–May 15) and fall (July 15–October 15) migration, with weekly monitoring in summer (May 16–July 14) during the first three years of operations under the permit, annual monitoring (August 1–October 15) during the life of the permit, and check-in monitoring (April 1–October 15) in years 15 and 16 of operations.
- Based on the results of the monitoring, adjustments to cut-in speeds will be addressed in accordance with Section 6.4, Adaptive Management.
- Although risk to Indiana and northern long-eared bats is considered low, mitigation measures have been incorporated into the Project to provide a long-term benefit that will mitigate for the impacts of permitted take. As more specifically described in Sections 6.2.2, initial mitigation will include coordinating with local land preservation entities in the vicinity of the Project to protect, restore and/or enhance habitats and/or other USFWS approved mitigation projects. The mitigation plan will be implemented in close cooperation with the USFWS and IDNR.

## **5.0 EFFECTS OF THE PROPOSED ACTION**

### **5.1 DIRECT EFFECTS**

#### **5.1.1 Habitat Loss**

No loss of summer maternity habitat will occur as a result of project operation. Due to the limited amount of suitable habitat within the Permit Area, the placement of turbines over 1,000 feet away from suitable summer habitat per the TAL requirements, and the availability of suitable habitat outside of the Permit Area, take of the Indiana bat or northern long-eared bat as a result of operation of the Project during the summer maternity season is not expected. The USFWS considers 1,000 feet to be the distance that northern long-eared bats and Indiana bats will travel from suitable habitat, and both species are unlikely to occur in areas located more than 1,000 feet from suitable habitat (USFWS 2014a).

#### **5.1.2 Mortality**

Bat mortality has been documented at wind energy facilities worldwide (Arnett et al. 2008). The primary bat species affected by wind facilities are migratory, foliage- and tree-roosting Lasiurine species that undergo long-distance migrations and do not hibernate. Arnett et al. (2008) compiled data from 21 studies at 19 wind facilities in the U.S. and Canada and found that mortality has been reported for 11 of the 45 bat species known to occur north of Mexico. Of the 11 species, the hoary bat, eastern red bat, and silver-haired bat have the highest mortality rates, with the hoary bat comprising 61.7% of all fatalities (Arnett et al. 2008).

Prior to September 2009, no mortality of species listed as threatened or endangered under the ESA had been reported in connection with wind energy facilities, including the Indiana bat (Arnett et al. 2008). In September 2009, the first documented take of an endangered Indiana bat occurred at BP Wind Energy's Fowler Ridge Wind Farm (FRWF) located in Benton County, Indiana (FRWF 2013). Including this, a total of 30 Indiana bat fatalities have been documented in the northeastern and Midwestern U.S. as of September 2021 (USFWS 2012a, 2012b, 2011a, 2018d, 2021). Based on publicly available reports, a total of 43 northern long-eared bat fatalities had been recorded at wind energy facilities in North America as of 2015, representing approximately 0.3% of the total bat mortality (Gruver and Bishop-Boros 2015). The northern long-eared bat was not listed or proposed for listing when many of these fatalities occurred; however, these records do provide information on the rarity of northern long-eared bat fatalities, given the large number of wind energy facilities operating within the species' range.

As of 2014, 1 within the state of Illinois, one Indiana bat and three northern long-eared bats had been found as fatalities at wind facilities, representing 0.013% of estimated total bat mortality in the state (IDNR 2015). The three northern long-eared bat fatalities in Illinois occurred at two different projects, California Ridge in Vermilion and Champaign counties, and another project near Pittsfield in Pike County (K. Shank, pers. comm.). The project in Pike County has several known roosts of both Indiana and northern long-eared bats in the vicinity, but none closer than 2,000 feet from the single turbine in the vicinity (K. Shank,

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pers. comm.). A northern long-eared bat fatality occurred at that turbine on May 28, 2014 (1.65 MW turbine built in 2005; K. Shank, pers. comm.).

Due to the absence of significant Indiana and northern long-eared bat records, it is instructive to consider general information regarding bat mortality to understand what type of mortality has been recorded and for what species. Bat mortality at wind facilities has been reported from direct impact with a spinning turbine blade or from barotrauma<sup>2</sup>. Barotrauma involves tissue damage to air-containing structures (e.g., lungs) caused by rapid or excessive pressure change (Baerwald et al. 2008). As turbine blades spin, the blades create areas of low pressure. Bats flying through these areas may suffer barotrauma in as high as 90% of cases (Baerwald et al. 2008); however, more recent studies have concluded that traumatic injury is still the leading cause of death (Rollins et al. 2012, Grodsky et al. 2011).

Qualitative analysis of *Myotis* bat calls from acoustic surveys conducted at the Permit Area in 2015 and 2016 identified three Indiana bat calls during the 2015 survey and six northern long-eared bat calls during the 2016 survey (Boyles & Boyles 2015, WEST 2017b; Section 3.2.2). Indiana bats may be present during the summer maternity season based on the timing of the calls recorded, whereas northern long-eared bats were only detected during migration. Both species, as well as other species, may be present during short periods of time during migration as they pass through the Permit Area to known hibernacula nearby.

In addition to the direct mortality of a bat, impacts to maternity colonies could occur through the take of lactating females, which would then result in the loss of any existing or future pups. This impact is further discussed in Section 5.4.3.

## 5.2 INDIRECT EFFECTS

Indirect effects are caused by or will result from the proposed action and are later in time but are still reasonably certain to occur. For the purposes of an HCP, the indirect effects in question must be reasonably foreseeable, a proximate consequence of the covered activities proposed under the HCP, and rise to the level of take (USFWS and NMFS 2016) if they are to be included as a covered activity. None of the indirect effects associated with the operation or maintenance of the Project are likely to result in take of either Indiana or northern long-eared bats as explained below.

One indirect effect to the covered species is lost future reproduction when a female is killed prematurely. This impact is covered in detail in Section 5.4.3.

During maintenance, some limited tree clearing or trimming may need to occur. In the unlikely event that trees >3 inches DBH would require removal, such trees will be cleared from November 1 to March 31 or inspected by a qualified biologist to confirm no roosting bats are present prior to removal.

The Project is intended to supply electricity to the regional electrical grid to address existing and projected future energy needs. As such, significant local community growth is not anticipated as a consequence of the Project's energy contribution. The Project will be staffed by approximately 10 O&M personnel

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<sup>2</sup> Rollins et al. (2012) evaluated competing hypotheses of barotrauma and traumatic injury to determine the cause of mortality at wind projects and found a small fraction (6%, 5 of 81) of bats with lesions possibly consistent with barotrauma. Based on forensic pathology examination, the data suggest traumatic injury is the major cause of bat mortality at wind farms, and barotrauma is a minor cause.

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throughout the life of the Project. Agricultural, recreational, and other customary activities on the lands surrounding the turbines likely will continue to take place as they did prior to the construction of the wind farm.

A potentially positive indirect effect on Indiana and northern long-eared bats is the addition of the Project as a renewable energy source, offsetting the potential operation of fossil fuel-fired generating sources and associated negative environmental impacts. However, the specific level of such benefit attributable to the Project facility is not readily quantifiable.

The mitigation associated with the Project (increased restoration and/or protection of summer habitat) is not anticipated to result in an indirect negative effect to any of the covered species but should directly enhance species viability.

Limited information is available regarding the disturbance/displacement of bats at wind facilities (Kunz et al. 2007). However, based on the number and frequency of documented deaths of bat species observed at wind energy facilities throughout North America, there appears to be no active avoidance of wind facilities by bat species (USFWS 2011b).

Both Indiana bats and northern long-eared bats have been confirmed present and would be at risk of disturbance/displacement when present in the Permit Area. None of the indirect effects associated with the operation or maintenance of the Project are likely to result in take of either Indiana or northern long-eared bats.

### **5.3 EFFECTS ON CRITICAL HABITAT**

A final rule designating critical habitat for the Indiana bat was published on September 24, 1976 (41 FR 41914). The critical habitat consists of 11 caves and 2 mines in 6 states:

- Illinois – Blackball Mine (LaSalle County)
- Indiana – Big Wyandotte Cave (Crawford County) and Ray’s Cave (Greene County)
- Kentucky – Bat Cave (Carter County) and Coach Cave (Edmonson County)
- Missouri – Cave 021 (Crawford County), Capes 009 and 017 (Franklin County), Pilot Knob Mine (Iron County), Bat Cave (Shannon County) and Cave 029 (Washington County)
- Tennessee – White Oak Blowhole Cave (Blount County)
- West Virginia – Hellhole Cave (Pendleton County)

No critical habitat has been designated for the northern long-eared bat to date.

The Permit Area does not occur within or in close proximity to, nor will it directly affect, designated Indiana bat critical habitat; therefore, none will be affected.

### **5.4 INCIDENTAL TAKE PERMIT**

The USFWS will issue an ITP upon a finding that this HCP meets the permit issuance criteria set forth in 50 CFR § 17.32(b)(2), including that the actions proposed by Sugar Creek Wind will not appreciably reduce the likelihood of the survival and recovery of the covered species in the wild, and that Sugar Creek Wind has minimized and mitigated the effects of its activities to the maximum extent practicable. The

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minimization and mitigation measures that Sugar Creek Wind will implement to meet this standard are described in the Conservation Plan in Section 6.0 of this HCP.

### 5.4.1 Scope of the Incidental Take Permit

#### 5.4.1.1 Permit Period and Area

Sugar Creek Wind is seeking a 30-year ITP for the Indiana bat and northern long-eared bat within the Permit Area during project operations.

#### 5.4.1.2 Type of Take

Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such activity [ESA §3(19)]. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, such as breeding, feeding or sheltering. Harass is defined by the Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt behavior patterns which include, but are not limited to, breeding, feeding, or sheltering [50 CFR §17.3].

The Project has the potential to result in take of the Indiana bat and the northern long-eared bat during operation of the Project through mortality due to collision with turbine blades or through temporary harm or harassment of individuals in the course of implementation of mitigation activities. Accordingly, the ITP will cover potential incidental take occurring in connection with otherwise lawful activities related to the operations of the Project and the implementation of mitigation activities pursuant to this HCP.

### 5.4.2 Take Estimate for the Covered Species

#### 5.4.2.1 Take Estimation Methodologies

The only project activity anticipated to result in Indiana or northern long-eared bat take (mortality) is operation. Indiana and northern long-eared bat mortality at operating wind farms is a rare event, and there is a limited data set on fatalities of these species at wind farms (see Section 5.1.2). Therefore, in order to evaluate risk and predict levels of take of federally listed bats at the Project, Sugar Creek Wind considered four take estimation methods that rely on regional data from operating wind farms. Sugar Creek Wind used these methods to develop take estimates for the Project prior to implementing minimization measures (i.e., when temperatures are above 50°F, feathering below 5.0 m/s during the fall migratory period and below 3.0 m/s during the spring and summer). Each method is described in detail in the Sections below.

Turbines have been sited a minimum of 1,000 feet away from suitable habitat, so it is assumed that there is avoidance during the summer maternity season. As described in Section 4.2 above feathering of the blades is proposed during certain seasonal periods and temperature based upon publicly available curtailment studies, feathering below 5.0 m/s yields a minimum of a 47% reduction in fatalities (Arnett et al. 2011, Good et al. 2011, Hein et al. 2013, 2014, Young et al. 2013).

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### 5.4.2.1.1 USFWS Region 3 Data Approach

The USFWS recently summarized post-construction monitoring data from wind farms within the USFWS Region 3 to determine an average fatality rate of 17.59 bats per MW per year, after being adjusted for the full bat active season and area searched (USFWS 2016d). Applying this to Sugar Creek (202 MW total) results in an all bat fatality estimate of 3,554 bats per year. Indiana bats are assumed to make up 0.09% of all bat fatalities, and northern long-eared bats are assumed to make up another 0.09% of all bat fatalities (based on species composition from post-construction monitoring studies in the region; USFWS 2016d). Applying these species composition rates to the overall take estimate results in a take estimate of 3.2 Indiana bats and 3.2 northern long-eared bats per year before implementation of any minimization measures. Application of the minimization measures is anticipated to result in at least a 47% reduction in take, resulting in a minimized take estimate of 1.7 Indiana bats and 1.7 northern long-eared bats.

### 5.4.2.1.2 MidAmerican Data Approach

Based on data published in the draft MidAmerican HCP (MidAmerican 2018), post-construction monitoring, and an informed Evidence of Absence approach were used to estimate unminimized take rates of 38 Indiana bats and 33 northern long-eared bats per year across the MidAmerican fleet in Iowa. This includes potential take of Indiana bats at 568 turbines, and potential take of northern long-eared bats at 2,020 turbines, which results in take rates of 0.0669 Indiana bat per turbine and 0.0163 northern long-eared bat per turbine. Adjusting these numbers for the size of the Sugar Creek Project (57 turbines) results in unminimized take estimates of 3.8 Indiana bats and 0.9 northern long-eared bat per year. Application of the minimization measures is anticipated to result in at least a 47% reduction in take, resulting in a minimized take estimate of 2.0 Indiana bats and 0.5 northern long-eared bats.

### 5.4.2.1.3 Hoopeston Wind Farm Data Approach

Post-construction monitoring at the Hoopeston Wind Farm estimated an annual take rate of 0.83 Indiana bat and 0.83 northern long-eared bat per year when operating at 5.0 m/s under their ITP. The proposed Sugar Creek Project is 1.16X larger than Hoopeston (57 turbines versus 49 turbines), so the estimated take would be 1.0 Indiana bat and 1.0 northern long-eared bat after implementation of the minimization measures. Assuming that this is due to a 47% reduction in take, the take estimate prior to implementation of minimization would have been 1.9 Indiana bats and 1.9 northern long-eared bats per year<sup>3</sup>.

### 5.4.2.1.4 Wildcat Wind Farm Data Approach

Post-construction monitoring at the Wildcat Wind Farm estimated an annual take rate of 0.6564 Indiana bat and 0.6564 northern long-eared bat per year when operating at 5.0 m/s under their ITP. The proposed Sugar Creek Project is only 45.6% of the size of the Wildcat (57 turbines versus 125), so the estimated take would be 0.3 Indiana bat and 0.3 northern long-eared bat per year after implementation of minimization measures. Assuming that this is due to a 47% reduction in take, the take estimate prior to implementation of minimization would have been 0.6 Indiana bat and 0.6 northern long-eared bat per year<sup>4</sup>.

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<sup>3</sup> 1.0 divided by 0.53

<sup>4</sup> 0.3 divided by 0.53



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**5.4.2.2 Average Take Estimates**

The rounded unminimized average by species of the four methods used to estimate take is 3 Indiana bats and 2 northern long-eared bats per year, or 90 Indiana bats and 60 northern long-eared bats over the 30-year permit term. After minimization, the average by species of the four methods used to estimate take is 1.3 Indiana bats and 0.9 northern long-eared bat (Table 5-1).

**Table 5-1. Summary of Take Estimation.**

<b>Take Estimation Method</b>	<b>Unminimized Take Estimates</b>	<b>Minimized Take Estimates</b>
USFWS Region 3 Data Approach	3.2 Indiana bats 3.2 northern long-eared bats	1.70 Indiana bats 1.70 northern long-eared bats
MidAmerican Data Approach	3.8 Indiana bats 0.9 northern long-eared bat	2.01 Indiana bats 0.48 northern long-eared bat
Hoopeston Wind Farm Data Approach	1.9 Indiana bats 1.9 northern long-eared bats	1.01 Indiana bat 1.01 northern long-eared bats
Wildcat Wind Farm Data Approach	0.6 Indiana bat 0.6 northern long-eared bat	0.32 Indiana bat 0.32 northern long-eared bat
Average	2.4 Indiana bats 1.7 northern long-eared bats	1.3 Indiana bats 0.9 northern long-eared bats

**5.4.2.3 Take Estimate Adjusted for Minimization Measures (i.e., “Predicted Take”)**

Based upon publicly available curtailment studies, feathering (i.e., to reduce the blade angle to the wind to slow or stop the turbine from spinning, preventing the turbine from freewheeling) below 5.0 m/s yields a minimum of a 47% reduction in fatalities (Arnett et al. 2011, Good et al. 2011, Hein et al. 2013, 2014, Young et al. 2013). Applying this reduction to the averaged take estimates of 2.4 Indiana bats and 1.7 northern long-eared bats yields a take estimate of 1.3 Indiana bats and 0.9 northern long-eared bat per year, or 39 Indiana bats and 27 northern long-eared bats over the 30-year permit term.

**5.4.2.4 Proposed Take Limit (i.e., “Permitted Take”)**

In addition to the uncertainty with take estimation (see Section 5.4.2.1), the results of cut-in speed studies that have estimated reductions in bat fatalities have varied widely (e.g., Arnett et al. 2011, Good et al. 2011, Hein et al. 2013, 2014, Young et al. 2013). These studies vary in location, time of year, turbine type, proximity to listed bat records, and year conducted, among other factors, suggesting that site-specific conditions may influence bat fatality rates. These factors, combined with the lack of site-specific fatality data (since the Project is not yet operating), affect our ability to precisely predict take at the Project, regardless of the method used to predict take. It is therefore prudent to provide for the potential that the take estimate methods above may have underestimated or overestimated the amount of take at the project.

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Given this uncertainty, Sugar Creek proposes to apply for a permit for a higher amount of take (hereafter, “permitted take”) than estimated with the method above (which averaged the three take estimation methods). Being permitted for a slightly higher amount of take, in combination with the adaptive management program, will greatly reduce the likelihood that a permit amendment will be needed, ensure that mitigation stays ahead of the take, allow for an upfront analysis of the reasonable range of take that could occur at the project, and ensure that the impacts of the take are analyzed at a level that does not underestimate impacts.

To calculate the permitted take, Sugar Creek applied the expected 47% reduction in bat fatality rates (the reduction expected from the conservation measures described in Section 6.2.1), to the four fatality estimate methods.

This yielded a range of 1 to 3 Indiana bats per year (when rounded up to whole bats). Using the same method for northern long-eared bats yields a range of 1 to 2 bats per year. Sugar Creek proposes to apply for a take limit of 3 Indiana bats and 2 northern long-eared bats per year, which is the upper end of the potential take for each species, among the three methods, after the minimization measures have been applied. This is a total of up to 90 Indiana bats and 60 northern long-eared bats over the 30-year permit term.

Sugar Creek Wind proposes to mitigate up-front for the Predicted Take in Section 5.4.2.3 (the take estimate adjusted for the minimization measures) of 39 Indiana bat and 27 northern long-eared bats, but due to uncertainty surrounding the risk factors for Indiana bats and northern long-eared bats and the duration of the permit, Sugar Creek Wind proposes to apply for a take limit (i.e., “Permitted Take”) for the 90 Indiana and 60 northern long-eared bats, and use adaptive management (including increasing the mitigation, as well as potential changes to cut-in speeds) to stay within the permitted levels of take.

### 5.4.3 Impacts of Estimated Take

#### 5.4.3.1 *Indiana Bats*

Indiana bats are assumed to be at risk only during the spring and fall migration periods, as all turbines have been sited more than 1,000 feet from suitable habitat. Given that migratory routes for Indiana bats in the Midwest remain generally unknown, it cannot be predicted with certainty from which maternity colonies or hibernacula bats migrating through the Permit Area may originate. Due to the predicted mortalities occurring primarily during migration, take at the Project will likely originate from more than one maternity colony and more than one hibernacula. Based on the maximum known migration distance for Indiana bats (357 miles; USFWS 2011b) and the location of known hibernacula relative to the Permit Area, it is expected that all or most of the Indiana bats taken at the Sugar Creek Wind Project will belong to the OCRU population.

Therefore, take from the Project is not expected to inordinately affect any single Indiana bat maternity colony or hibernaculum, and take is not expected to result in permanent loss of the reproductive potential of a maternity colony or of the maternity colony itself. Additionally, loss of the anticipated small number of bats is unlikely to adversely impact any hibernating populations to which these individuals belong.

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Indiana bats taken by the Project may include non-reproductive juveniles, as well as adult female and male bats. Mortality statistics are skewed toward males of the four most commonly killed species at wind energy facilities: the hoary bat, eastern red bat, silver-haired bat, and tri-colored bat (Arnett et al. 2008). Behavioral-based risk factors have been hypothesized to increase the exposure potential for male tree bats at turbines (Cryan 2008). However, there are no data that suggest that male *Myotis* bats may be more vulnerable to wind turbine mortality (USFWS 2011b). Gruver et al. (2009) recorded an equal number of male and female *Myotis* fatalities at a wind energy facility in Wisconsin, and BHE Environmental (2011) recorded more female *Myotis* fatalities than male *Myotis* fatalities at another wind energy facility in Wisconsin. Because the Project is expected to take migrating individuals originating from a variety of unknown locations, it is currently most reasonable to assume equal risk for male and female bats within the Permit Area.

Sugar Creek Wind ran a Resource Equivalency Analysis (REA)-based model for Indiana bats (USFWS 2016e) based on the estimated level of take (Section 5.4.2). The REA model used the resource service of reproduction as the unit of measurement for debits and credits and specifically the reproductive potential of females from the population. This is based on the principle that when an adult female bat is prematurely taken at a wind energy facility, her and her offspring's reproductive potential is lost. Similarly, when mitigation is applied, females and their future reproductive potential are gained.

Although the overall ratio of females to males in the Indiana bat population within the OCRU is assumed to be 1:1, female Indiana bats are expected to occur more frequently than males in the population as distance from hibernacula increases. Female Indiana bats disperse from hibernacula to join summer maternity colonies, while male Indiana bats typically remain closer to hibernacula throughout the summer. Therefore, more female Indiana bats than male Indiana bats are expected to migrate through the Permit Area, based on the distance of the Permit Area to hibernacula. The USFWS estimates a 3:1 ratio of female to male Indiana bats migrating through the Permit Area each fall (USFWS 2012c).

Consequently, approximately 75% of the 39 to 90 Indiana bats taken at the Project are expected to be female. The REA model was run based upon a take of 0.98 to 2.25 female Indiana bats each year utilizing the minimized take estimate (Section 5.4.2.3) and a stationary population ( $\lambda=1$ ) within the REA model debits. This results in a take of 29 to 68 adult female Indiana bats over the 30-year Project term, and a lost reproduction of 56 to 128 female pups, for a total potential impact of take of 85 to 196 female Indiana bats.

Based upon the 85 to 198 total female Indiana bat debits accrued over the 30-year life of the Project, this represents 0.03% to 0.07% of the estimated 2019 population of the OCRU (276,317 Indiana bats; USFWS 2017b) and will be distributed over 30 years. Considering the overall low level of expected take and the compensatory mitigation measures Sugar Creek Wind will implement to compensate for the take, it is highly unlikely that the impact of the Project will appreciably reduce the likelihood of survival and recovery of the Indiana bat. In the event that some of the bats taken at the Project belong to the Midwest Recovery Unit (MWRU) population, overall impacts to this population will be very minimal. In 2019, the MWRU population was estimated at 245,474 individuals (USFWS 2019).

As WNS spreads into and across the Midwest (see discussion in Section 7.2.1), it may significantly affect the OCRU Indiana bat population. WNS is causing severe declines in the populations of cave-hibernating bats throughout eastern North America. The USFWS has estimated that WNS caused a decline of

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approximately 36% in the Indiana bat Northeast Recovery Unit (NERU) population between 2007 and 2009 (USFWS 2011c) and 54% between 2009 and 2011 (USFWS 2012d), but populations appear to have steadied between 2011 and 2013 with a 13.3% increase in the NERU population (USFWS 2013c), and an additional 5.3% increase between 2017 and 2019 (USFWS 2019). If WNS becomes widespread across the Midwest, and specifically within Illinois, the estimated level of take from the Project would represent a greater proportion of the local populations; however, the level of take due to the Project would be expected to decline proportionally as populations decline due to WNS. The amount of take that the Project will contribute in addition to losses from WNS would not cause the OCRU Indiana bat population to decline appreciably sooner than it would decline as a result of WNS alone. The possible effects of WNS on this population, and, subsequently, Sugar Creek Wind's mitigation and conservation measures, are addressed in Section 7.2, Changed Circumstances.

### 5.4.3.2 *Northern Long-eared Bat*

Similar to Indiana bats, northern long-eared bats are assumed to be at risk only during the spring and fall migration periods, as all turbines have been sited more than 1,000 feet from suitable habitat. Given that migratory routes for northern long-eared bats in the Midwest remain generally unknown, it cannot be predicted with certainty from which maternity colonies or hibernacula bats migrating through the Permit Area may originate. Due to the predicted mortalities occurring primarily during migration, take at the Project will likely originate from more than one maternity colony and more than one hibernacula. The size, status, and distribution of northern long-eared bat populations are not known; however, given the short maximum migration distance for the species (55 miles; USFWS 2015a), it is expected that most of the northern long-eared bats taken at the Project will belong to local populations. As discussed in Section 3.3.2.7, the population of northern long-eared bats in Illinois is estimated at 213,720 adult individuals (USFWS 2016b).

Because take is anticipated to be spread across multiple populations, take from the Sugar Creek Wind Project is not expected to inordinately affect any single northern long-eared bat maternity colony or hibernaculum, and take is not expected to result in permanent loss of the reproductive potential of a maternity colony or of the maternity colony itself. Additionally, loss of the anticipated small number of bats is unlikely to adversely impact any hibernating populations to which these individuals belong.

Northern long-eared bats taken by the Project may include non-reproductive juveniles, as well as adult female and male bats. Mortality statistics are skewed towards males of the four most commonly-killed species at wind energy facilities: the hoary bat, eastern red bat, silver-haired bat, and tri-colored bat (Arnett et al. 2008). Behavioral-based risk factors have been hypothesized to increase the exposure potential for male tree-bats at turbines (Cryan 2008). However, there are no data that suggest that male *Myotis* bats may be more vulnerable to wind turbine mortality (USFWS 2011b). Gruver et al. (2009) recorded an equal number of male and female *Myotis* fatalities at a wind energy facility in Wisconsin, and BHE Environmental (2011) recorded more female *Myotis* fatalities than male *Myotis* fatalities at another wind energy facility in Wisconsin. Because Sugar Creek Wind is expected to take migrating individuals originating from a variety of unknown locations, it is currently most reasonable to assume equal risk for male and female bats within the Permit Area.

Sugar Creek Wind has run a REA-based model for northern long-eared bats (USFWS 2016f) based on the estimated level of take (Section 5.4.3). The REA model used the resource service of reproduction as

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the unit of measurement for debits and credits, and specifically on the reproductive potential of females from the population. This is based on the principle that when an adult female bat is prematurely taken at a wind energy facility, her and her offspring's reproductive potential is lost. Similarly, when mitigation is applied, females and their future reproductive potential are gained.

Due to their recent proposal for listing, research into the sex ratios of northern long-eared bats has been limited. However, there is no evidence to suggest that a 1:1 sex ratio is improbable. Unlike Indiana bats, the northern long-eared bat shows less dispersal from hibernacula (USFWS 2014a), suggesting that females and males may be expected to migrate through the Permit Area in equal proportions. Consequently, of the 27 to 60 northern long-eared bats estimated to be taken at Sugar Creek Wind over the life of the Project, 50% (14 to 30 bats) are expected to be female, for an estimated take of 0.45 to 1 female bat/year over the 30-year Project life. The loss of female bats also represents lost reproductive potential from these individuals.

The REA model was run based upon a take of 0.45 to 1 female northern long-eared bat each year utilizing the estimated take estimate (Section 5.4.2) and a stationary population ( $\lambda=1$ ) within the REA model debits. This results in a take of 14 to 30 adult female northern long-eared bats over the 30-year project term, and the lost reproduction of 26 to 57 female pups, for a total impact of take of 39 to 87 female bats.

Based upon the 39 to 87 total female northern long-eared bat debits accrued over the 30-year life of the Project, this represents 0.01% to 0.03% of the estimated population in Illinois (320,580 northern long-eared bats, including adults and pups; USFWS 2016b) and will be distributed over 30 years. Considering the overall low level of expected take and the compensatory mitigation measures Sugar Creek Wind will implement to compensate for the take, it is highly unlikely that the impact of the Project will appreciably reduce the likelihood of survival and recovery of the northern long-eared bat. Given that no restrictions are anticipated in the recruitment or distribution of northern long-eared bats within Illinois or in the species' overall range, the action is not likely to jeopardize the continued existence of the northern long-eared bat. In the event that some of the bats taken at the Project belong to neighboring states, overall impacts to these populations will be very minimal, as their populations are estimated between 153,495 (Iowa) and 806,715 (Wisconsin; USFWS 2016b). Even if all 39 to 87 female northern long-eared bat debits came from the smaller population in Iowa, this would represent less than 0.06% of the state's population and would be distributed over 30 years.

As WNS spreads into and across the Midwest (see discussion in Section 7.2.1), it may significantly affect the local northern long-eared bat population. WNS is causing severe declines in the populations of cave-hibernating bats throughout eastern North America. There has been a sharp decline in the northern long-eared bat population in the northeastern part of its range due to WNS, and WNS has been confirmed on northern long-eared bats (USFWS 2014a), indicating that they are highly susceptible to the disease. The decline within surveyed hibernacula from eight states is approximately 99% for the northern long-eared bat (USFWS 2014a).

If WNS becomes widespread across the Midwest, and specifically within Illinois, this level of take from the Project would represent a greater proportion of the local populations; however, the level of take due to the Project would be expected to decline proportionally to the decline in local population size. The amount of take that the Project will contribute in addition to losses from WNS would not cause the local northern

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long-eared bat population to decline appreciably sooner than it would decline as a result of WNS alone. The possible effects of WNS on these populations and, subsequently, Sugar Creek Wind's mitigation and conservation measures, are addressed in Section 7.3, Unforeseen and Changed Circumstances.

## 6.0 CONSERVATION PLAN

In issuing an ITP, the USFWS must find, among other things, that the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.<sup>5</sup> The term "maximum extent practicable" is not defined in the ESA, nor is it defined in any agency regulations.<sup>6</sup> According to some courts, the maximum extent practicable standard does not mean that an applicant must implement all conservation measures that it can afford to implement while still going forward with development.<sup>7</sup> Rather, the "maximum extent practicable" standard means that the conservation measures proposed by the applicant must be commensurate with the level of take under the plan. Stated differently, an applicant for an ITP must demonstrate that its avoidance, minimization, and mitigation measures are commensurate with the anticipated impacts of the take, are rationally based and supported by science, and are reasonably capable of being accomplished. It is only where certain constraints may preclude full minimization or full mitigation that the "practicability" issue needs to be addressed more thoroughly. Here, as will be described, Sugar Creek Wind's proposed minimization and mitigation are commensurate with the impact of the taking, and Sugar Creek Wind has provided funding assurances to ensure proper implementation of the HCP.

Steps taken to arrive at the conservation plan described herein included defining the biological goals, which include goals to minimize and mitigate impacts to listed species to the maximum extent practicable, and to reduce impacts to all bats by an amount based on best available science, which suggests that a 35% reduction can be attained using turbine operational protocols including the manufacturer's cut-in speed and blade feathering, and 47% can be attained when raising the cut-in speed to 5.0 m/s. Sugar Creek Wind agreed to meet this goal even though non-listed bat species are not protected under the ESA. Published literature and reviews by experts indicate that raising cut-in speeds is clearly effective at reducing impacts to all bats, although the percent reduction is variable and the effectiveness at reducing impacts to listed species is uncertain.

As described in Section 6.3, Sugar Creek Wind evaluated intensive monitoring programs using the USFWS Evidence of Absence (EofA) software (Dalthorp et al. 2017) to ensure that the Project is not exceeding the level of permitted take (see Section 6.4.1). The intensive monitoring program is designed to maximize the number of carcasses found by searching large areas frequently (see Section 6.3.4 for details), which will lead to both an increased chance of finding a covered species, should one be taken at the Project, as well as an increased level of confidence in the overall bat fatality information collected at the Project. In addition, using site-specific monitoring data in this manner is more consistent with the "No Surprises" rule, which is intended to reduce financial uncertainty and provide assurances to section 10

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<sup>5</sup> See 50 C.F.R. § 17.22(b)(2)(B).

<sup>6</sup> See *Nat'l Wildlife Fed'n v. Norton*, 306 F. Supp. 2d 920, 927 (E.D. Cal. 2004).

<sup>7</sup> *Id.*

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permit holders that, as long as the permittee is properly implementing the HCP, no additional commitments of resources will be required beyond those specified in the HCP.

### 6.1 BIOLOGICAL GOALS AND OBJECTIVES

The biological goals define the expected outcome of this conservation plan. These goals are broad, representing the guiding principles for operation of the conservation program described in this HCP and forming the basis for the minimization and mitigation strategies employed. The biological objectives represent the steps through which the biological goals will be achieved and provide a basis for measuring progress towards and achievement of those goals. The biological goals and objectives of this conservation plan for the covered bat species are:

1. Goal 1: To maintain the integrity of the Covered Species populations that migrate through the Permit Area by minimizing Indiana and northern long-eared bat mortality within the Permit Area.
  - Objective: Implement an operational strategy that will decrease bat mortality by at least 47% from predicted uncurtailed levels, thereby decreasing actual mortality of all bats, and specifically Indiana and northern long-eared bats.
2. Goal 2: To increase survival and reproductive capacity of Indiana and northern long-eared bats within their summer range, thereby promoting population growth of maternity colonies for both species.
  - Objective: Implement a mitigation project that will protect and restore habitat in blocks with a minimum size of 46 acres each within the range of extant Indiana and northern long-eared bat maternity colonies. Mitigation will be quantified and designed pursuant to the REA model.

### 6.2 MEASURES TO ACHIEVE BIOLOGICAL GOALS AND OBJECTIVES

#### 6.2.1 Minimization of Direct Bat Mortality

All publicly available curtailment studies to date show an inverse relationship between cut-in speeds and bat mortality. To minimize potential for direct bat mortality, turbines will be feathered below the manufacturer's cut-in speed of 3.0 m/s from sunset to sunrise when temperatures are above 40°F during the summer maternity season, spring migration period, and the end of the fall migration period (March 15 to July 31 and October 16 to November 15). During the fall migration period (August 1 to October 15), turbines will be feathered below wind speeds of 5.0 m/s from sunset to sunrise when temperatures are above 50°F.

In summary, the turbines will be feathered below the following cut-in speeds by date and temperature:

Temperature	March 15 to July 31	August 1 to October 15	October 15 to November 15	November 15 to March 15
<40°F	uncurtailed	uncurtailed	uncurtailed	uncurtailed

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40-50°F	3.0 m/s	3.0 m/s	3.0 m/s	uncurtailed
>50°F	3.0 m/s	5.0 m/s	3.0 m/s	uncurtailed

Feathering below the manufacturer's cut-in speed (3.0 m/s) is expected to reduce overall bat mortality by a minimum of 35% (Good et al. 2012, Young et al. 2011, Baerwald et al. 2009), and feathering below 5.0 m/s is expected to reduce overall bat mortality by a minimum of 47% (Arnett et al. 2011, Good et al. 2011, Hein et al. 2013, 2014, Young et al. 2013).

Curtailed actions deemed effective at reducing the risk of collision for all bat species should be at least as effective for the smaller, weaker-flying Indiana and northern long-eared bats, which are adapted for foraging over water or near vegetation, rather than the open-air aerial hawking used by migratory tree bats (Norberg and Rayner 1987). Curtailment above even 4.0 m/s has been shown to reduce *Myotis* fatalities by over 90% (Gruver and Bishop-Boros 2015), and it is assumed that curtailment at 5.0 m/s during the periods of highest risk for Indiana bats and northern long-eared bats would be even more protective. Therefore, a nighttime cut-in speed of 3.0 m/s during the spring and summer and 5.0 m/s during the fall, with blades feathered below the cut-in speed, is expected to minimize take of Indiana and northern long-eared bats substantially. It is conservatively estimated that the proposed curtailment strategy will reduce overall bat fatality, Indiana bat mortality, and northern long-eared bat mortality by 35 to 47%, although the actual reduction in mortality may be greater.

### 6.2.2 Mitigation for Direct Bat Mortality

#### 6.2.2.1 Initial Mitigation

##### Basis for Mitigation Amount

As set forth in Section 5.4.4, Sugar Creek Wind is estimating the impact of the take to be 85 female Indiana bats and 39 northern long-eared bats (based on the Predicted Take estimates of 39 Indiana bats and 27 northern long-eared bats over the 30-year permit term).

The USFWS models for the Indiana bat (USFWS 2016e) and northern long-eared bat (USFWS 2016f) were used to calculate the necessary mitigation (acres of protection of summer roosting and foraging habitat) for each species. This resulted in 97 acres for Indiana bats and 43 acres for northern long-eared bats. Utilizing a 10% stacking discount, mitigation requirements were calculated as follows:

$$\text{Mitigation} = 97 \text{ acres} + (43 \text{ acres} * 0.1) = 101.3 \text{ acres}$$

Protection of 101.3 acres of summer roosting and foraging habitat is proposed to offset the anticipated level of take at the Project for Indiana bats and northern long-eared bats. To mitigate for anticipated Project impacts to covered species, Sugar Creek Wind proposes to fund a specific conservation project or projects for Indiana bats and northern long-eared bats in consultation with the USFWS upon permit issuance. The goal of the mitigation project is to support recovery plan-based conservation projects on no less than 101.3 acres of mitigation land for covered species within the project vicinity. Efforts will be made, as best as possible, to locate a mitigation parcel (or parcels) within the same HUC-10 watershed as the Project, though other locations (such as between the project and known hibernacula) may be chosen if mutually agreed upon by Sugar Creek Wind and USFWS.



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Over the ITP term, Sugar Creek Wind estimates a Predicted Take of 39 Indiana bats and 27 northern long-eared bats a result of project operations. Sugar Creek Wind has developed and is implementing operational and construction protocols to avoid and minimize the majority of potential project impacts. Remaining, and likely minor, project impacts will be mitigated through offsite conservation measures. The mitigation is based upon the impact of the take (see Section 5.4.3), specifically the lost reproduction of adult female bats.

In arriving at the proposed amount of mitigation, Sugar Creek Wind considered the results of the REA model developed by the USFWS (USFWS 2016e, 2016f) to assess the impact of proposed take on listed bat species. The REA model provides useful information regarding potential benefits of different mitigation options, including summer habitat acquisition and protection, summer habitat restoration, and winter habitat acquisition and protection. Since wooded habitats in this area are limited, forest restoration efforts (which include permanent protection as well) are equal in value to preservation measures, so any combination of restoration or protection totaling 101.3 acres will be sufficient based on the estimated impact of take (see Section 5.4.3) and the stacking of mitigation credits such that mitigating for the impact of take on Indiana bats is sufficient for the northern long-eared bats as well.

### Mitigation Site(s)

Sugar Creek Wind is working with Magnolia Land Partners LLC (Magnolia) to implement a mitigation project consistent with this HCP. The mitigation plan is included as Appendix B of this HCP. As described in Appendix B, Magnolia has identified three potential sites, and final site selection will be made in consultation with USFWS. While the sites range in size, mitigation for Sugar Creek will involve the permanent protection and management of 101.3 acres of any site chosen. Forest habitat assessments were completed for the potential sites to evaluate the quality and quantity of bat habitat and included a desktop assessment. The sites were evaluated based on the guidelines for suitable summer habitat in the current Indiana Bat Survey Guidelines, and site visits were conducted to gather information on each property, including, but not limited to:

- Suitable habitat characteristics;
- Major forest types and tree species composition;
- Invasive species location and identification within the site; and
- Site photography.

The three potential sites include protection of 101.3 acres of one of the following:

**Site 1:** Located in the Lower Illinois-Senachwine Lake watershed approximately 0.5 miles east of the closest Indiana bat maternity roost record and 1.8 miles southeast of the nearest northern long-eared bat maternity roost record. The site contains over 131 acres of forested habitat with over 295 additional acres of habitat suitable for potential future conservation. The forested habitat on the site is a diverse oak-hickory forest of varying maturity dominated by older trees. No signs of any past tree cutting activity were noted. The topography of the site includes hills, ridges, and ravines with slopes ranging from 10% – 60%. Strawn Creek and Pigeon Creek flow through the site, as well as ephemeral tributaries to each. Dominant tree species within the overstory include

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white oak (*Quercus alba*), sugar maple (*Acer saccharum*), shagbark hickory (*Carya ovata*), black oak (*Quercus velutina*), Ohio buckeye (*Aesculus glabra*), black locust (*Robinia pseudoacacia*), American elm (*Ulmus Americana*), chinkapin oak (*Quercus muehlenbergii*), and black walnut (*Juglans nigra*). Numerous potential maternity roost trees are present on the site, including mature live shagbark hickories and large snags with characteristic roost tree conditions such as exfoliating bark, cracks, and hollow limbs. The site is adjacent to several Marshall County Conservation Areas, Babb Slough to the south and Sawyer Slough to the north. Approximately 131.16 acres of forest are present on the site, the entirety of which is considered to be suitable summer Indiana and northern long-eared bat habitat based on suitability requirements identified in the most recent USFWS Rangelwide Indiana Bat Summer Survey Guidelines.

The site contains expansive ridges with the potential for conversion to agricultural use as well as trees suitable for logging, which would reduce habitat suitability for the covered bat species. Invasive species, including bush honeysuckle (*Lonicera mackii*) and tree-of-heaven (*Ailanthus altissima*) were noted on the property and threaten the habitat quality if left unchecked. Additionally, the initial habitat assessment for Site 1 indicated a large (>7 in. DBH) snag density of 3.2 per acre, below the target density of five per acre as set forth in Section 4 of Appendix B. To address these threats and ensure the habitat persists, the following actions are proposed: placement of a permanent conservation easement prohibiting agricultural and commercial harvesting activities; chemical and/or mechanical invasive species management; and snag creation via girdling.

**Site 2:** Located in the Lower Illinois-Senachwine Lake watershed approximately 1.0 mile west of the closest Indiana bat maternity roost record and 0.8 mile north of the closest northern long-eared bat maternity roost record. The site contains approximately 147 acres of forested habitat suitable for conservation. The forest on the site is a diverse oak-hickory forest of varying maturity. The topography of the site includes hills, ridges, and ravines with slopes ranging from 10%-60%. Pigeon Creek flows through the southern portion of the site, and the eastern border is along the Illinois River. Ephemeral tributaries to each are found within the site. Dominant tree species within the overstory include northern red oak (*Quercus rubra*), sugar maple, white oak, black walnut, shagbark hickory, American hophornbeam (*Ostrya virginiana*), black cherry (*Prunus serotina*), American elm, black oak, mockernut hickory (*Carya tomentosa*), black locust, and chinkapin oak. Numerous potential maternity roost trees are present on the site, including mature live shagbark and mockernut hickories and large snags with characteristic roost tree conditions such as exfoliating bark, cracks, and hollow limbs. The site is adjacent to the Wilson Hill Prairies Natural Heritage Landmark, Marshall County Hill Prairies Land and Water Reserve, and Sawyer Slough Marshall County Conservation Area, all to the south. Approximately 147.06 acres of forest are present on the site, the entirety of which is considered to be suitable summer Indiana and northern long-eared bat habitat based on suitability requirements identified in the most recent USFWS Rangelwide Indiana Bat Summer Survey Guidelines.

The site contains areas with the potential for conversion to agricultural use as well as an abundance of valuable mature timber trees, the logging of which would reduce habitat suitability for the covered bat species. Invasive species, including bush honeysuckle and common buckthorn (*Rhamnus cathartica*) were noted on the property and threaten the habitat quality if left

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unchecked. To address these threats and ensure the habitat persists, the following actions are proposed: placement of a permanent conservation easement prohibiting agricultural and commercial harvesting activities; and chemical and/or mechanical invasive species management.

**Site 3:** Located in the Lower Illinois watershed approximately 2.0 miles west of the closest Indiana bat and northern long-eared bat maternity roost records. The site contains over 111 acres of forested habitat suitable for conservation, and approximately 7.25 acres of land cleared for agricultural use suitable for restoration via reforestation. The forest on the site is a classic oak-hickory forest that is relatively younger than the other two sites, but is well established and shows high potential for future growth. The topography of the site includes hills, ridges, and ravines with slopes ranging from 10%-60%. McKee Creek bounds the western edge of the site, and numerous ephemeral and perennial streams were noted on the site, as well as a freshwater pond. Dominant tree species within the overstory include white oak, black oak, American elm, white ash (*Fraxinus americana*), shagbark hickory, northern red oak, american hophornbeam, and shingle oak (*Quercus imbricaria*). Numerous potential maternity roost trees are present on the site, including mature live shagbark hickories and large snags with characteristic roost tree conditions such as exfoliating bark, cracks, and hollow limbs. The site is approximately one mile west of Siloam Springs State Park. Approximately 111.65 acres of forest are present on the site, the entirety of which is considered to be suitable summer Indiana and northern long-eared bat habitat based on suitability requirements identified in the most recent USFWS Rangewide Indiana Bat Summer Survey Guidelines.

The site contains areas which could be used to expand neighboring agriculture fields as well as many trees suitable for logging which would reduce habitat suitability for the covered bat species. Several timber harvests have been performed on the site in the last forty years. The proposed reforestation areas are currently used for agriculture. Invasive species, including bush honeysuckle, common buckthorn, and autumn olive (*Eleagnus umbellata*) were noted on the property and threaten the habitat quality if left unchecked. Invasive species were most prevalent in areas included in the last logging event. Once released from agriculture, the restoration areas would be especially susceptible to invasive species growth until planted trees reach maturity and shade out the invasive species growth. To address these threats and ensure the habitat persists, the following actions are proposed: placement of a permanent conservation easement prohibiting agricultural and commercial harvesting activities; reforestation of agricultural areas as described in Section 3.2 of Appendix B; and chemical and/or mechanical invasive species management.

### Mitigation Monitoring and Reporting

Sugar Creek (or its third-party mitigation implementing entity, on Sugar Creek Wind's behalf) will monitor all mitigation projects and submit annual reports to the IDNR and USFWS by January 31 following each calendar year in which a mitigation action or monitoring is actively conducted. Reports will describe the methods and results of any summer habitat mitigation projects. Reports for any summer habitat mitigation will include the number of acres preserved and/or restored, as well as the details of all restoration actions taken and measurements of success criteria. Table 3, of Appendix B, provides an outline of the timing of monitoring events and the corresponding performance standards to be evaluated.

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Following implementation of a mitigation project, compliance monitoring will be conducted on all protected and restored summer habitat. The following target metric values will be used to evaluate compliance:

- Tree density: 381 native trees/acre<sup>8</sup> or canopy cover > 60%
- Snag density: 5 snags with DBH > 7 in./acre
- Native understory composition: woody invasive species < 20% cover in the understory

Compliance monitoring for restored and protected habitat includes the following (USFWS 2012):

1. Initial confirmation that any restoration site was planted using an appropriate species mix, spacing and site preparation; and
2. After three years, monitoring to confirm a 70% survival rate of planted species, and again at seven years to confirm a minimum stand density of planted and volunteer native trees equal to at least 70% of the planted density; and
3. Monitoring every two (2) years for the life of the permit from aerial photographs (or a report from the land managing agency) confirming that mitigation requirements are being met (i.e., trees have been planted and survived), confirming no changed circumstance events have occurred, and identifying possible easement violations; and
4. Monitoring every seven (7) years for the life of the permit for invasive species. Should any invasive species that threaten the function of the mitigation for Indiana and northern long-eared bat habitat be present, they must be controlled to remove that threat within three years.

Should the sites fall below the target metric values, site maintenance will occur to return the site to the intended composition. Specific management actions will depend on site and stand conditions but will generally include one or many of the following: selective tree cutting, tree girdling, understory thinning, and invasive species removal. All mechanical control of vegetation will occur outside of the bat active season (November 1 to March 14). Selective cutting may be performed to thin areas with canopy coverage greater than 80% to allow foraging space and solar warming of roost trees, and in areas with canopy coverage between 70%-80% to improve foraging habitat quality and facilitate growth of preferred roost tree species, as specified by USFWS. Preferred roost tree species and trees showing suitable roosting characteristics such as hollow limbs, exfoliating bark, and cracks or crevices will be avoided during group and select cutting. Tree girdling may use girdling at tree base, girdling in the top third, and removal of the majority of branches, to provide potential roost trees at various conditions throughout the maternity cycle. The site will maintain at least 60% canopy cover at all times. Monitoring reports will be sent to USFWS every two years.

Each monitoring report will include, at a minimum, the following:

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<sup>8</sup> The planted density should be on 8x10 spacing, or 544 trees/acre. A 70% survival rate would result in a minimum tree density of 381 native trees/acre (USFWS 2012).

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- A site summary of the vegetation communities present, anything of note that occurred during the monitoring period, and information on whether or not the project(s) are meeting the performance standards described above.
- A discussion of invasive species present within the site(s), and if >20% at any site, mapping of locations and proposed treatment actions.
- Summary of any maintenance activities conducted during the monitoring period, and an outline of any maintenance activities anticipated during the following monitoring period.
- Photographs from permanent photo locations.

The monitoring work schedule is shown in Table 3 of Appendix B.

### Mitigation Funding

Sugar Creek Wind has entered into a Service Agreement with Magnolia to provide the mitigation for a cost of \$768,800. This is approximately \$7,589 per acre. Within 30 days following issuance of the ITP, Sugar Creek Wind will make a payment to Magnolia to facilitate the implementation of this mitigation plan during the term of the ITP. Magnolia shall provide financial assurances, either in the form of an escrow account or endowment fund, solely to fund the activities associated with long-term management of the sites, including travel, monitoring, invasive species management, and reporting.

#### 6.2.2.2 **Mitigation for Adaptive Management**

##### Basis for Mitigation Amount

As described in Section 5.4.2.4, the permitted level of take requested is 90 Indiana bats and 60 northern long-eared bats over the 30-year permit term, or 3 Indiana bats and 2 northern long-eared bats per year. Adaptive management, described in Section 6.4.1.1, will be used to increase the amount of mitigation if the actual take from the project is greater than the expected level of take (Section 5.4.2.3), up to the level of permitted take.

The USFWS models for the Indiana bat (USFWS 2016e) and northern long-eared bat (USFWS 2016f) were used to calculate the maximum amount of necessary mitigation (acres of protection of summer roosting and foraging habitat) for each species. This resulted in 223 acres for Indiana bats and 97 acres for northern long-eared bats (assuming a take of 2.25 female Indiana bats per year and 1 female northern long-eared bat per year). Utilizing a 10% stacking discount, mitigation requirements were calculated as follows:

$$\text{Mitigation} = 223 \text{ acres} + (97 \text{ acres} * 0.1) = 232.7 \text{ acres}$$

Protection of 101.3 acres of summer roosting and foraging habitat is already proposed to offset the anticipated level of take at the Project for Indiana bats and northern long-eared bats. If the level of take is actually higher at the project, up to an additional 131.4 acres of mitigation (232.7 acres minus 101.3 acres) may be needed to offset these impacts.

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### Implementation

If additional mitigation (up to 131.4 acres, as described above) is deemed necessary, Sugar Creek Wind will develop a mitigation implementation plan in consultation with the USFWS and a conservation entity. This implementation will set forth the schedule and sequencing for specific habitat enhancement activities to be undertaken under the HCP.

The goal of the mitigation project will be to contribute to the conservation of covered species by enhancing suitable habitat for the covered species. The following guidelines will be used to develop the mitigation plan:

- The proposed Project will substantially reduce the threats to covered species;
- The mitigation plan will describe the recovery objectives and include anticipated dates for achieving those objectives;
- The Project will consist of protection, enhancement and/or restoration activities that are not otherwise planned within the implementation area;
- The Project will incorporate quantifiable, scientifically valid standards that will demonstrate achievement of recovery objectives;
- The Project will provide benefits to the covered species for a minimum of 30 years by avoiding impacts associated with natural disasters, including disease, fires, blow downs, pests, and floods;
- The Project will be monitored and reported to ensure implementation and effectiveness; and
- The Project will be consistent with recovery plans or other pertinent scientific literature applicable to the Recovery Unit.

Monitoring and reporting and changed circumstances will follow the same general plan as described in Section 6.2.2.1. Sugar Creek will provide a parental guarantee to cover the adaptive management fund for mitigation.

The amount of mitigation needed will be determined based on what percentage of the permitted take is projected to be taken by the end of the Permit Term, as follows:

$$\begin{aligned} & \textit{Additional Mitigation Required} \\ & = \left[ \left( \frac{\textit{Projected Take}}{\textit{Permitted Take}} * 232.7 \textit{ acres} \right) - \textit{Acres of Mitigation Already Implemented} \right] \end{aligned}$$

This method would be applied to either the Indiana bat or northern long-eared bat, whichever species triggered the need for additional mitigation. If both species trigger the need for Additional Mitigation, the larger mitigation requirement will be used (i.e., whichever species requires more acres).

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**6.3 MORTALITY MONITORING AND REPORTING**

Post-construction monitoring for the covered species under the ITP will involve “Intense Monitoring”, “Annual Monitoring”, “Check-in Monitoring”, or “Adaptive Management Monitoring” during every year of operations as outlined in Table 6-1 below and detailed in Sections 6.3.1 through 6.3.5.

**Table 6-1. Summary of proposed monitoring protocols and schedule.**

Species	Monitoring Phase	Permit Year	Number of Turbines Searched	Search Interval	Search Period
Bats	Intensive	Years 1 – 3	57 roads and pads (100-meter radius)	Weekly	Apr 1 – Jul 31
			15 cleared plots (40-meter radius), 42 roads and pads	2x/week	Aug 1 – Oct 15
	Annual	Years 4 – 14 & 17 – 30	57 roads and pads (100-meter radius)	1x/week	Aug 1 – Oct 15
	Check-in	Years 15, 16	57 roads and pads (100-meter radius)	Weekly	Apr 1 – Jul 31
			15 cleared plots (40-meter radius), 42 roads and pads	2x/week	Aug 1 – Oct 15
	Adaptive Management	For the 2 years following any adaptive management response	Roads and pads (minimum of 6 turbines and up to 100% of turbines) determined based on response implemented	3x/week	Season triggered

The goal of the monitoring program is to verify that take levels of Indiana bats and northern long-eared bats are staying at or below permitted levels. An analysis of the post-construction monitoring protocols, and how they were developed using EofA, is described in Section 6.3.3.

**6.3.1 Background and Goals**

The detailed post-construction monitoring plan has been developed for the Project in coordination with the USFWS to provide a means of monitoring and ensuring compliance with the take numbers estimated in this HCP and authorized in the ITP and assessing the effectiveness of the HCP in meeting the biological objective of minimizing direct mortality to Indiana bats and northern long-eared bats set forth in Section 6.1 of this HCP. Included in the post-construction monitoring plan are standardized carcass searches, searcher efficiency trials, and carcass removal trials. The goals of the post-construction monitoring are to determine overall bat fatality rates from the Project, estimate Indiana and northern long-eared bat mortality at the species level, and evaluate the circumstances under which fatalities occur. Post-construction monitoring results will also provide triggers for adaptive management, as described in Section 6.4.

The post-construction monitoring plan will address all bat fatalities observed within the Permit Area. Based on the analysis provided in Section 5.0, Indiana bat and northern long-eared bat mortalities are expected to occur only rarely, if at all; therefore, the monitoring plan is designed using the USGS “Evidence of Absence” software to determine statistically whether Sugar Creek Wind has exceeded given thresholds for take of the Covered Species.

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### 6.3.2 Permits and Wildlife Handling Procedures

All necessary wildlife salvage/collection permits will be obtained from IDNR Division of Wildlife Resources and the USFWS to facilitate legal transport of injured animals and/or carcasses.

All bat carcasses found will be labeled with a unique number, individually bagged, and retained in a freezer at the Sugar Creek Wind O&M building until the annual report has been submitted to the USFWS (at a minimum). A copy of the original data sheet for each carcass will be placed in the bag with each frozen carcass. The carcasses may be used in searcher efficiency and carcass removal trials; however, mice purchased through a commercial source may be used as a surrogate. In the event that a carcass of an ESA- or state-listed species is found, Sugar Creek Wind will arrange to submit the carcass to the appropriate authorities. If an injured bat is found, the animal will be sent to a local wildlife rehabilitator, when possible. All bird carcasses will be identified in the field, if possible, and left in place. Digital photographs and location information of all bird carcasses will be taken and used for confirming identification when necessary.

### 6.3.3 Monitoring Protocols

Sugar Creek Wind used the USGS EofA Software to evaluate post-construction monitoring protocols. The following assumptions for bats were used:

- Exponential persistence distribution with a mean carcass persistence of 5 days
- Searcher efficiency ( $p$ ) of 0.50 on full plots and 0.90 on roads and pads
- Spatial coverage ( $a$ ) of 0.766 on full plots and 0.233 on roads and pads
- Factor by which searcher efficiency changes with each search ( $k$ ) of 0.65
- Temporal coverage ( $v$ ) of 1 (searches are being conducted during the entire period of risk)

Sugar Creek targeted an overall detection probability ( $g$ ), utilizing EofA and the above assumptions, of above 0.08 for spring monitoring and for annual monitoring during years 4-14 and 17-30, and a detection probability of above 0.20 for intensive monitoring during years 1-3 and check-in monitoring. Adaptive management monitoring targeted a detection probability above 0.10. The monitoring protocols that achieve these goals are summarized in Table 6-1, and the corresponding detection probabilities are summarized in Table 6-2.



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**Table 6-2. Predicted detection probability (g) for bats during each phase of monitoring at the Sugar Creek Wind Project.**

Monitoring Type and Years	Season (Dates)	Predicted Detection Probability (g)
Intensive Monitoring (Years 1–3)	Spring, Summer (Apr 1 to July 31)	0.114 (B <sub>a</sub> = 25.9745, B <sub>b</sub> = 201.7603)
	Fall (Aug 1 to Oct 15)	0.219 (B <sub>a</sub> = 98.0485, B <sub>b</sub> = 349.1677)
Annual Monitoring (Years 4–14 and 17-30 [57 roads and pads])	Fall (Aug 1 to Oct 15)	0.114 (B <sub>a</sub> =25.9745, B <sub>b</sub> = 201.7603)
Check-in Monitoring (Years 15 and 16)	Spring, Summer (Apr 1 to July 31)	0.114 (B <sub>a</sub> = 25.9745, B <sub>b</sub> = 201.7603)
	Fall (Aug 1 to Oct 15)	0.219 (B <sub>a</sub> = 98.0485, B <sub>b</sub> = 349.1677)
Adaptive Management (Years 1-30) as needed	Season Triggered	0.172* (B <sub>a</sub> = 239.0233, B <sub>b</sub> = 1151.733)

\*Assumes monitoring at 100% of turbines at risk.

### 6.3.4 Field Methods

#### 6.3.4.1 Post-construction Monitoring

##### 6.3.4.1.1 Standardized Carcass Searches

At 40-meter-radius cleared-plot turbines, seven transects will be spaced at approximately 16.4 feet intervals. Observers will walk at a rate of approximately 2 mph, scanning the ground for carcasses within 10 feet of each transects. The observer will start at one side of the circular plot and systematically search in a north/south or east/west direction, switching the search pattern on a weekly basis. At road/pad turbines, the observer will walk the access road starting at 312 feet from the turbine and walk toward the turbine, around the turbine, and back towards their vehicle searching the 16- foot-wide unvegetated road surface until the entire road/pad is searched.

Hull and Muir (2010) analyzed carcass finds and modeled the ballistics from turbines similar to those being used by the Project (312 feet in height) and showed that 99% of all bat carcasses were found within 218 feet of the turbine base. Therefore, Sugar Creek Wind will initially survey roads out to a conservative 312 feet from the turbine base to evaluate the area correction factor assumed in Section 6.3.3 and potentially adjust it to become a site-specific area adjustment factor used in estimating facility-wide fatality rates if results indicate adjustment is appropriate. Information on carcass distributions will be discussed with the USFWS and IDNR to determine how far from the turbine base future road and pad searches should be after the initial three years of intensive monitoring, or once enough carcasses have been collected to calculate an accurate site-specific area adjustment.

Carcass searches during intensive monitoring and check-in monitoring will be completed by qualified biologists, under applicable permits and experienced in completing fatality search methods, including proper handling and reporting of carcasses. Searchers will be familiar with and able to accurately identify

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bat species likely to be found in the Permit Area. Carcass searches during check-in monitoring will be completed by O&M staff trained in these methods, under applicable permits. Any unknown bats or suspected Indiana or northern long-eared bats discovered during fatality searches will be sent to a qualified USFWS-approved bat expert for positive identification, or DNA analysis will be completed.

For all carcasses found, data recorded will include:

- Date and time,
- Initial species identification,
- Sex, age, and reproductive condition (when possible),
- Global positioning system (GPS) location,
- Distance and bearing to turbine,
- Substrate/ground cover conditions,
- Condition (intact, scavenged),
- Any notes on presumed cause of death, and
- Wind speeds and direction and general weather conditions for nights preceding search.

A digital picture of each detected carcass will be taken before the carcass is handled and removed. Bird carcasses will be documented in place and not removed. As previously mentioned, all bat carcasses will be labeled with a unique number, bagged, and stored frozen as needed for future studies (with a copy of the original data sheet) at the project O&M building.

Bat carcasses found in non-search areas or time periods will be coded as “incidental finds” and documented in a similar fashion to those found during standard searches, to the extent possible. Maintenance personnel will be informed of the timing of standardized searches and, in the event that O&M personnel find a carcass or injured animal, these personnel will be trained on the collision event reporting protocol. Any carcasses found by maintenance personnel will also be considered incidental finds. Incidental finds will be included in survey summary totals but will not be included in the corrected mortality estimates because the lack of standardized search effort and search area, as well as the lack of searcher efficiency and carcass removal trials, prohibits calculations to account for bias and extrapolate incidental carcasses found to estimated fatalities.

### 6.3.4.1.2 Searcher Efficiency and Carcass Removal Trials

To assess carcass persistence, approximately 40 bat carcasses will be randomly placed within survey areas at varying times during the intensive monitoring, annual monitoring, and check-in monitoring periods. Sugar Creek Wind and its contractors will rely on contacts with veterinary labs and universities that can provide bat carcasses and/or use of bat carcasses collected on-site during monitoring studies; however, in the event that 40 are not available, brown mice or small black rats will be used as surrogates for bat carcasses. The carcasses will be placed on a minimum of two dates during each season, thereby spreading the trials throughout the survey period to incorporate the effects of varying weather, climatic and vegetation conditions, and scavenger types and densities. Carcasses will be dropped from waist high or higher and allowed to land in a random posture. Each trial carcass will be discreetly marked (with tape or thread) prior to placement so that it can be identified as a study carcass if it is found by observers or wind facility personnel or moved by a scavenger.

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Observers completing carcass searches will monitor the trial bats over a 30-day period according to the following schedule as closely as possible. Carcasses will be checked every day for the first 7 days, and then on days 10, 14, 20, and 30. This schedule may vary slightly depending on weather and coordination with the other survey work. At each visit, the observer will note the condition of the carcass (e.g., intact, scavenged, complete). Trial carcasses will be left at the location until the end of the 30-day trial or until the carcass is removed entirely by scavengers. After 30 days, any remaining evidence of the carcasses will be removed.

Searcher efficiency trials will be completed concurrent with scavenger trials, using the same test subjects as used in carcass persistence trials. Searchers will be unaware of the placement of the test subjects done on the morning of turbine searches. Test subjects will be checked after searcher efficiency trials to ensure the subjects were present at the time of the trial. These carcass removal and searcher efficiency trials will be used to adjust estimates of bat fatalities using contemporary equations for estimating fatality.

### 6.3.4.1.3 Statistical Methods for Estimating Overall Bat Fatality Rates

The proposed methodology for estimating overall bat fatality rates (other than covered species) largely follows the estimator proposed by Erickson et al. (2003), as modified by Young et al. (2009), which is also comparable to the Shoenfeld (2004) estimator; however, if more appropriate estimators are available at the time the monitoring work is completed, such as Huso (2011), or others to be developed in the future, they will be used if agreed upon with the USFWS.

The proposed estimation technique follows Erickson et al. (2003), in which the estimate of the total number of wind turbine-related casualties will be based on four components: (1) observed number of casualties, (2) searcher efficiency, (3) scavenger removal rates, and (4) estimated percent of casualties that likely fall in non-searched areas, based on percent of area searched around each turbine. Variance and 90% confidence intervals will be calculated using bootstrapping methods (Erickson et al. 2003 and Manly 1997 as presented in Young et al. 2009).

### 6.3.4.1.4 Mean Number of Observed Casualties (c)

The estimated mean observed number of bat casualties (c) per turbine per study period will be calculated as:

$$c = \frac{\sum_{j=1}^n c_j}{n}$$

where n is the number of turbines searched, and  $c_j$  is the number of casualties found at a turbine.

Incidental mortalities (those found outside of the searched area or by O&M personnel) will not be included in this calculation, nor in the estimated fatality rate.

### 6.3.4.1.5 Estimation of Searcher Efficiency Rate (p)

Searcher efficiency (p) will represent the average probability that a carcass was detected by searchers. The searcher efficiency rates will be calculated by dividing the number of trial carcasses observers found

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by the total number that remained available during the trial (non-scavenged). Searcher efficiency will be calculated for each season and for all search methods (i.e., roads and pads, full plots).

### 6.3.4.1.6 Estimation of Carcass Removal Rate (t)

Carcass removal rates will be estimated to adjust the observed number of casualties to account for scavenger activity at the Permit Area. Mean carcass removal time (t) will represent the average length of time a planted carcass remained at the Permit Area before it was removed by scavengers. Mean carcass removal time will be calculated as:

$$t = \frac{\sum_{i=1}^S t_i}{s - s_c}$$

where s is the number of carcasses placed in the carcass removal trials and  $s_c$  is the number of carcasses censored. This estimator is the maximum likelihood (conservative) estimator assuming the removal times follow an exponential distribution and there is right-censoring of the data. Any trial carcasses still remaining at 30 days will be collected, yielding censored observations at 30 days. If all trial carcasses are removed before the end of the search period, then  $s_c$  will be zero, and the carcass removal rate will be calculated as the arithmetic average of the removal times. Carcass removal rate will be calculated for each season and for all search methods (i.e., roads and pads, full plots).

### 6.3.4.1.7 Search Area Adjustment

Approximation of A, the adjustment for areas that were not searched, will be adapted from the Erickson et al. (2003) estimator, as modified by Young et al. (2009), to accommodate differences in carcass search study design. For the Project fatality estimates, A will represent the adjustment for the proportion of carcasses that likely fell outside of the area searched. The value for A will be approximated using the following formula, or a variation thereof:

$$A = \frac{\left(\frac{C_{RP}}{P_{RP} * S_{RP}}\right) + \left(\frac{C_{FP}}{P_{FP} * S_{FP}}\right)}{\left(\frac{C_{RP}}{P_{RP}}\right) + \left(\frac{C_{FP}}{P_{FP}}\right)}$$

where CRP is the number of observed casualties on roads and pads, CFP is the number of observed casualties on full plots, PRP is the searcher efficiency on roads and pads, PFP is the searcher efficiency on full plots, SRP is the proportion of roads and pads searched across all study turbines, and SFP is the proportion of full plots searched across all study turbines. For the annual monitoring, area adjustments for roads and pads will utilize the most recent area adjustments calculated for the Project (i.e., in years 4-14 the area adjustment factors from intensive monitoring and spring monitoring will be utilized, in years 17-30 the area adjustment factors from check-in monitoring will be utilized).

To adjust for the carcasses that fall outside of the 40-meter full plots, a distance-based carcass density model for carcasses found on the roads and pads will be used to calculate a site-specific area adjustment (Huso and Dalthorp et al. 2014). This will use data from the first 3 years of intensive monitoring, when roads and pads are searched out to 312 feet.

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### 6.3.4.1.8 Estimation of the Probability of Carcass Availability and Detection ( $\pi$ )

Searcher efficiency and carcass removal rates will be combined to represent the overall probability ( $\pi$ ) that a casualty incurred at a turbine would be reflected in the post-construction mortality study results. This probability will be calculated as:

$$\pi = \frac{t \cdot p}{I} \cdot \left[ \frac{\exp(I/t) - 1}{\exp(I/t) - 1 + p} \right]$$

where I is the interval between searches. For this study, I=3.5 for intensive monitoring carcass searches and I=7 for annual monitoring, check-in monitoring, and spring monitoring carcass searches.

### 6.3.4.1.9 Estimation of Facility-Related Mortality (m)

Mortality estimates will be calculated using the estimator proposed by Erickson et al. (2003), as modified by Young et al. (2009), or others as discussed in Section 6.3.4.1.3 above. The estimated mean number of casualties/turbine/study period (m) will be calculated by dividing the estimated mean observed number of casualties/turbine/study period (c) by  $\pi$ , an estimate of the probability a carcass was not removed and was detected, and then multiplying by A, the adjustment for the area within the search plots which was not searched:

$$m = A \cdot \frac{c}{\pi}$$

## 6.3.5 Data Analysis, Reporting, and Consultation

### 6.3.5.1 Data Analysis

The tools in the EofA software (Dalthorp et al. 2017) will be used to estimate bat fatality rates ( $\lambda$ ) and cumulative bat fatalities ( $M^*$ ). More specifically, the average annual fatality rate, short term rate, projection of future mortality, and total mortality estimate tools in the Multiple Years Module will be used. Because incidental finds cannot be corrected for search effort, they will not be used to calculate take estimates for compliance except if the number of incidental finds in any given year exceeds the permitted take rate.

The results of fatality estimation will be analyzed throughout the permit period, and the most scientifically defensible approach will be utilized to determine if adaptive management (see Section 6.4) is triggered in coordination with the USFWS. As appropriate, and if necessary, Sugar Creek Wind and the USFWS will meet and discuss available data and attempt to informally resolve any disagreements regarding the need for adaptive management, with the USFWS making the final determination.

### 6.3.5.2 Reporting

Sugar Creek Wind will provide an annual mortality monitoring report to the USFWS by March 1 of each year of the permit, summarizing the results of post-construction monitoring occurring during the prior calendar year. The report will include fatality estimates, data summaries, and assessment of correlations between fatality rates and potentially influential variables, such as weather, location, turbine operation, etc.

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Overall fatalities of covered species will be expressed both in terms of fatalities/turbine/season and in terms of fatalities/MW/season, as recommended by the USFWS's Land based Wind Energy Guidelines (USFWS 2012e) to facilitate comparison with other studies, as well as facility-wide estimates for use in evaluating permit compliance and Adaptive Management thresholds.

The reports will include all data analyses, including correlation analyses and overall fatality estimates, and a discussion of monitoring results and their implications.

In addition to the mortality monitoring reports, Sugar Creek Wind will notify the USFWS within 48 hours of positive covered species identification (or if a suspect carcass is found) to evaluate available data concerning the discovery, potential cause of the fatality, and appropriate adaptive management actions if necessary.

### **6.4 ADAPTIVE MANAGEMENT**

Adaptive management is a process through which Sugar Creek Wind can modify operational protocols outlined in this HCP to reflect new information or changing conditions in order to minimize take and ensure conservation of the covered species, while minimizing effects on the operation of the Project. The HCP handbook (USFWS and NMFS 2016) defines adaptive management as "a method for examining alternative strategies for meeting measurable biological goals and objectives, and then, if necessary, adjusting future conservation management actions according to what is learned." The purpose of adaptive management is to ensure that take levels do not exceed the limits predicted in the HCP and authorized in the ITP. Therefore, the adaptive management framework is designed to trigger additional minimization or mitigation measures if cumulative annual take is on pace to exceed the ITP limits or to ensure that the impacts of the take have been fully offset. An appropriate adaptive management framework also allows for reduced minimization following adaptive management changes if the annual take is predicted to be less than the ITP limits, indicating that reduced minimization back to baseline measures would maintain take below the ITP limits.

Sugar Creek Wind will use adaptive management to minimize take associated with the operation of the Project and to promote the long-term survival of covered species. Impacts will be analyzed using the best available science at that time, including scientific advancements made since issuance of the ITP. Analysis may include items such as the timing of fatalities, location of fatalities, and other circumstances (e.g., weather), as well as the actual take estimate. In addition to the conservation measures proposed below, additional conservation measures may be implemented if research suggests that they may be successful in reducing the level of take at the Project.

Adaptive management will allow Sugar Creek Wind to minimize the uncertainty associated with gaps in scientific information or biological requirements. Information used in the adaptive management process will come from the post-construction mortality monitoring activities described in Section 6.3. Monitoring data will be analyzed to determine if the objectives of this HCP are being met. If the conservation measures are not producing the desired results, adjustments will be made to the HCP as necessary and in consultation with the USFWS to achieve the biological objectives of this HCP.

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### 6.4.1 Adaptive Management Triggers and Responses

If no covered species are observed, the estimated total bat mortality will be evaluated to determine the estimated take of both covered species (see Section 6.3 for methodology), and these estimates will be evaluated to determine whether it is in compliance with the ITP.

Sugar Creek Wind will utilize EofA and the results of post-construction monitoring at the end of each monitoring year to evaluate whether adaptive management has been triggered starting after year three of post-ITP issuance operations. Sugar Creek Wind will utilize the “Multiple Years Module” within the EofA program to evaluate the average annual fatality rate ( $\lambda$ ) and to estimate the total fatalities (M) for Indiana bats and northern long-eared bats.

The average annual fatality rate ( $\lambda$ ) will be calculated in EofA at the end of each monitoring year and will incorporate the current year’s data and data from all previous years of monitoring, unless a cut-in speed adjustment had been made previously (i.e., if adaptive management had previously been triggered, years at a different cut-in speed would not be included in the annual rate as it is anticipated that a change in cut-in speed would change the annual rate). The total fatalities (M) will be calculated in EofA at the end of each monitoring year and will incorporate the current year’s data and data from all previous years of monitoring, regardless of whether any cut-in speed adjustments had been made previously.

In order to account for the annual variability of take, to avoid making decisions based on an annual outlier result, and given the rarity of incidental take, the adaptive management triggers are based on a combination of a three-year estimation term and average fatality rates over completed permit years in the EofA approach. The three-year assessment period accounts for annual variability and helps ensure that decisions are made based on the expected normal conditions at the Project. In addition, it also identifies if changes in the trend in mortality are occurring over time, for example increasing or decreasing, that a single year estimate would not account for. In this manner, decisions are made at an appropriate time scale, while still allowing Sugar Creek Wind sufficient time over the permit term to make adjustments to the minimization measures to maintain permit compliance.

#### 6.4.1.1 Bats

Sugar Creek’s covered bat species adaptive management protocol (Table 6-3) will inform increases in mitigation if take is projected to exceed estimated and already mitigated levels and changes to operational parameters, if needed, to ensure Sugar Creek stays within the permitted take. Accordingly, Sugar Creek has established adaptive management triggers and responses that would require increased mitigation or require operational adjustments, or both, if the rate of take is greater than the rate of permitted take (see Section 5.4.2.4). For bats, three adaptive management triggers will be used (and are summarized in Table 6-3 below):

- **Short-term Trigger:** is the annual average take rate ( $\lambda$ ) larger than expected?
  - First level:
    - Yes, if the annual take of Indiana bats was between 1.3 per year and 3 per year or if the annual take of northern long-eared bats was between 0.9 per year and 2 per year.

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- No, if the annual take of Indiana bats was equal to or less than 1.3 per year and the annual take of northern long-eared bats was equal to or less than 0.9 per year.
  - Second level:
    - Yes, if the annual take of Indiana bats was greater than 3.0 per year or if the annual take of northern long-eared bats was greater than 2.0 per year.
    - No, if the annual take of Indiana bats was equal to or less than 3.0 per year and the annual take of northern long-eared bats was equal to or less than 2.0 per year.
- Reversion Trigger: is the annual average take rate ( $\lambda$ ) small enough to safely reverse an existing operational constraint?
  - Yes, if the annual take of Indiana bats was less than 50% of the anticipated take (0.65 Indiana bat per year) and the annual take of northern long-eared bats was less than 50% of the anticipated take (0.45 northern long-eared bat per year).
  - No, if the annual take of Indiana bats was greater than 0.65 per year or if the annual take of northern long-eared bats was greater than 0.45 per year.
- Long-term Trigger: does the cumulative take (M) exceed the long-term authorized amount?
  - Yes, if the cumulative take of Indiana bats was 90 or more, or if the cumulative take of northern long-eared bats was 60 or more.
  - No, if the cumulative take of Indiana bats was less than 90 and the cumulative take of northern long-eared bats was less than 60.



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**Table 6-3. Summary of proposed adaptive management triggers and responses for**

**Indiana bats and northern long-eared bats. Triggers are based on the cumulative estimated mortality (M) and the cumulative annual fatality rate (λ).**

Trigger		Confidence Level (EofA)	Operational Response
No Trigger	The average annual take rate and the projected take over the 30-year permit term is at or below the Predicted Take	$\lambda_{IBAT} \leq 1.3$ and $\lambda_{NLEB} \leq 0.9$  AND  $M \leq 39$ IBAT and $M \leq 27$ NLEB	No changes, continue implementing the minimization (Section 6.2.1) and mitigation (Section 6.2.2) measures outlined in the HCP (and summarized below): <ul style="list-style-type: none"> <li>• Fall cut in speed of 5.0 m/s</li> <li>• Spring, summer, and late fall cut-in speed of 3.0 m/s</li> <li>• Mitigation of 101.3 acres</li> </ul>
Short-term Trigger	First Level:  The average annual take rate is between the Predicted and the Permitted Take, and projected take over the 30-year permit term is between the Predicted and the Permitted Take	$1.3 < \lambda_{IBAT} < 3.0$ or $0.9 < \lambda_{NLEB} < 2.0$  AND  $39 \text{ IBAT} \leq M_{\text{Projected}} \leq 90 \text{ IBAT}$ or $27 \text{ NLEB} \leq M_{\text{Projected}} \leq 60 \text{ NLEB}$	Increase mitigation to account for the higher level of take (if take is projected to exceed estimated take and already mitigated levels). This will need to occur prior to take exceeding cumulative levels (based on projected take)  AND  Repeat Intensive Monitoring for 2 years (if deploying technology or changing cut-in speed)  In addition, Sugar Creek Wind may choose to implement one or more of the following:  Deploy additional technology (e.g., deterrent technology, smart curtailment, or other such technologies as they become proven and available)

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				<p>OR</p> <p>Raise cut-in speeds by 0.5 m/s, or at some level thought to be able to decrease take by the necessary amount. Depending on the timing of bat fatalities, this may be applied during a concentrated period or in a part of the project if all listed bats are found within a specific time period or area of the Project.</p>
	<p>Second Level:</p> <p>The average annual take rate is above the Permitted Take, and projected take over the 30-year permit term is above the Permitted take</p>	<p><math>\lambda_{IBAT} \geq 3.0</math> or <math>\lambda_{NLEB} \geq 2.0</math></p> <p>AND</p> <p><math>M_{Projected} \geq 90</math> IBAT or <math>M_{Projected} \geq 60</math> NLEB</p>	<p><math>\alpha = 0.1</math> for <math>\lambda</math> <math>\alpha = 0.5</math> for M</p>	<p>Increase mitigation to account for the higher level of take (if needed)</p> <p>AND</p> <p>Repeat Intensive Monitoring for 2 years (if deploying technology or changing cut-in speed)</p> <p>AND EITHER</p> <p>Deploy additional technology (e.g., deterrent technology, smart curtailment, or other such technologies as they become proven and available)</p> <p>OR</p> <p>Raise cut-in speeds by 0.5 m/s. Depending on the timing of bat fatalities, may be applied during a concentrated period or part of the project if all listed bats are found within a specific time period or area of the Project.</p>
Reversion Trigger	<p>The average annual take rate is below 50% of the Predicted Take, and projected take over the 30-year permit term is below the Predicted Take.</p>	<p><math>\lambda &lt; 0.65</math> IBAT and <math>\lambda &lt; 0.45</math> NLEB</p> <p>AND</p> <p><math>M_{Projected} &lt; 39</math> IBAT and <math>M_{Projected} &lt; 27</math> NLEB</p>	<p><math>\alpha = 0.01</math> for <math>\lambda</math> <math>\alpha = 0.5</math> for M</p>	<p>Lower cut-in speeds by 0.5 m/s at all or a subset of turbines. This may be applied during a concentrated period or periods or part of the Project determined by the monitoring as lower risk (no listed bats found).</p> <p>AND</p> <p>Repeat Intensive Monitoring for 3 years</p>

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Long-term Trigger	The actual calculated take to-date exceeds the Permitted Take.	M ≥ 90 IBAT or M ≥ 60 NLEB	$\alpha = 0.5$	Raise cut-in speeds to 6.9 m/s during identified period of risk.
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If an adaptive management trigger is met and an operational response implemented, Sugar Creek Wind will implement adaptive management monitoring the following two years to ensure that take is remaining within permitted levels.

### **6.4.2 Reporting and Notification**

Sugar Creek Wind shall provide written notification to the USFWS prior to the implementation of any adaptive management response measures set forth in this section. Annual mortality monitoring reports submitted in accordance with Section 6.3 of this HCP shall include a discussion of the effectiveness of the measures implemented.

## **7.0 IMPLEMENTATION AND FUNDING ASSURANCES**

### **7.1 PLAN IMPLEMENTATION**

The HCP is a mandatory element of the permit application and its implementation will be a condition of the permit. The HCP is designed to be self-implementing, providing the requirements for covered activities, as well as required avoidance, minimization, and mitigation measures.

The applicant requests the benefits of the Federal No Surprises Rule, 63 Fed. Reg. 8859 (Feb. 23, 1998) (codified at 50 C.F.R. §§ 17.3, 17.22(b)(5), 17.32(b)(5)). It generally provides assurances to section 10 permit holders that, as long as the permittee is properly implementing the HCP and the ITP, no additional commitment of land, water, or financial compensation will be required with respect to covered species, and no restrictions on the use of land, water, or other natural resources will be imposed beyond those specified in the HCP without the consent of the permittee. The “No Surprises” Rule has two major components: changed circumstances and unforeseen circumstances.

### **7.2 CHANGED CIRCUMSTANCES**

The term “changed circumstances” means changes in circumstances affecting a species or geographic area covered by an HCP that can reasonably be anticipated and that can be planned for (e.g., the listing of new species or a fire or other natural catastrophic event in areas prone to such events).

As discussed in Section 9.6 of the HCP Handbook (USFWS and NMFS 2016) with respect to foreseeable changed circumstances, the HCP should discuss measures developed by the applicant to meet such changes over time, possibly by incorporating adaptive management measures for covered species in the HCP. HCP planners should identify potential problems in advance and identify specific strategies or protocols in the HCP for dealing with them, so that adjustments can be made as necessary without having to amend the HCP. Sugar Creek Wind has identified impacts of WNS on covered species, elevated annual take due to changing environmental conditions, the listing of new species, and changed technologies/techniques as foreseeable changed circumstances warranting consideration in this HCP.

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### 7.2.1 Impacts of WNS on Covered Species

The occurrence of WNS and population declines constitute foreseeable changed circumstances that warrant consideration in this HCP. WNS has been confirmed in the Indiana bat OCRU; however, it is difficult to predict at this time what the long-term effects of the disease will be on the covered species.

By establishing a biological objective to reduce *Myotis* fatalities by turbine operational restrictions and by lowering its take estimate over the permit term (see Section 6.2.1), Sugar Creek Wind anticipates that incidental take will not constitute a material negative effect to the population declines that are already occurring due to WNS impacts (i.e., the WNS response has been incorporated into the development of the plan through the biological objectives and the take assessment). Given the uncertainty surrounding WNS and its effects on local bat populations, however, WNS is acknowledged as a changed circumstance that might require an additional response.

**Trigger:** The changed circumstance trigger for the covered species is a 70% or greater reduction in the Indiana bat OCRU or northern long-eared bat local population based on USFWS data after 2015. Seventy percent is the approximate population reduction for Indiana bats in the NERU from 2007-2011, the period that reflects declining populations from WNS effects for that recovery unit (based on best scientific data currently available). That recovery unit has been experiencing effects from WNS since 2006, and we anticipate other recovery units will follow the same trend as WNS continues to spread. This trend is incorporated into the Indiana bat population model being used by USFWS in its biological opinion to analyze effects of the Sugar Creek Wind ITP on the Indiana bat. If, however, at any time the Indiana bat OCRU or local population of northern long-eared bat decreases by 70% or greater than the 2015 level, this will constitute a changed circumstance, as a key assumption of the Indiana bat population model will have been violated.

**Response:** Upon receipt of the biennial population estimates for the OCRU or northern long-eared bat population, the USFWS will immediately evaluate whether this trigger has been met and will inform Sugar Creek Wind if that is the case. In the event that the WNS changed circumstance has been triggered, Sugar Creek Wind will complete an analysis, in coordination with the USFWS, to determine whether the level of Indiana bat take at the Project is having a material negative effect (after accounting for benefits of mitigation) to the remaining Indiana bat populations in the OCRU or northern long-eared bat population. If the analysis demonstrates that a 35% take reduction is no longer sufficient to prevent material negative effects with the declining population, Sugar Creek Wind will implement additional operational restrictions or minimization measures by the next bat spring emergence season (April). These additional measures will be determined through consultation with the USFWS, which will determine what level of take reduction prevents material negative effects. A written plan will be provided by Sugar Creek Wind to the USFWS by December 31 of the same year as the 70% population decrease, with formal concurrence reached by February 1 of the following year. In addition, the effectiveness of these additional measures will be evaluated by additional monitoring, which will be detailed in the written plan.

Examples of different turbine operational protocols that will be considered include changes in the turbine cut-in speed; changes in timing of turbine operating regimes (if timing of Indiana bat or northern long-eared bat fatalities suggests a specific period when these species are at greatest risk); selected turbine curtailment (if evidence indicates specific turbines are causing significantly greater mortality of bats); making operational

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adjustments based in part on other environmental factors such as temperature; and deployment and testing of bat deterrent technology if suitable technology is available.

### 7.2.2 Listing of New Species

As a result of current population declines due primarily to WNS, other bat species may become listed under the ESA as threatened or endangered during the ITP term.

**Trigger:** The USFWS publishes a final rule to list under the ESA any bat species that occurs within the Permit Area and is reasonably certain to experience take from the Project but is not covered by the HCP.

**Response:** In the event of any future listing of bats or other species as threatened or endangered, Sugar Creek Wind will confer with the USFWS over the need to pursue an amendment to the HCP and ITP. In the event of a future candidate species designation, Sugar Creek Wind will similarly confer with the USFWS over the need to pursue an amendment of this HCP to include these as covered species and incorporate appropriate conservation measures.

Populations of cave-dwelling bats in the eastern and central U.S. may be declining due to WNS or other factors. In particular, the little brown bat has experienced declines in recent years due to a variety of factors.

This species and others may occur in the Permit Area. If one or more of these species become listed during the permit term, Sugar Creek Wind will comply with the ESA, and Sugar Creek Wind may seek to include such newly listed species as covered species in the ITP via a permit amendment.

### 7.2.3 Changed Technology/Techniques

**Trigger:** The Applicant notifies the USFWS of the intent to utilize alternative monitoring, mortality estimation, or minimization methods that have been demonstrated, based on the best available science, to be as effective as, or more effective than, the methods described in this HCP and available at equal or lower cost. New methods and technologies will only be considered if the methods have been demonstrated to be at least as effective as the methods in this HCP, are considered the best available science, will not require an increase in the take authorization for the Project, and are approved by the USFWS.

**Response:** The Applicant will work with the USFWS to ensure that any new methods or technologies that are used are compatible with the Biological Goal and Objectives and expected take rate in this HCP.

Over the 30-year life of the permit, it is reasonably foreseeable that advances in wind turbine technology and techniques to avoid or minimize the mortality of bats will be made. This could include items such as bat deterrents, increased knowledge of the relationship between weather conditions and fatalities, and turbine design changes, as well as other advancements. These examples are described in detail below.

The use of acoustic deterrents for reducing bat mortality at wind turbines is currently being studied; however, this technology is currently not available on a large scale for use in wind energy facilities. Over time, other techniques that otherwise deter bats from collisions with turbines may prove effective in reducing bat mortality (e.g., changes in turbine colors, habitat modifications, etc.). Sugar Creek Wind may implement bat deterrents if the technique is proven and cost effective, meets the biological goals of this HCP, and is approved by USFWS.

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A growing body of evidence suggests that bat activity is low at low temperatures and particularly that nightly Indiana bat activity is correlated with temperature (USFWS 2007). Several studies have shown that bats and their prey become constrained by falling temperatures as autumn progresses (USFWS 2007). USFWS guidance states that mist-netting is unlikely to be successful when ambient temperatures are below 50° F due to a sharp decrease in bat activity (USFWS 2007). This temperature is also understood to be the general threshold for hibernation by Indiana bats (USFWS 2007).

A study of the relationship between weather conditions and bat mortality at the Fowler Ridge wind energy facility in Indiana found that bat casualty rates were highest on nights with higher mean temperature and increasing variance in temperature (Good et al. 2011). Specifically, 91% of all bat fatalities during the fall migration period occurred on nights with mean nightly temperatures above 68° F. Regression analysis indicated that bat mortalities increased by 15% for every 1.8° F increase in average nightly temperature at the Fowler site (Good et al. 2011). These data indicate that it may be possible to allow greater turbine operation at temperatures below 50° F (10° C), or other temperature to be determined based on future research, to avoid risk to Indiana bats and greatly reduce risk to all bats in general. Sugar Creek Wind may implement greater turbine operations at lower temperatures; if approved by the USFWS, this technique is proven, cost effective, and meets the biological goals of this HCP.

Changes in turbine configuration, technology such as new turbine and/or blade designs, or automated changes in turbine operation triggered by monitoring parameters correlated to high risk to bats (such as weather variables or detection of high bat activity near the turbines) may also prove useful in reducing bat mortality at wind turbines. If new techniques or technology become available that are feasible to implement, cost less to implement than the currently proposed minimization measures, and meet the biological objectives of the HCP, Sugar Creek Wind will evaluate whether to replace the measures detailed in the HCP. Although some technologies may be cost-effective, other factors may render them infeasible (e.g., topography, site constraints, safety, legal constraints). Additionally, although some measures may cost less to implement, timing may play a factor in whether such technologies are cost-effective to implement (i.e., it may not be financially prudent to change approaches in the latter years of the permit, especially if recorded take is negligible).

Any changes in techniques or technologies will only be considered if they have been demonstrated in an acceptable scientifically-based study and have been approved by the USFWS as the best available science, compliant with the HCP biological goals and objectives, and will not require an increase in the take authorized for the Project.

### **7.3 UNFORESEEN CIRCUMSTANCES**

Unforeseen circumstances are defined as changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers and the USFWS at the time of the negotiation and development of the plan and that result in a substantial and adverse change in the status of the covered species (50 C.F.R. § 17.3).

The USFWS bears the burden of demonstrating that unforeseen circumstances exist using the best available scientific and commercial data available while considering certain factors (50 C.F.R. §§ 17.22(b)(5)(iii)(C)). In deciding whether unforeseen circumstances exist, the USFWS will consider, but not be limited to, the following factors (50 C.F.R. §§ 17.22(b)(5)(iii)(C)):

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1. The size of the current range of the affected species;
2. The percentage of range adversely affected by the HCP;
3. The percentage of range conserved by the HCP;
4. The ecological significance of that portion of the range affected by the HCP;
5. The level of knowledge about the affected species and the degree of specificity of the species conservation program under the HCP; and
6. Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

In negotiating unforeseen circumstances, the USFWS will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the species covered by the HCP without the consent of the permittee (50 C.F.R. §§ 17.22(b)(5)(iii)(A)). If additional conservation and mitigation measures are deemed necessary to respond to unforeseen circumstances, the USFWS may require additional measures of the permittee where the HCP is being properly implemented only if such measures are limited to modifications within conserved habitat areas, if any, or to the HCP's operating conservation program for the affected species, and maintain the original terms of the plan to the maximum extent possible (50 C.F.R. §§ 17.22(b)(5)(iii)(B)). Additional conservation and mitigation measures will not involve the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the conservation plan without the consent of the permittee. Notwithstanding these assurances, nothing in the No Surprises Rule "will be construed to limit or constrain the USFWS, any federal agency, or a private entity, from taking additional actions, at its own expense, to protect or conserve a species included in a conservation plan" (50 C.F.R. §§ 17.22(b)(6)).

## 7.4 IMPLEMENTATION COSTS AND FUNDING ASSURANCES

The ESA implementing regulations provide that an applicant for an ITP must establish that sufficient funding will be available to implement the HCP, including the requirements to monitor, minimize, and mitigate the impacts from the taking. If Sugar Creek Wind obtains an ITP from the USFWS, Sugar Creek Wind agrees to guarantee all funding obligations, under the ITP and this HCP. Unless otherwise noted, all amounts described in this chapter are based on 2020 dollars and are therefore required to be adjusted annually for inflation in the future.

Measures requiring funding in an HCP typically include on-site measures during project implementation or construction (e.g., monitoring, surveys, research), as well as on-site and off-site measures required after completion of the Project or activity (e.g., revegetation of disturbed areas and acquisition of mitigation lands). For relatively small to medium-size projects involving only one or two applicants, the funding source is usually the permittee, and funding is provided immediately before project activities commence, immediately after, or in stages.

The estimated post-construction costs for Years 1-30 of the ITP, including the intensive monitoring effort, spring monitoring, check-in monitoring, annual monitoring, mowing, and reporting (see Table 7-1 for details) was determined based on quotes received from a Request For Proposal (RFP) issued on March 6<sup>th</sup>, 2020. Since then, we have received quotes from four reputable environmental consulting companies. The amount provided in Table 7-1 is an estimated average from our top three bidders. An executed contract by March 1 of



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each year will be provided the USFW. The amount of the financial assurance may be reduced over time commensurate with remaining financial obligations in the HCP by mutual agreement of the parties.

The HCP and all of the obligations contained herein shall be binding on and shall inure to the benefit of the parties hereto and their respective successors and assigns.

**Table 7-1. Funding assurances budget.**

(Note: All costs are based on 2020 dollars, and then adjusted for inflation using a 3% inflation rate per year.)  
*Estimated Cost*

Task		Per year	Total (adjusted for inflation where applicable)	Funding Source and timing of Funding	Major Assumptions/Cost Basis
Intensive bat monitoring Years 1-3		\$65,000	\$200,909 (3 years total)	Annual operating budget. Will provide USFWS with signed contract by March 1 of each year.	Fall searches include 15 full plot turbines and 42 roads and pads, searches twice per week.  Spring and summer searches include weekly searches of 57 roads and pads.
Annual bat monitoring Years 4-14 & 17-30		\$40,000	\$1,656,558 (25 years total)	Annual operating budget. Will provide USFWS with signed contract by March 1 of each year.	Once weekly searches of 57 roads and pads during the fall (Aug 1 – October 15).
Check-in bat monitoring Years 15-16 (fall and spring/summer periods)		\$70,000	\$214,939 (2 years total)	Annual operating budget.	Weekly monitoring of roads and pads during the spring and summer, and twice weekly monitoring of 15 cleared plots and 42 roads and pads during the fall season
Vegetation clearing for full plots		\$60,000	\$369,687 (5 years total)	Annual operating budget.	15 full plots in the fall for years 1-3 and 15-16
Bat mitigation	Initial	N/A	\$768,800	Redacted and executed Mitigation Agreement with Service Provider	101.3 acres, \$7,589 per acre

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Task		Per year	Total (adjusted for inflation where applicable)	Funding Source and timing of Funding	Major Assumptions/Cost Basis
	Mitigation True-up (adaptive management)	N/A	\$997,195	Parental Guarantee within 90 days of permit issuance	131.4 acres of additional bat mitigation (at \$7,589 per acre)
	Changed Circumstances Fund	N/A	\$64,370	Parental Guarantee within 30 days of permit issuance	Cost to restore 50% (50.65 acres, \$1,000 per acre) of initial bat mitigation one time.  Plus, \$11,000 for adaptive management \$2,720 for additional monitoring
Changed Circumstances Fund		N/A	N/A	Annual operating budget	No out-of-pocket expenses requiring funding assurances.
Contingency Fund		\$3,250	\$3,250	Annual operating Budget.	5% of year 1's post-construction monitoring cost (~\$65,000)

**7.4.1 Minimization Measures**

Minimization measures implemented at the Project will consist of implementing a cut-in speed (3.0 m/s from March 15 through July 31, 5.0 m/s from August 1 through October 15, and 3.0 from October 16 through November 15) from sunset to sunrise when the air temperature is above 50°F, and a cut-in speed of 3.0 m/s from March 15 through November 15 when temperatures are between 40°F and 50°F (in accordance with operational needs). This increase in cut-in speed will reduce the annual energy production at the Project, which effects the economic viability of the Project. However, this is not an out-of-pocket expense, and the economic models have been adjusted to account for these losses.

All other minimization measures (i.e., underground collector lines, interconnecting to an existing grid, etc.) have already been incorporated into the project design and financials and will not increase out-of-pocket expenses to Sugar Creek Wind.

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### 7.4.2 Monitoring

Post-construction monitoring will be conducted annually for the 30-year permit term, as described in Section 6.3 of this HCP. Costs of mortality monitoring will be self-funded through the annual operating budget of the Project, and include costs related to monitoring, reporting, and vegetation clearing (see Table 7-1). As a further assurance that funds will be in place to conduct monitoring, Sugar Creek Wind will provide USFWS with evidence that it has signed a contract for each year of monitoring and reporting by March 1 of that year.

At the end of each season of monitoring, the end-of-season report will include a description of the post-construction monitoring required for the upcoming monitoring year, based on the results of the prior year's monitoring. Sugar Creek Wind will also provide as part of its annual report a proposal from an independent consultant for the monitoring work for the upcoming year.

### 7.4.3 Mitigation Measures

#### 7.4.3.1 *Initial Mitigation*

The initial mitigation includes protection of 101.3 acres of bat habitat at a cost of \$768,800. Additional mitigation that may be implemented under adaptive management is discussed below in Section 7.4.3.1.

Sugar Creek Wind will provide a redacted executed service agreement with the bat mitigation service provider who will be facilitating off-site conservation actions for bats (i.e., acquisition of 101.3 acres for mitigation projects) during the term of the ITP. As described above, Sugar Creek Wind will consult with the USFWS over selected project(s) that satisfy the requirements of Section 6.2 before Sugar Creek Wind directs that money be disbursed.

#### 7.4.3.2 *Mitigation True-up/Adaptive Management*

Mitigation implemented under adaptive management could include up to \$997,195 for the protection of 131.4 additional acres of bat habitat. Therefore, up to \$997,195 will be provided via a Parental Guarantee within 90 days of permit issuance to cover any potential adaptive management changes related to increasing the mitigation.

While other adaptive management measures could have substantial costs related to lost revenue due to changes in operations, there are no "out of pocket" expenses. Post-construction monitoring costs incurred due to adaptive management are described in Section 7.4.2.

#### 7.4.3.3 *Changed Circumstances for Mitigation*

Sugar Creek Wind will also provide a Parental Guarantee in the amount of \$64,370 relating to changed circumstances caused by drought, fire, flood, or tornado. This amount will be sufficient to cover all restoration, monitoring, and management associated with deforestation of 50% of the total mitigation acreage should one of these natural disasters occur. The Parental Guarantee will be in place through the end of the ITP term.

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### 7.4.4 Changed Circumstances

Changed circumstances are outlined in Section 7.2. The responses to most changed circumstances include changes to the operational protocols of the turbines. There would be no out-of-pocket cost to changing operations, though there would be lost revenue which would be funded out of the annual operating budget.

Any costs associated with an ITP amendment would have financial assurances included in that HCP amendment. While some changed circumstances include the deployment of new technologies (e.g., deterrents) should they become available, due to the wide variety of possible technological advances or changes in information that could occur over the 30-year permit period, a specific cost estimate is not available at this time. Any change of technology (e.g., deterrents) would be funded through existing sources (e.g., annual operating budget, existing liquidity sources, etc.).

### 7.4.5 Administrative Costs

Many of the costs associated with this HCP are described in the previous sections; however, there will be costs associated with the administration of this ITP, including a portion of the time for senior operations staff and environmental and permit compliance staff at Sugar Creek Wind to be dedicated to ITP administration. This time will include maintaining lines of communication with the USFWS and the IDNR, managing consultants' work (monitoring, reports), attending annual meetings with the USFWS and IDNR as required, and other tasks necessary to ensure successful implementation of the HCP. It is anticipated that these costs will be absorbed within the annual salaries of such managers and will consist of less than 5% of the total responsibilities for 2-3 appropriate staff members.

### 7.4.6 Contingency Fund

The purpose of this contingency amount is to provide a reasonable "buffer" if actual costs estimated in this section are higher than anticipated. This total will change from year to year as the assured funding is revised based on the year-ahead monitoring estimates.

For Year 1 Post-construction Monitoring, the base contingency is \$3,250. Five percent of \$65,000 equals \$3,250. This total will change in subsequent years based on the proposed monitoring effort and estimates.

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List of Preparers  
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### 8.0 LIST OF PREPARERS

This document was prepared in consultation with the USFWS. The following companies and key individuals contributed to its preparation.

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## **SUGAR CREEK WIND HCP**

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# **Appendix A**

Bat Surveys, Studies and Reports

**Final Report on Acoustic Surveys of the Bat Community on the Proposed Sugar Creek Wind Farm Project**

**Prepared by:**

Dr. Justin Boyles and Esmarie Boyles  
Cobden, IL 62920

31 July 2015

## Executive Summary

We have completed an acoustic presence/absence study for Indiana bats on the proposed Sugar Creek Wind Farm site in Logan County, Illinois. We followed methodology as prescribed by the 2015 Range-Wide Indiana Bat Summer Survey Guidelines. Both foraging and roosting habitat are limited and largely confined to the narrow riparian areas surrounding Sugar Creek and a single forest block in the southern third of the site. Thus, we sampled two sites (each with two bat detectors) on Sugar Creek and one site (with two detectors) near the southern forest block. We recorded high quality calls at all sites. Two automated call identification programs (BCID v. 2.7c and EchoClass v. 3.1) each identified two Indiana bat call sequences, but the two programs did not agree on identification of any of those four calls. Post-hoc, qualitative call identifications suggest that one of those four calls is a red bat. The other three calls are likely *Myotis* sp. calls, but disagreement between the programs and limited quality of these particular calls precludes definitive identification. Considering that at least three species of *Myotis* are possible on the site and the limited number of calls recorded from these species, it seems that substantial effort will need to be expended to conclusively distinguish presence or probable absence of these species using acoustic detection alone. The most conservative conclusion is therefore to assume presence of Indiana bats on the proposed site.



## Study Site Description

The proposed project is a 175 MW wind power production facility consisting of 117 wind turbine generators. The site is in Logan County, approximately 14 km west of Lincoln, Illinois and 42 km north-northeast of Springfield, Illinois (Figure 1).

The site is almost completely agricultural (Figure 2). Sugar Creek meanders east-west for approximately 9 km in the northern third of the proposed site and Salt Creek is just south of the site. New Holland Legion Park (~125 ac) is in the middle of the site.

Potential roosting habitat for Indiana bats (*Myotis sodalis*) and northern long-eared bats (*M. septentrionalis*) is limited on the proposed site to approximately 273 acres of forest in 6 patches, the largest three containing approximately 160, 70, and 40 acres. The two largest areas are largely confined to narrow riparian strips (often < 30 m wide) bordering Sugar Creek. In some areas, there is moderate to high quality roosting habitat for Indiana bats in these riparian areas, but the density of quality roost trees is relatively low. Most of the available roost trees are either cottonwoods, maples, or large willows. On general appearance, there is considerable quality roosting habitat for northern long-eared bats in these riparian zones. Sugar Creek itself is relatively wide (approximately 15-35 m in most areas) and generally slow moving, with only occasional ripples. The creek is the most likely foraging habitat for both Indiana and northern long-eared bats on the proposed site.

The third large block of habitat is a woodlot in the southern end third of the project (Figure 2). Low to moderate quality roosting habitat exists for Indiana bats, but moderate to high quality roosting habitat exists for northern long-eared bats. None of the proposed work on the site will directly impact any of the possible habitat through removal of trees.

## Methodology

We conducted a Phase-2 presence/probable absence acoustic survey between 24 July and 26 July 2015. We followed the protocols laid out by the 2015 Range-Wide Indiana Bat Summer Survey Guidelines. Briefly, we sampled 3 sites (Figure A-1) for 4 detector nights each. At each site, we used 2 detectors (Anabat SD1 at site 1, Anabat SD2 at site 2, and Wildlife Acoustics SM2Bat+ at site 3) for 2 nights.

Site 1 was along Sugar Creek at the northeastern end of the site. Both detectors were placed on sand bars in the creek with good coverage of the creek (see Figure A-2 for of detector b; photos of detector a were lost because of a formatting error, but the location looked very similar to that of detector b). The roosting habitat around Site 1 was probably the highest quality we found on the proposed site with multiple large cottonwoods (*Populus deltoides*), sugar maples (*Acer saccharum*), and black willow (*Salix nigra*). The forest is largely in the floodplain of Sugar Creek, so the understory was relatively open with the exception of thick stands of stinging nettle and poison ivy. Sugar Creek has a relatively wide channel and could serve as ideal foraging habitat for both Indiana and northern long-eared bats.

Site 2 was also along Sugar Creek, but at the extreme western end of the proposed site, just east of the bridge on N County Rd 4000 E. Both detectors were placed in small forest openings on the northern bank of the creek, approximately 2-3 m above the water level (Figures A-3 and A-4). The roosting habitat at Site 2 was moderate, with fewer, mostly smaller trees and a narrower riparian zone than at Site 1. Sugar Creek serves as high quality potential foraging habitat for bats in the area.

Site 3 was near the large woodlot on the southern end of the property. Detector A was on the northeastern corner of the woodlot on a small drainage ditch (Figure A-5). Detector B was on the southeastern corner of the woodlot overlooking a wide drainage area (Figure A-6). The woodlot has relatively thick understory and likely serves as poor to moderate roosting habitat for Indiana

bats. Because of the drainage near the woodlot and a small pond approximate 200 m southeast of the woodlot, the foraging habitat is moderate to good.

We verified that all detectors were in good working order when they were deployed on 22 July. At Sites 1 and 3, we recorded data on 22 and 23 July. For unknown reasons, the batteries in both detectors at Site 2 died on 23 July, so those detectors were left for another night and recording was done on 22 and 24 July. During the period, the temperatures were warm (>50°F), the wind was calm (<9 mph), and there was no precipitation (Figure B-1).

The Anabat detectors were housed in standard waterproof containers (i.e., plastic bins with 90° PVC angles extending from the bins), and placed on tripods approximately 1.5 m high. They were oriented away from physical obstructions and vegetation. SM2Bat+ detectors were not weatherproofed and were mounted on aluminum poles approximately 2.5 m above the ground. We did not program start and stop times on the Anabats because of reliability concerns with this function. The SM2Bat+ detectors were set to begin recording at 20:00 for 9 hrs.

We identified bat calls using two approved automated call identifiers, Program EchoClass (v. 3.1) and Program BCID (v. 2.7c). In Program EchoClass, we identified calls using species set 1, which contains all of the likely species at the site, plus three highly unlikely species (*Myotis leibii*, *M. grisescens*, and *M. austroriparius*). Set 2 was not used because it does not include evening bats (*Nycticeius humeralis*), which we have captured nearby. In Program BCID, the species set for Illinois was selected and we used the default filter settings for analysis.

## Results and Discussion

We recorded high quality calls on all detectors on both nights of sampling. Activity varied between sites; site 3a had overall low activity levels while activity levels at the other 5 sites were all relatively high for the area.

In general terms, the two automated call programs returned broadly similar results regarding species composition in the area. *Myotis* calls were identified by both BCID and EchoClass, although the numbers were limited (19 calls by BCID and 9 calls by EchoClass; see below for details). Both programs identified a substantial number of calls as being emitted by big brown bats (*Eptesicus fuscus*), silver-haired bats (*Lasiorycteris noctivagans*), red bats (*Lasiurus borealis*), hoary bats (*Lasiurus cinereus*), and evening bats (*Nycticeius humeralis*). Calls were identified only rarely as being emitted by tri-colored bats (*Perimyotis subflavus*). The only major discrepancies between the two models were with the relative proportion of red bats, silver-haired bats, and evening bats. According to Echoclass, red bats were by far the dominant species and were responsible for over 60% of all calls identified to species. Calls attributed to silver-haired bats and evening bats represented less than 10% of all calls identified. Contradictorily, BCID suggests the number of calls from these three species are almost identical (23-27% of all species recorded). While we have captured a limited number of evening bats relatively close by and silver-haired bats are certainly possible in large numbers in late July and August in central Illinois, our personal experience netting in this area would lead us to argue that large numbers of red bats in the area is far more likely.

Four calls were identified as Indiana bats (Figures 3-6). Each program identified two call sequences, but none of the calls were identified as Indiana bats both programs. One call identified as an Indiana bat by BCID was almost certainly emitted by a red bat (Figure 5), but the other three calls do represent possible Indiana bats. Both calls identified as Indiana bats by EchoClass were identified as *Myotis* (one little brown bat and one unknown *Myotis*) by BCID. The other call identified as an Indiana bat by BCID was identified as a small-footed bat (*Myotis leibii*) by EchoClass. However, this location is considerably outside the range of small-footed bats and the habitat is highly unlikely to support small-footed bats. Qualitatively (as identified by Dr. Justin Boyles; see attached CV), these

calls are almost certainly from *Myotis* sp., and they are suggestive of Indiana bats. Based on the low number of calls and limited quality of these calls, we would be uncomfortable stating that these are definitively Indiana bats, but they do suggest the possibility of Indiana bats on this site.

The statistical probability assigned to the Indiana bat calls is ambiguous at best. EchoClass does not assign maximum likelihood probabilities if only one call is detected for a species in a night (which is the case for both Indiana bat calls this program identified), and the BCID manual explicitly questions the validity of the maximum likelihood estimator used and warns against using it alone for species presence/absence determinations.

Two calls were identified as northern long-eared bats by EchoClass (and none by BCID). In both cases, the calls are almost certainly the feeding buzzes of a red bat, as the calls <30 sec before were identified as a red bats, and pulses early and/or late in the file are suggestive of red bat calls. Both programs also identified a small number of endangered gray bats (*Myotis grisescens*) calls, but the proposed site is considerably out of range for this species, so we consider these identifications unlikely.

The results of the presence/probably absence survey suggest Indiana bats are possible on the site of the proposed Sugar Creek Wind Farm. The automated call analysis programs both suggest Indiana bats are present at the site, but the extremely limited number of calls precludes any probabilistic estimation of their likelihood. In fact, *Myotis* bats seem to be relatively rare on the area, and given the large number of calls required to definitively distinguish between these species, acoustic surveys would need to be much more intensive to document or exclude Indiana bats. Therefore, the most conservative course of action to assume presence of Indiana bats on the site. Future work may include mist-netting to verify the presence of Indiana bats, but the site is not highly conducive to mist-netting surveys. Generally speaking, the best foraging and roosting habitat are along Sugar Creek, which is generally wide with an open canopy, making mist-netting difficult (but not impossible).

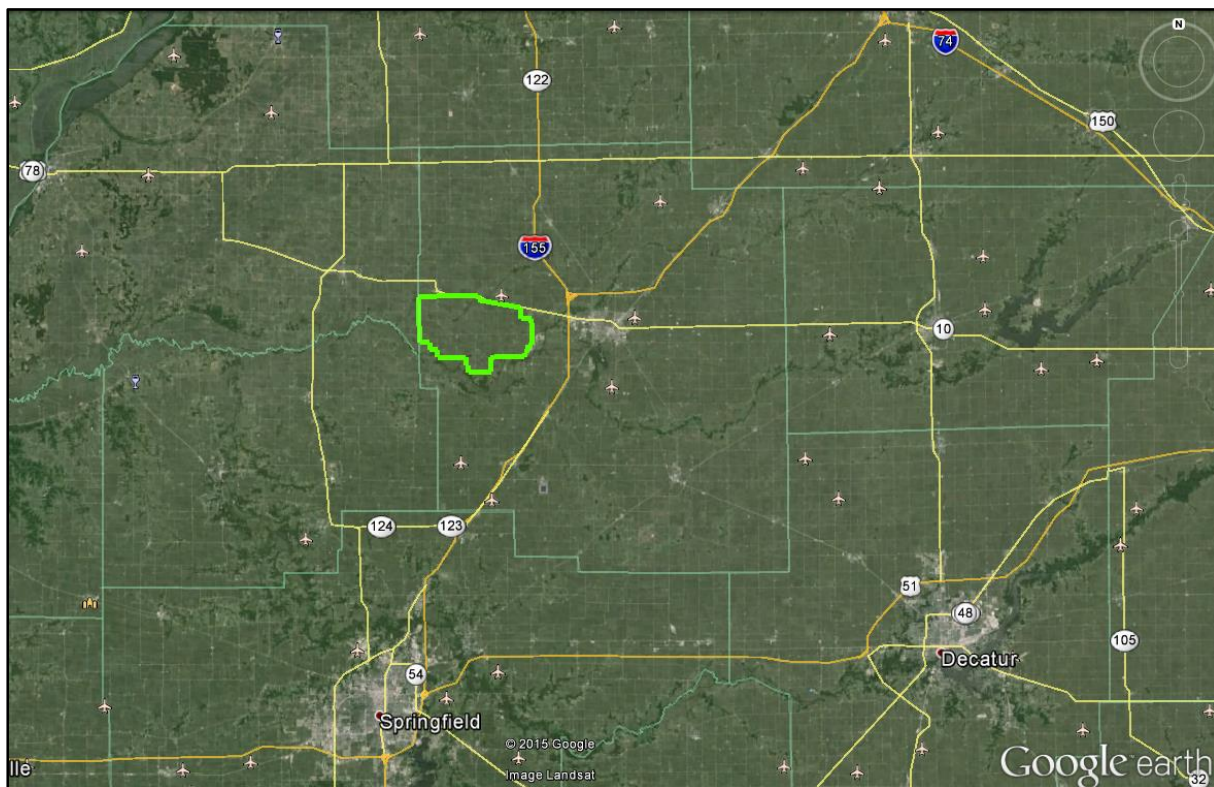


Figure 1. Aerial photo of the proposed site for the Sugar Creek Wind Farm (green line)

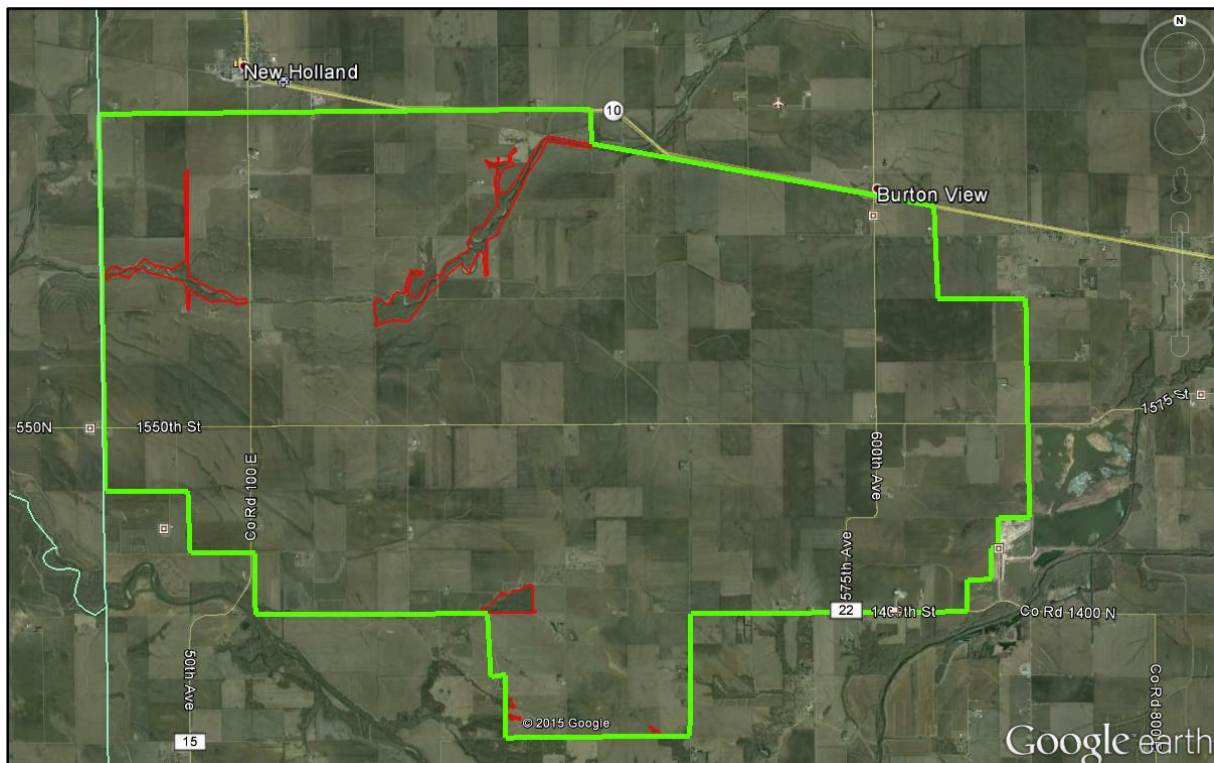


Figure 2. Aerial photo of the proposed site of the Sugar Creek Wind Farm (green line) with potential roosting habitat for Indiana bats (*Myotis sodalis*) and northern long-eared bats (*M. septentrionalis*) marked in red.

**Table 1. Maximum Likelihood Results of Automated Analysis with Program EchoClass v. 3.1**

	Date	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU
Site 1a	2015-Jul-22	0	0	0	0	-1	-1	-1	-1	-1	-1	0.9988	1
Site 1a	2015-Jul-23	0	0	0	0	-1	1	-1	-1	1	-1	0.9988	0.0005
Site 1b	2015-Jul-22	0	0.9149	0	0	-1	-1	-1	-1	-1	-1	1	0.0001
Site 1b	2015-Jul-23	0	0.2471	0	0	-1	-1	-1	-1	-1	1	1	0
Site 2a	2015-Jul-22	0	0.5711	0	0.0001	-1	-1	-1	-1	-1	-1	1	1
Site 2a	2015-Jul-24	0	0.7958	0	0.2408	-1	-1	-1	-1	1	-1	0.9986	0.0001
Site 2b	2015-Jul-22	0	0.9979	0	0.0576	-1	1	-1	-1	-1	-1	0.9993	1
Site 2b	2015-Jul-24	0	0.0018	0	0.0001	-1	-1	-1	-1	-1	-1	0.9983	-1
Site 3a	2015-Jul-22	0	1	0.0011	-1	-1	-1	-1	-1	-1	-1	-1	-1
Site 3a	2015-Jul-23	0	1	0	-1	-1	-1	-1	-1	-1	-1	1	-1
Site 3b	2015-Jul-22	0	1	0	1	-1	1	1	-1	-1	1	1	-1
Site 3b	2015-Jul-23	0	0.999	0	0.999	-1	1	-1	-1	-1	-1	0.999	-1

Details: Values represent the probability that all sequences identified as that species are incorrectly identified (i.e., a small value represents a high likelihood that a species is present and identified correctly by the model).

-1 values represent species that were not detected at site

1 values represent species that only had 1 sequence detected and are therefore not included in the maximum likelihood estimation

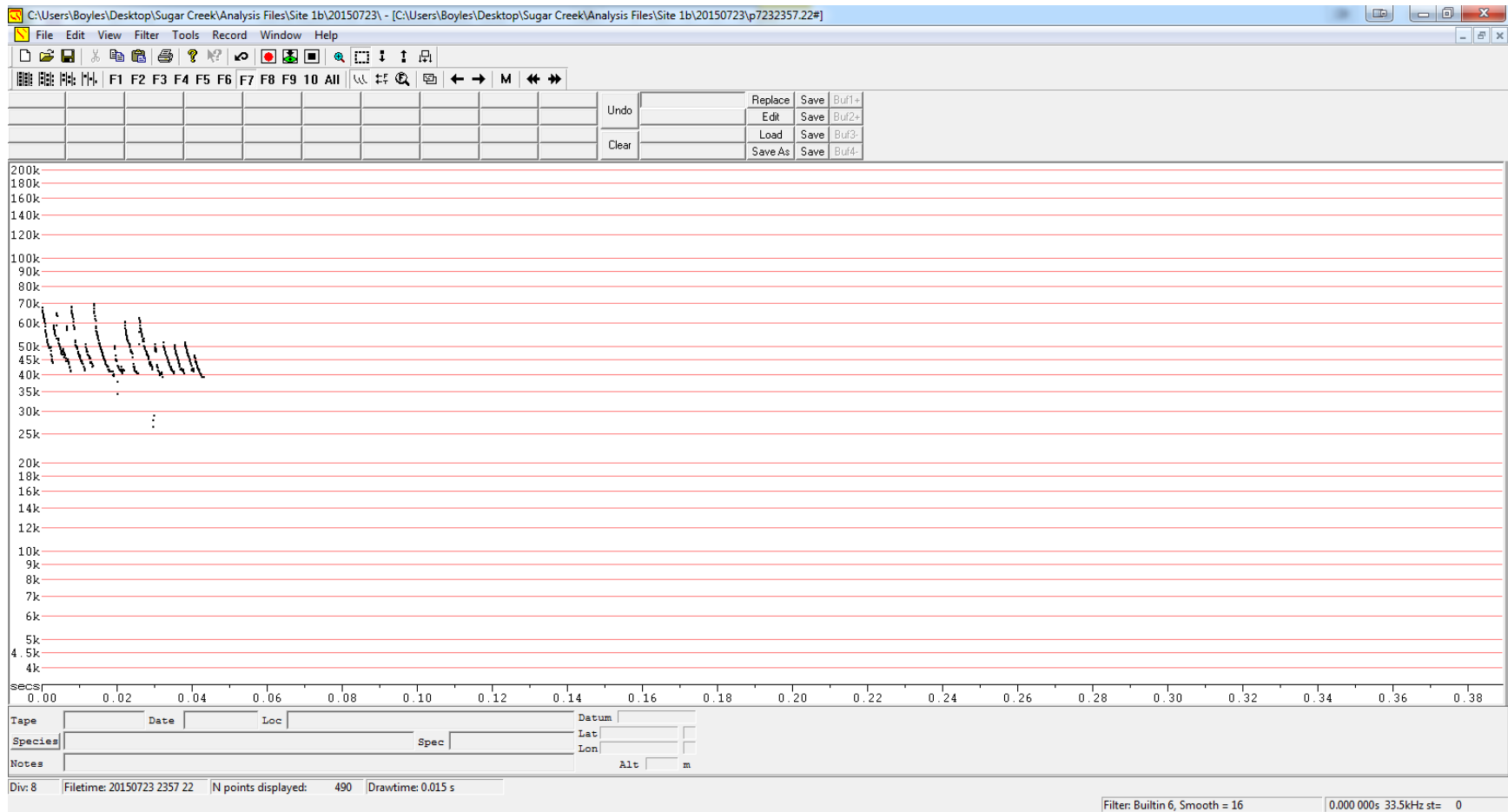


Figure 3. Single file identified as *Myotis sodalis* by Program EchoClass v. 3.1 on 23 July 2015 at site 1b. This file was identified as an unknown *Myotis* by Program BCID v. 2.7c.

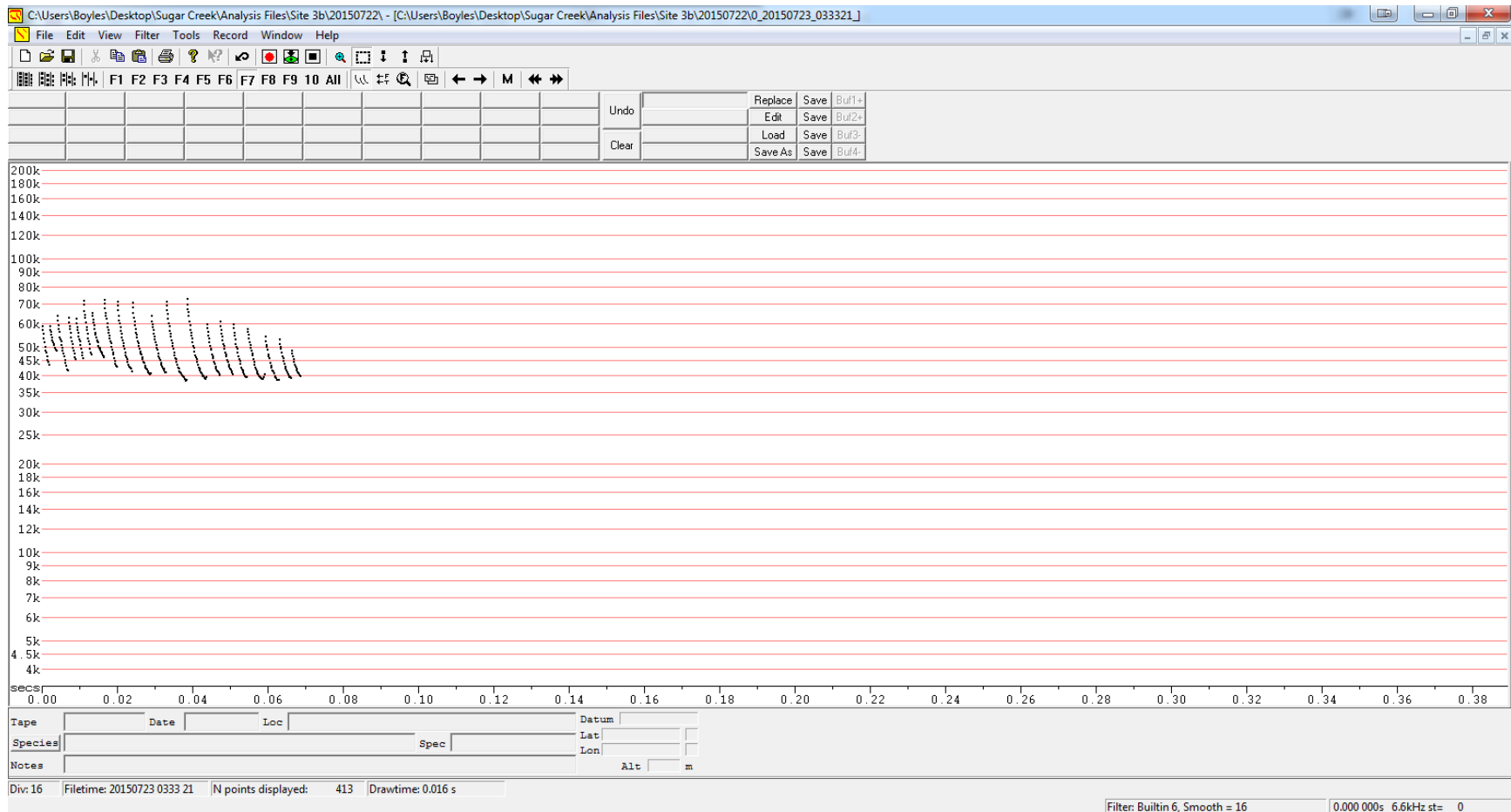


Figure 4. Single file identified as *Myotis sodalis* by Program EchoClass v. 3.1 on 22 July 2015 at site 3b. This file was identified as *Myotis lucifugus* by Program BCID v. 2.7c.



**Table 2. Maximum Likelihood Results of Automated Analysis with Program BCID v. 2.7c**

		<b>EPFU</b>	<b>LANO</b>	<b>LABO</b>	<b>LACI</b>	<b>MYGR</b>	<b>MYLU</b>	<b>MYSO</b>	<b>NYHU</b>	<b>PESU</b>	<b>UNKN</b>
Site 1a	2015-July-22	0.999999	0.000001	0.000001	0.000001			0.005131	0.000001	0.212580	
Site 1a	2015-July-23	0.999999	0.000001	0.000001	0.000001				0.000001		0.000005
Site 1b	2015-July-22	0.005577	0.000001	0.000001	0.000001		0.009230		0.000001	0.003006	
Site 1b	2015-July-23	0.368784	0.000001	0.000001	0.000001		0.000001			0.999999	
Site 2a	2015-July-22	0.005675	0.000001	0.000001	0.000062	0.000001	0.087825		0.000001	0.513699	
Site 2a	2015-July-24	0.027917	0.000001	0.000001	0.000001		0.009231		0.000001	0.000304	
Site 2b	2015-July-22	0.000005	0.000001	0.000001	0.000001		0.000007		0.000001	0.000004	
Site 2b	2015-July-24	0.003668	0.000001	0.000139	0.000001				0.000001		
Site 3a	2015-July-22	0.000001	0.135472	0.000002			0.009002		0.340747		
Site 3a	2015-July-23	0.000001	0.216290	0.000001							
Site 3b	2015-July-22	0.000001	0.000001	0.000001		0.000001	0.089669	0.019560	0.000001	0.250384	
Site 3b	2015-July-23	0.000001	0.000001	0.000001		0.000001	0.005317		0.000001	0.004786	
All Sites		0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	

Details: Values represent the probability that all sequences identified as that species are incorrectly identified (i.e., a small value represents a high likelihood that a species is present and identified correctly in by the model). Note that Bat Call Identification, Inc. does not recommend the use of these values alone for determining presence/absence of species.

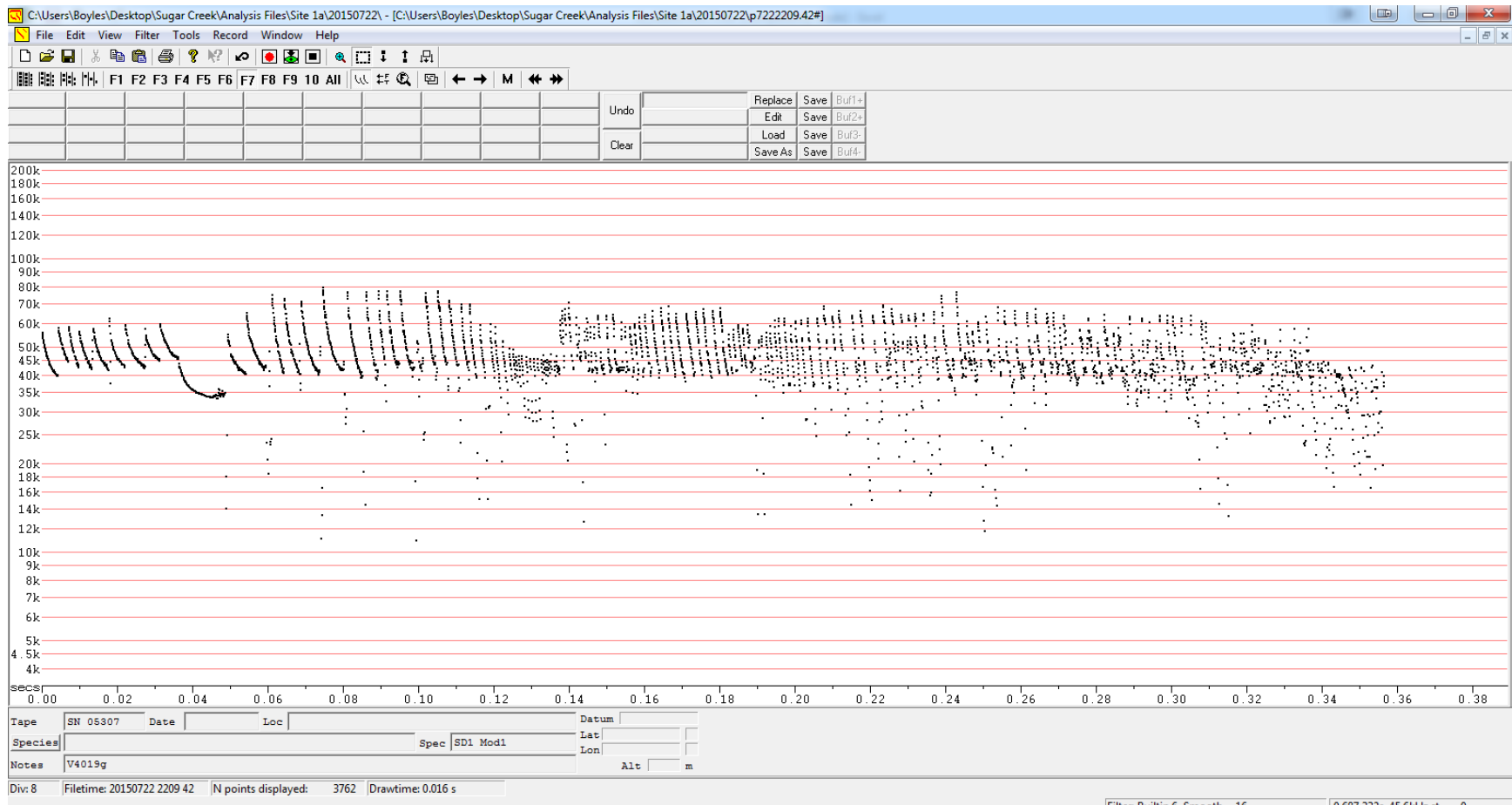


Figure 5. Single file identified as *Myotis sodalis* by Program BCID 2.7c on 22 July 2015 at site 1a. This file was identified as *Lasius borealis* by Program EchoClass v. 3.1.

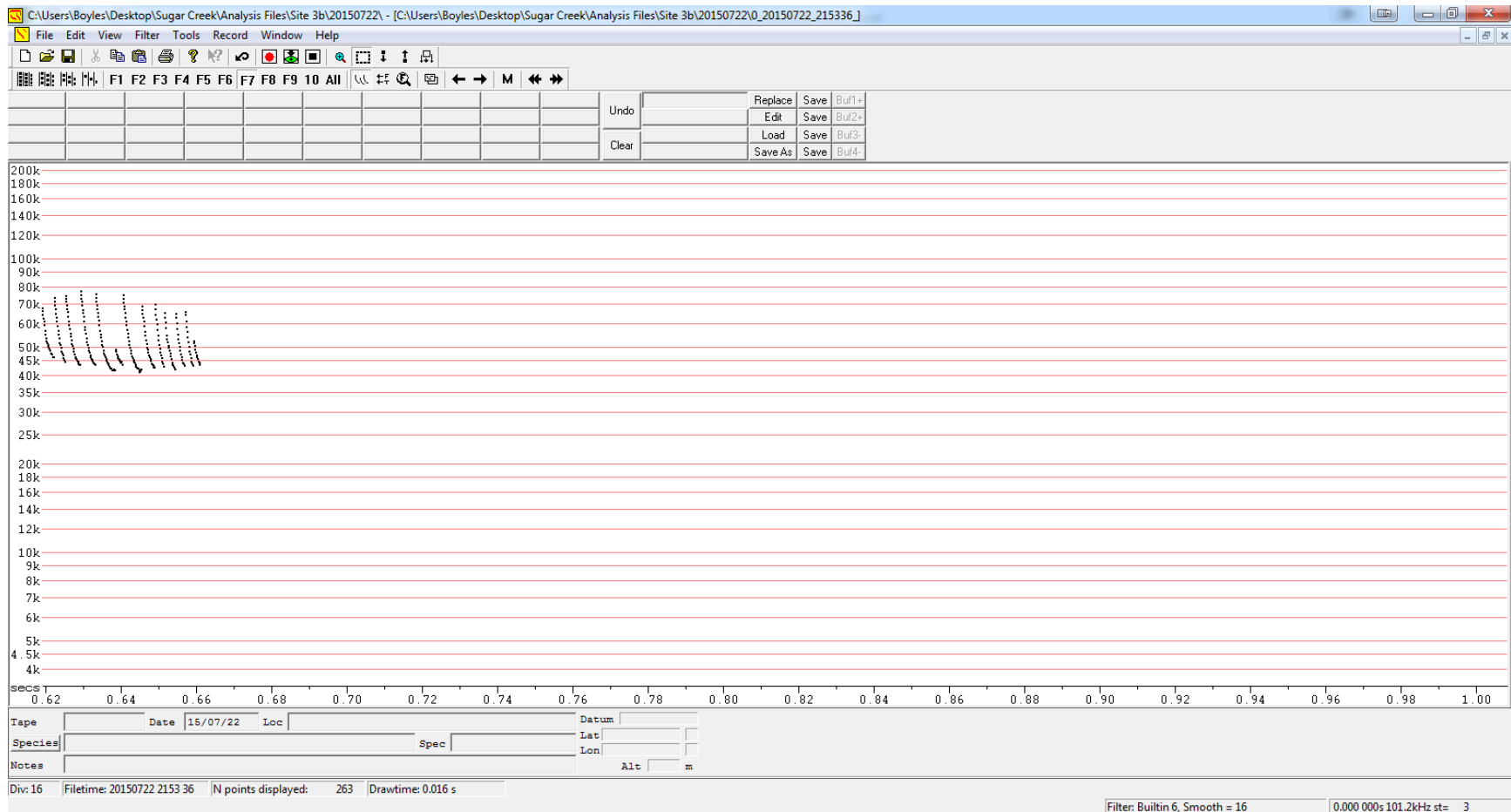


Figure 6. Single file identified as *Myotis sodalis* by Program BCID 2.7c on 22 July 2015 at site 3b. This file was identified as *Myotis leibii* by Program EchoClass v. 3.1.

**Appendix A. Details of Detector Sites at the Proposed Sugar Creek Wind Farm**

**Table A-1. Details of Detector Sites**

	Latitude	Longitude	Dates Deployed	Detector Model
Site 1a	40.16512 N	89.54469 W	7-22 to 7-23 2015	Anabat SD1
Site 1b	40.16326 N	89.54594 W	7-22 to 7-23 2015	Anabat SD1
Site 2a	40.16184 N	89.59616 W	7-22 and 7-24 2015	Anabat SD2
Site 2b	40.16105 N	89.60021 W	7-22 and 7-24 2015	Anabat SD2
Site 3a	40.12487 N	89.53694 W	7-22 to 7-23 2015	SM2Bat+
Site 3b	40.12181 N	89.53628 W	7-22 to 7-23 2015	SM2Bat+

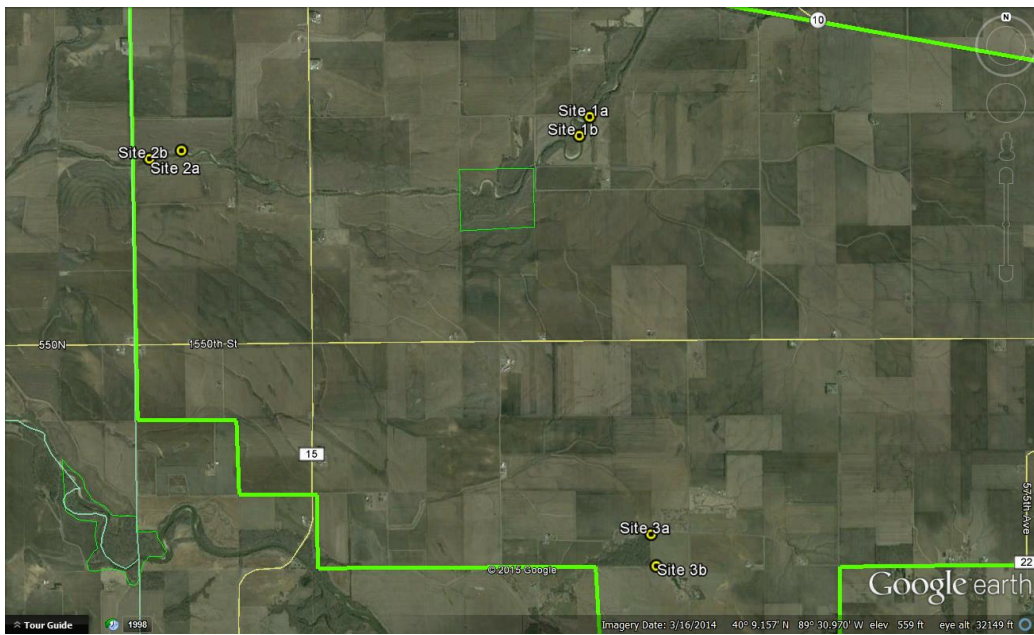


Figure A-1. Map showing placement of detectors on the Proposed Sugar Creek Wind Farm

**Site 1a**

Photos corrupted and lost because of a formatting error.



Figure A-2. Site 1b

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Figure A-3. Site 2a



Figure A-4. Site 2b

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Figure A-5. Site 3a



Figure A-6. Site 3b

## Appendix B. Weather Summary

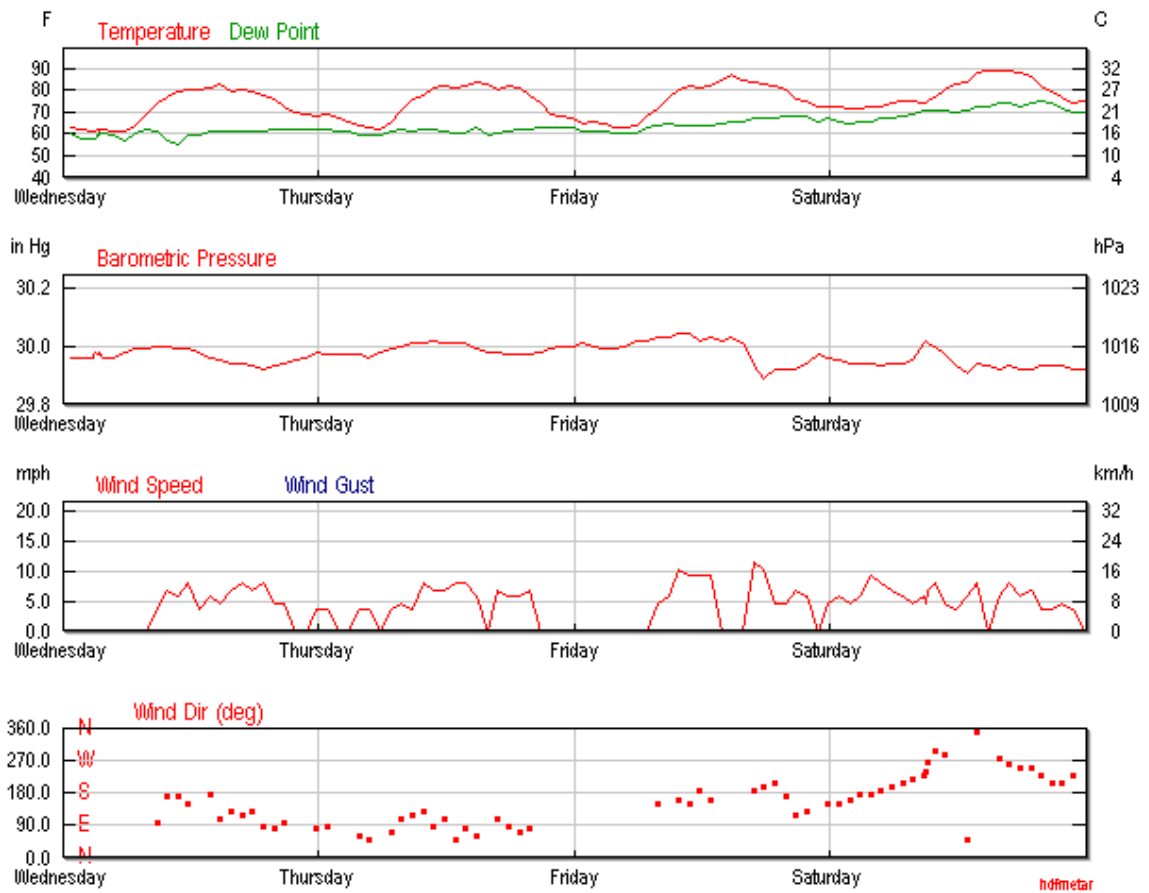


Figure B-1. Weather summary as recorded at Abraham Lincoln Capital Airport, a National Weather Service registered reporting station. The site is approximate 35 km SW of the proposed project site. At no time during the sampling period did the temperature drop below 50°C, and the wind speed was always below 9 mph at night.

## Justin G. Boyles, Ph.D.

16 June 2015  
Principal Scientist  
Eko Consulting LLC  
Cobden, IL 62920

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### RELEVANT QUALIFICATIONS

Dr. Boyles has 15 years of experience working with bats in the eastern United States and southern Africa. He is one of the most heavily published and cited bat biologist during that period, and has extensive research experience on the hibernation physiology, migratory ecology, and summer roosting habitat selection of Indiana bats and northern long-eared bats. He has extensive experience conducting summer habitat and winter cave surveys for Indiana bats in the eastern United States, and has collected known bat calls, qualitatively identified bat calls, and taught classes on bat detector use and call identification.

### ACADEMIC AFFILIATIONS:

Assistant Professor, Cooperative Wildlife Research Laboratory, Department of Zoology, University of Southern Illinois Carbondale (2012-Present)

Post-Doctoral Research Fellow, University of Tennessee, Knoxville. Hosts: Drs. Gary McCracken and Tom Hallam (2011-2012)

Post-Doctoral Research Fellow, University of Pretoria, South Africa. Host: Professor Andrew E. McKechnie (2009-2011)

### EDUCATION:

Ph.D. in Biology, Indiana State University, Terre Haute, Indiana, 2009

M.S. in Biology, Missouri State University, Springfield, Missouri, 2004

B.S. in Ecology, Evolution and Systematics, Missouri State University, Springfield, Missouri, 2002

### REPRESENTATIVE PUBLICATIONS (OUT OF 50 IN TOTAL):

1. Maine, J. J. and **J. G. Boyles**. *In Press*. Bats initiate vital agroecological interactions in corn. *Proceedings of the National Academy of Science*.
2. **Boyles, J. G.**, C. L. Sole, P. M. Cryan, and G. F. McCracken. 2013. Knowledge deficiencies in estimating the economic value of insectivorous bats: A prospectus for researchers. Chapter 24 *In: Bat Evolution, Ecology and Conservation*. Adams, R. A. and S. C. Pedersen, eds. Springer Science Press, New York.
3. **Boyles, J. G.**, P. M. Cryan, G. F. McCracken, and T. H. Kunz. 2011. Economic importance of bats in agriculture. *Science*. 332: 41-42.\*

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4. **Boyles, J. G.** and C. K. R. Willis. 2010. Could localized warm areas inside cold caves reduce mortality of hibernating bats affected by white-nose syndrome? *Frontiers in Ecology and the Environment*. 8: 92-98.\*
5. Cryan, P. M., C. U. Meteyer, **J. G. Boyles**, and D. S. Blehert. 2010. Wing pathology associated with White-nose Syndrome in bats suggests life-threatening disruption of physiology. *BMC Biology*. 8: 135.\*
6. Willis, C. K. R., R. M. R. Barclay, **J. G. Boyles**, R. M. Brigham, V. Brack, Jr., D. L. Waldien, and J. Reichard. 2010. Bats are not birds and other problems with Sovacool's (2009) analysis of animal fatalities due to electricity generation. *Energy Policy*. 38: 2067-2069.
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11. **Boyles, J. G.** and L. W. Robbins. 2006. Characteristics of summer and winter roost trees used by evening bats (*Nycticeius humeralis*) in Missouri. *American Midland Naturalist*. 155: 210-220.
12. Timpone, J. C., **J. G. Boyles**, and L. W. Robbins. 2006. Possible niche-overlap in roosting sites between evening bats (*Nycticeius humeralis*) and big brown bats (*Eptesicus fuscus*). *Northeastern Naturalist*. 13: 597-602.

#### POPULAR BOOK:

1. **Boyles, J. G.**, J. C. Timpone, and L. W. Robbins. 2009. *Bats of Missouri*. Indiana State University and the Center for North American Bat Research and Conservation. 60 pp.

#### RELEVANT PROFESSIONAL ACTIVITY AND SERVICE:

##### Society Service:

2014-	Member and Ecosystem Services Lead: Ecology and Evolution Working Group, National White-nose Syndrome Working Group
2012-2014	Board member: Midwest Bat Working Group

#### INVITED TESTIMONY:

- 2011 Importance of bats to agriculture. Expert testimony before the U.S. House of Representatives, Natural Resources Committee, Subcommittee on Fisheries, Wildlife, Oceans, and Insular Affairs for the hearing "Why should we care about

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bats: devastating impact white-nose syndrome is having on one of nature's best pest controllers" 24 June, 2011. C-Span coverage can be seen [here](#).

# Northern Long-Eared and Indiana Bat Habitat Assessment for the Sugar Creek Wind Project in Logan County, Illinois

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**Prepared by:**

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**October 4, 2017**



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*Privileged and Confidential - Not For Distribution*

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## **INTRODUCTION**

Sugar Creek Wind, LLC, an affiliate of Apex Clean Energy Management, LLC (Apex), is developing the Sugar Creek Wind Project (Project) in Logan County, Illinois. Western EcoSystems Technology, Inc. (WEST) conducted a Phase I Bat Habitat Assessment for the federally threatened northern long-eared bat (*Myotis septentrionalis*; NLEB) and endangered Indiana bat (*Myotis sodalis*; INBA) within the proposed boundary for the Project (Figure 1).

The NLEB and INBA occur throughout much of Illinois where suitable forest exists, although the INBA is considered to be absent from the northern reaches of the state (Feldhamer et al. 2015). The Illinois Department of Natural Resources (IDNR) Natural Heritage Database does not list NLEB or INBA as known to occur in Logan County (IDNR 2014). Similarly, a search using the Illinois EcoCAT system ([IDNR 2017](#)) yielded no records of listed bat species in the Project.

Desktop and on-site habitat assessments were conducted in accordance with the US Fish and Wildlife Service (USFWS) *Range-Wide Indiana Bat Summer Survey Guidelines* (USFWS 2017), which also apply to NLEB and describe the broader habitat requirements of the NLEB. The objective of the habitat assessment was to identify potential summer habitat for NLEB and/or INBA within the Project area to inform facility siting.

## **STUDY AREA**

The Project is located four miles (mi; 6.4 kilometers [km]) west of Lincoln, Illinois in Logan County, and is characterized by flat to gently rolling topography dominated by cultivated crops (Figure 1). The study area falls within the Central Corn Belt Plains Ecoregion, which encompasses a large portion of central Illinois, and is composed of vast glaciated plains with scattered sand sheets and dunes (Woods et al. 2007). Much of the region was originally dominated by tall-grass prairie and had scattered groves of trees and marshes occurring on level uplands. Today, most of the area has been cleared to make way for highly productive farms producing corn (*Zea mays*), soybeans (*Glycine max*), and livestock. Streams within the ecoregion have been tiled, ditched, and tied into existing drainage systems, which has caused a reduction in the amount of aquatic habitat occurring in the area.

Sugar Creek enters the northern Project boundary and flows westward for four mi (6.4 km) before exiting the Project. Salt Creek predominantly flows south of the southern boundary, but does intersect the southwest corner of the Project before flowing west to the confluence with Sugar Creek (Figure 1).

According to the US Geological Survey National Land Cover Database (NLCD 2011; Homer et al. 2015), the dominant land cover type within the Project was cultivated cropland, which covered 93.1% of the study area (16,525.31 acres [ac; 6,687.56 hectares [ha]). Developed

areas and barren land covered approximately 4.3% (771.81 ac [312.34 ha]) of the Project in total. Land cover types that might provide roosting habitat for bat species covered a relatively small portion of the Project, and included 1.1% cover of deciduous forest (201.97 ac [81.73 ha]) and 0.5% cover of woody wetlands (86.98 ac [35.20 ha]). Similarly, land cover types that might provide foraging opportunities for bats were relatively uncommon, and included hay/pasture (0.9%; 151.42 ac [61.28 ha]), herbaceous areas (0.1%; 14.75 ac [5.97 ha]), and open water (<0.1%; 0.18 ac [0.07 ha]; Table 1).

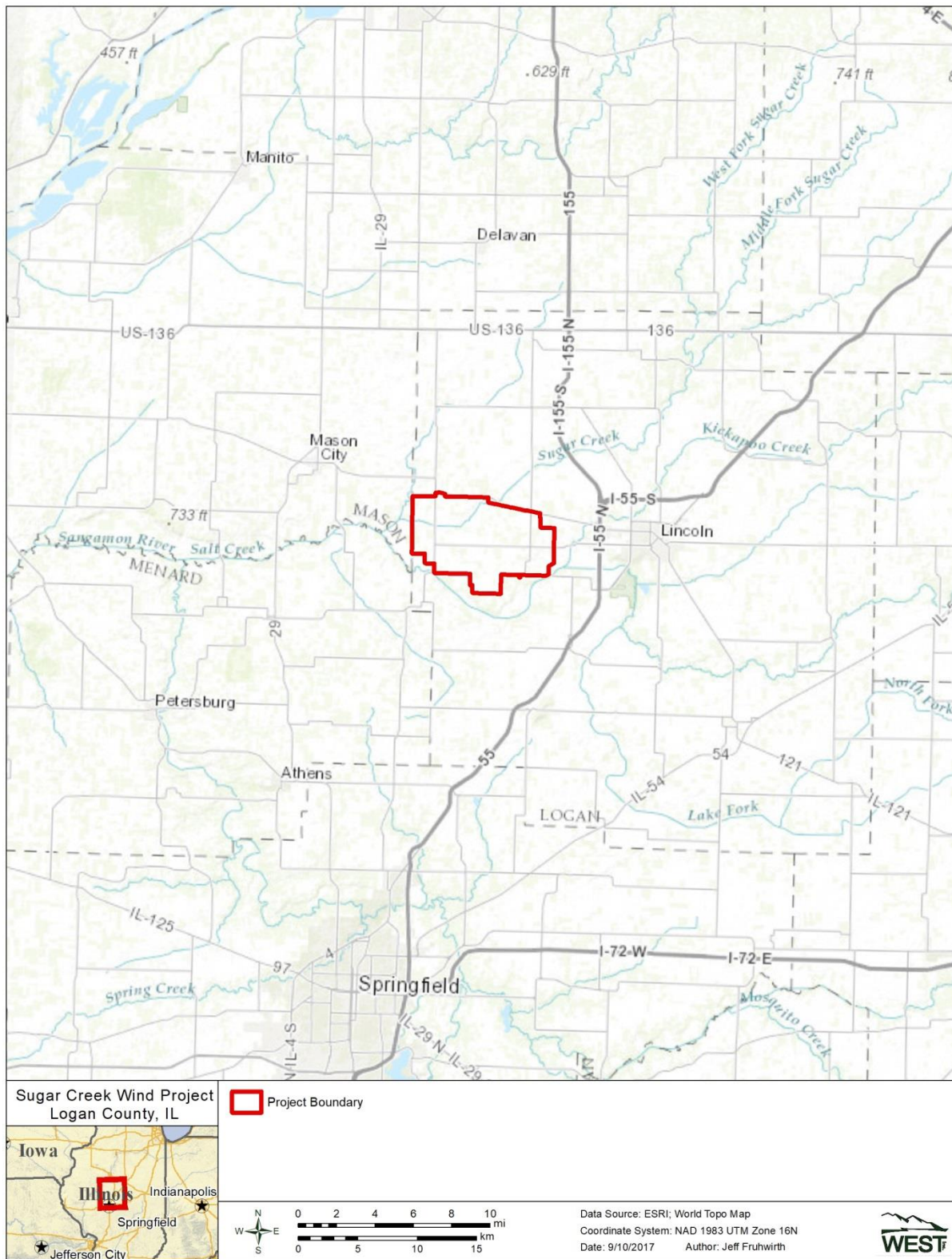


Figure 1. Overview of the Sugar Creek Wind Project in Logan County, Illinois.

**Table 1. Land cover types, area, and composition within the Sugar Creek Wind Project in Logan County, Illinois (USGS NLCD 2011, Homer et al. 2015).**

<b>Land Cover Type</b>	<b>Acres</b>	<b>% Composition</b>
Cultivated Crops	16,525.31	93.1
Developed	751.53	4.2
Deciduous Forest	201.97	1.1
Hay/Pasture	151.42	0.9
Woody Wetlands	86.98	0.5
Barren Land	20.28	0.1
Herbaceous	14.75	0.1
Open Water	0.18	<0.1
<b>Total</b>	<b>17,752.42</b>	<b>100</b>

## METHODS

WEST conducted an initial review of the Project area plus 1,000 feet using available Geographic Information System data, including aerial photography from multiple years. This information was used to identify all areas with trees that met the potential habitat criteria visible on the aerial images (see criteria below). A site visit was then completed by Aaron McAlexander, a federally permitted bat biologist with WEST, on August 23, 2017 to evaluate eight identified areas of potential habitat. During the site visit, forest characteristics were recorded, including vegetation type, tree size composition, dominant tree species, presence of flight corridors, potential water sources, and presence of preferred roost tree species and snags. Size composition of live trees was characterized by three classifications based on DBH: small (DBH 3- 5 in [8- 13 cm]), immature (DBH 5- 15 in [13 - 38 cm]), and mature (DBH greater than 15 in [38.1 cm]). The number, type, and suitability of water resources for bats present within the Project and photographs of representative forest types were also recorded (Appendix A).

Suitable habitat was defined as follows for each species:

**NLEB:** The USFWS defines suitable NLEB habitat as forests and woodlots containing potential roost trees; however, buildings, barns, bridges, and bat houses may also be considered potential summer habitat for NLEB. Potential roosts are trees with a diameter breast height (DBH) greater than or equal to three inches (in; 7.6 centimeter [cm]) with exfoliating bark and/or cavities. Linear forested features, including shelterbelts and other loose aggregates of trees with variable amount of canopy closure, may also represent suitable habitat for NLEB. These features are not considered suitable if not connected to suitable habitat within 1,000 feet (ft; 305 meters [m]; USFWS 2017).

**INBA:** The USFWS defines suitable INBA roost trees as snags or live trees with a DBH greater than or equal to five in (12.7 cm), with exfoliating bark, cracks, crevices, or hollows. Individual trees may be considered roosting habitat when they exhibit the characteristics of a potential roost and are within 1,000 ft (305 m) of other forested/wooded habitat (USFWS 2017).

Isolated trees and isolated small forest lots were not considered suitable habitat for NLEB or INBA. A conservative minimum forest patch size of 15 ac (6 ha) was used based on research by Foster and Kurta 1999 and Henderson and Broders 2008. This patch size is less than one-third of the area that the USFWS believes is required to support a maternity colony of INBA (i.e. 46 ac [19 ha]; Szymanski et al. 2013).

## **RESULTS**

Croplands, which were barren of forested habitat, were discernible on aerial photographs and dominate most of the Project. Forested areas varied from small and immature stands to mostly mature stands with some immature trees interspersed. The majority of suitable habitat consisted of forested riparian areas along Salt Creek and Sugar Creek. Dominant tree species observed throughout the Project study area included honey locust (*Gleditsia triacanthos*), eastern cottonwood (*Populus deltoides*), black walnut (*Juglans nigra*), American sycamore (*Platanus occidentalis*) and silver maple (*Acer saccharinum*). Other common tree species included black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), sugar maple (*Acer saccharum*), American basswood (*Tilia americana*), and northern red oak (*Quercus rubra*). Water sources included ponds, Sugar Creek, Salt Creek, and their tributaries. All forested stands were less than 0.3 mi (0.5 km) from at least one water source, and forested stands varied in their connectivity to other forest and in the availability of dead snags.

A total of 473.76 ac (191.72 ha) of suitable NLEB habitat and 401.86 ac (162.63 ha) of suitable INBA habitat was delineated within the Project, composing 20.2% and 18.0%, respectively, of the Project area. Areas within 1,000 ft (305 m) of forest were mapped as potential foraging habitat for both species because these areas are considered to be potential foraging habitat by the USFWS (Figure 2; USFWS 2014).

Eight representative points with detailed habitat descriptions are provided in Table 2.

**Table 2. Sample site characterization within the study area at the Sugar Creek Wind Project in Logan County, Illinois.**

Site	Dominant Tree Spp.	Tree Size	Snags Present	Nearest Water Source Description	Connected to Suitable Habitat?	Suitable Habitat Present?
Sc 1	<i>Platanus occidentalis</i> , <i>Tilia americana</i> , <i>Gleditsia triacanthos</i> , <i>Populus deltoides</i> , <i>Juglans nigra</i>	Mostly mature, some immature	Yes	Sugar Creek	Yes	INBA & NLEB
Sc 2	<i>Platanus occidentalis</i> , <i>Tilia americana</i> , <i>Gleditsia triacanthos</i> , <i>Populus deltoides</i> , <i>Acer saccharinum</i> , <i>Fraxinus pennsylvanica</i> , <i>Juglans nigra</i>	Mostly mature, some immature	Yes	Sugar Creek	Yes	INBA & NLEB
Sc 3	<i>Platanus occidentalis</i> , <i>Acer saccharinum</i>	Immature, some mature	Yes	Sugar Creek	Yes	NLEB only
Sc 4	<i>Platanus occidentalis</i> , <i>Tilia americana</i> , <i>Gleditsia triacanthos</i> , <i>Populus deltoides</i> , <i>Acer saccharinum</i> , <i>Juglans nigra</i>	Immature, some mature	Yes	Sugar Creek, small drainage to Sugar Creek	Yes	INBA & NLEB
Sc 5a	<i>Gleditsia triacanthos</i> , <i>Acer saccharinum</i> , <i>Salix nigra</i> , <i>Quercus</i> spp.	Small, Immature	No	Small ephemeral tributary to Salt Creek intersects woodlot	Yes	NLEB only
Sc 5b	<i>Gleditsia triacanthos</i> , <i>Acer saccharinum</i> , <i>Salix nigra</i> , <i>Quercus</i> spp.	Mature, some immature	Yes	Small ephemeral tributary to Salt Creek intersects woodlot	Yes	INBA & NLEB
Sc 6	<i>Gleditsia triacanthos</i> , <i>Platanus occidentalis</i> , <i>Tilia americana</i> , <i>Quercus rubra</i> , <i>Juglans nigra</i> , <i>Acer saccharum</i>	Mature, some immature	Yes	Small ephemeral tributary to Salt Creek intersects woodlot	Yes	INBA & NLEB
Sc 7	<i>Gleditsia triacanthos</i> , <i>Acer saccharinum</i> , <i>Quercus rubra</i>	Immature, some mature	Yes	Small ephemeral tributary to Salt Creek approximately 0.29 mi (0.47 km) east in connective woodlot	Yes	INBA & NLEB
Sc 8	<i>Juglans nigra</i> , <i>Quercus rubra</i> , <i>Acer saccharum</i>	Mature	Likely, difficult to interpret from road	Large wetland area approximately 0.42 mi (0.67 km) east and outside of project area.	No	INBA & NLEB

\* Diameter Breast Height (DBH categories: small (less than five inches [in; 13 centimeters (cm)]), immature (5-15 in [13-38 cm]), and mature (more than 15 in [38.1 cm])).

Mi = miles, km = kilometers

## **CONCLUSIONS**

Forested areas in Logan County can be considered potential habitat for federally-listed NLEB and INBA, although the species are not known to occur in the county (IDNR 2014). The NLCD mapping indicates 288.95 ac (116.93 ha) of forested land (deciduous forest and woody wetlands) within the Project. Our more detailed habitat assessment, using aerial photography and ground-truthing, revealed that a total of 473.76 ac (191.72 ha) of potentially suitable NLEB habitat and 401.86 ac (162.63 ha) of potentially suitable INBA habitat is located within the Project area. Avoidance of these areas by the USFWS recommended 1,000 ft (305 m; i.e., potential foraging habitat) with turbines would minimize risk of impact to INBA and NLEB during summer, as well as other bats that rely on similar habitats.

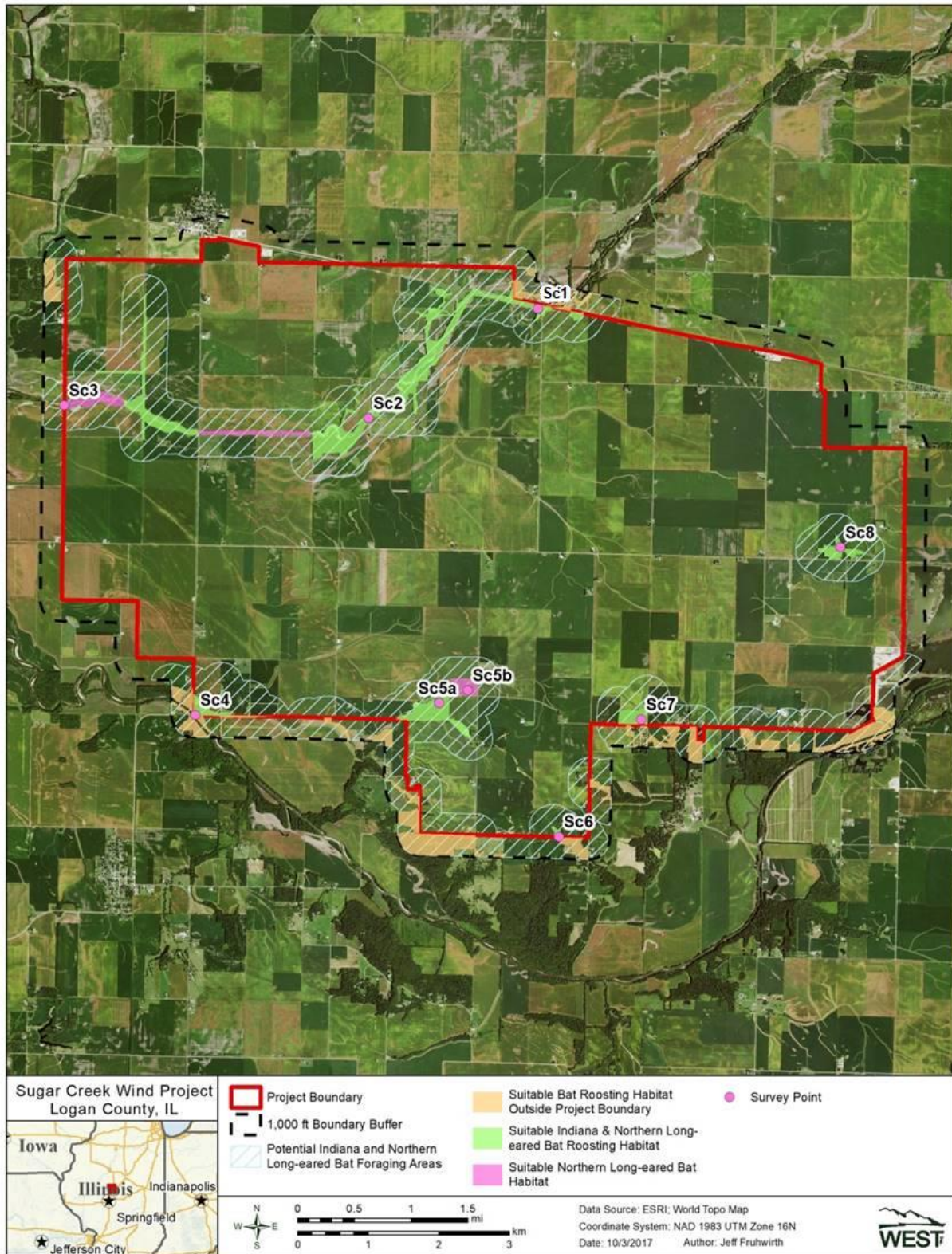


Figure 2. Sample sites and suitable habitat for federally listed bat species at the Sugar Creek Wind Project in Logan County, Illinois.



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## **Appendix A. Representative Site Photos**



**Appendix A1. Habitat Assessment Point Sc 1.**



**Appendix A2. Habitat Assessment Point Sc 2.**



**Appendix A3. Habitat Assessment Point Sc 3.**



**Appendix A4. Habitat Assessment Point Sc 4.**



**Appendix A5. Habitat Assessment Point Sc 5.**



**Appendix A6. Habitat Assessment Point Sc 6.**



**Appendix A7. Habitat Assessment Point Sc 7.**



**Appendix A8. Habitat Assessment Point Sc 8.**

# Bat Acoustic Study for the Sugar Creek Wind Project Logan County, Illinois

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July 20 – November 4, 2016



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**Prepared by:**

**Benjamin Hale and Travis Brown**

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408 West Sixth Street  
Bloomington, Indiana 47404

January 30, 2017



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- *Privileged and Confidential* -



## **EXECUTIVE SUMMARY**

Western EcoSystems Technology, Inc. conducted a study of bat activity at the proposed Sugar Creek Wind Project (Project) in Logan County, Illinois. The study was conducted in accordance with the tiered process outlined in the US Fish and Wildlife Service *Land-Based Wind Energy Guidelines*. The bat acoustic study was designed to estimate levels of bat activity and evaluate species composition in the Project area during the late summer and fall of 2016.

Acoustic monitoring was conducted at two ground stations near forest edges and at two meteorological (met) tower stations located in agricultural fields in the Project area between July 20 and November 4, 2016. Paired Wildlife Acoustics SM3BAT detector microphones were deployed at each met tower, one at 5 meters above ground level (agl) and the other at 45 meters agl. AnaLook<sup>®</sup> software and call filters were used to categorize recorded bat calls (passes) into high- and low-frequency groups. Quantitative and qualitative analyses were additionally conducted using Kalediscope Pro<sup>®</sup> (Kaeidoscope) to identify potential calls of federally listed bat species.

Acoustic detectors recorded 14,222 bat passes, as determined by Analook software, during 622 detector-nights. Ground detectors at met tower stations recorded a mean ( $\pm$  standard error) bat activity level of  $9.70 \pm 1.10$  bat passes per detector-night. Raised detectors at met tower stations recorded a mean of  $14.86 \pm 1.25$  bat passes per detector-night. Detectors at forest edge stations recorded a mean bat activity level of  $42.91 \pm 4.61$  bat passes per detector-night. Bat activity peaked during late July. At met tower stations, both ground and raised detectors recorded a majority of low-frequency calls (71.0% and 63.2%, respectively). Conversely, forest edge stations detected a majority of high-frequency calls (68%). Overall, the majority of high-frequency calls (78.7%) were recorded at forest edge stations.

A total of 14,374 call sequences were analyzed by Kaleidoscope software, of which 65 (0.5%) were identified as potentially Indiana or northern long-eared bat. Qualitative review of the calls resulted in no Indiana and six northern-long eared bat calls, all of which were recorded at ground-based microphones, with two at met tower and four at forest edge stations during August and September.

While relationships between pre-construction acoustic activity levels and post-construction bat fatality levels remain difficult to establish, approximately two-thirds of bat fatality studies in the Midwest reported fewer than five bat fatalities/MW/year, and it is probable that similar fatality rates could be observed in the Project area.

## **STUDY PARTICIPANTS**

### **Western EcoSystems Technology, Inc.**

Travis Brown	Project Manager, Report Writer
Kevin Murray	Bat Biologist and Bat Data Analyst
Benjamin Hale	Field Supervisor, Bat Biologist, and Report Writer
Carmen Boyd	Data Manager
Andrew Telander	Statistician
Kristina Hammond	Data Analyst
Rebecca Schmitt	Technical Editor
Sofia Agudelo	Technical Editor and Peer-Reviewer
Dina Pettit	Field Technician

## **REPORT REFERENCE**

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## **INTRODUCTION**

Western EcoSystems Technology, Inc. (WEST) conducted a study of bat activity at the proposed Sugar Creek Wind Project (Project) in Logan County, Illinois (Figure 1). The study was conducted during the late summer and fall of 2016 in accordance with the tiered process described in the US Fish and Wildlife Service (USFWS) *Land-Based Wind Energy Guidelines* (WEG; USFWS 2012), and methods were developed in coordination with USFWS and the Illinois Department of Natural Resources to evaluate the use of the Project area by bats, including federally and state-listed species.

## **STUDY AREA**

The Project is located less than five miles (mi; eight kilometers [km]) west of the town of Lincoln, in northwest Logan County, Illinois (Figure 1). Approximately 17,749 acres (ac; 7,183 hectares [ha]) are being considered for Project development; however, only a portion of this area will be directly affected by installation of utility-scale wind turbines and associated infrastructure. According to the US Geological Survey (USGS) National Land Cover Database (USGS NLCD 2011, Homer et al., 2015), cultivated crops (mainly corn [*Zea mays*] and soybean [*Glycine max*]) represent the major land cover type within the Project area (6,525.4 ac (6,687.6 ha; 93.1% of the Project area), followed by developed areas 535.6 ac; 3%); all other land cover types represent less than 2% of the Project area (Figure 2, Table 1).

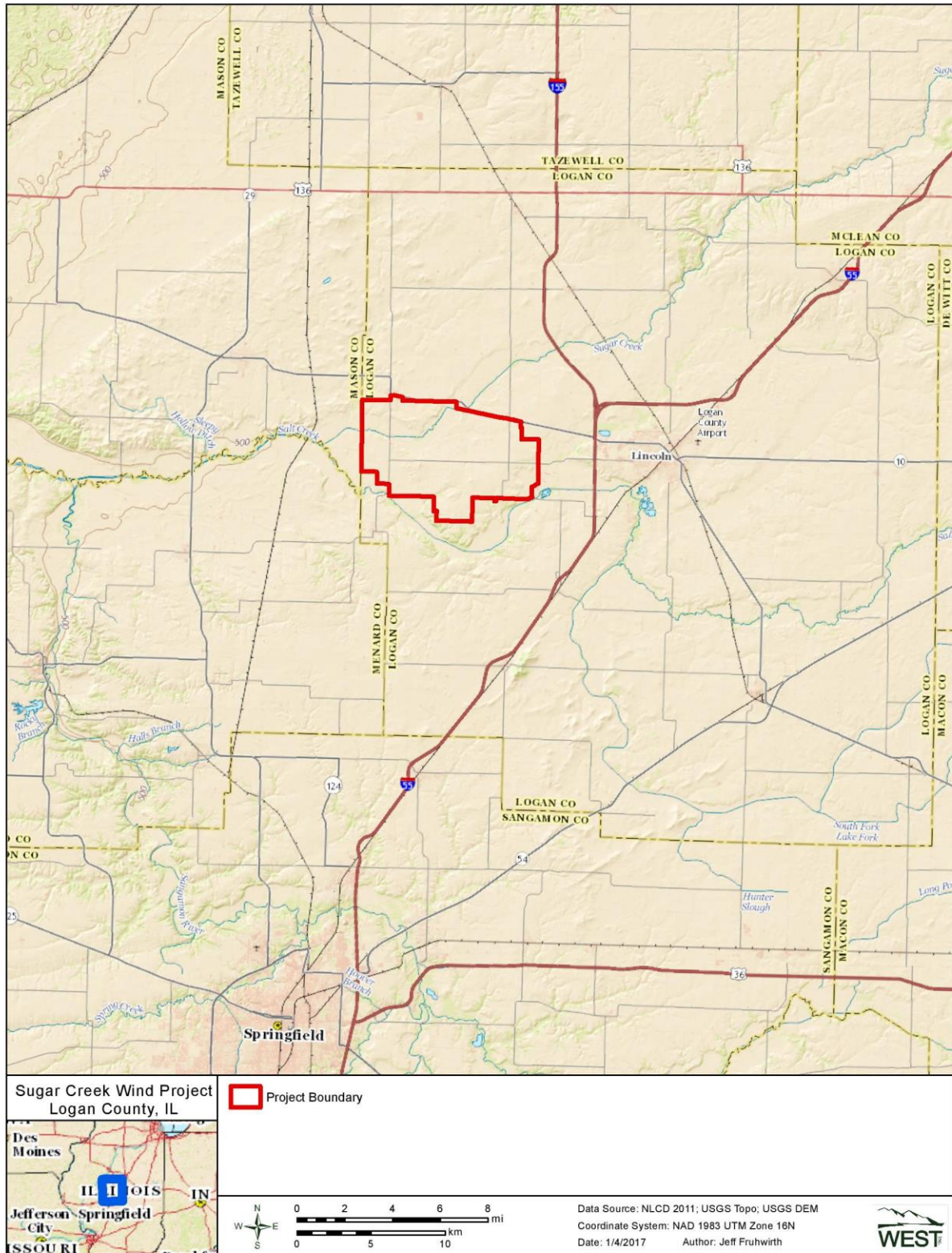


Figure 1. Topographic map showing the location of the Sugar Creek Wind Project in Logan County, Illinois.

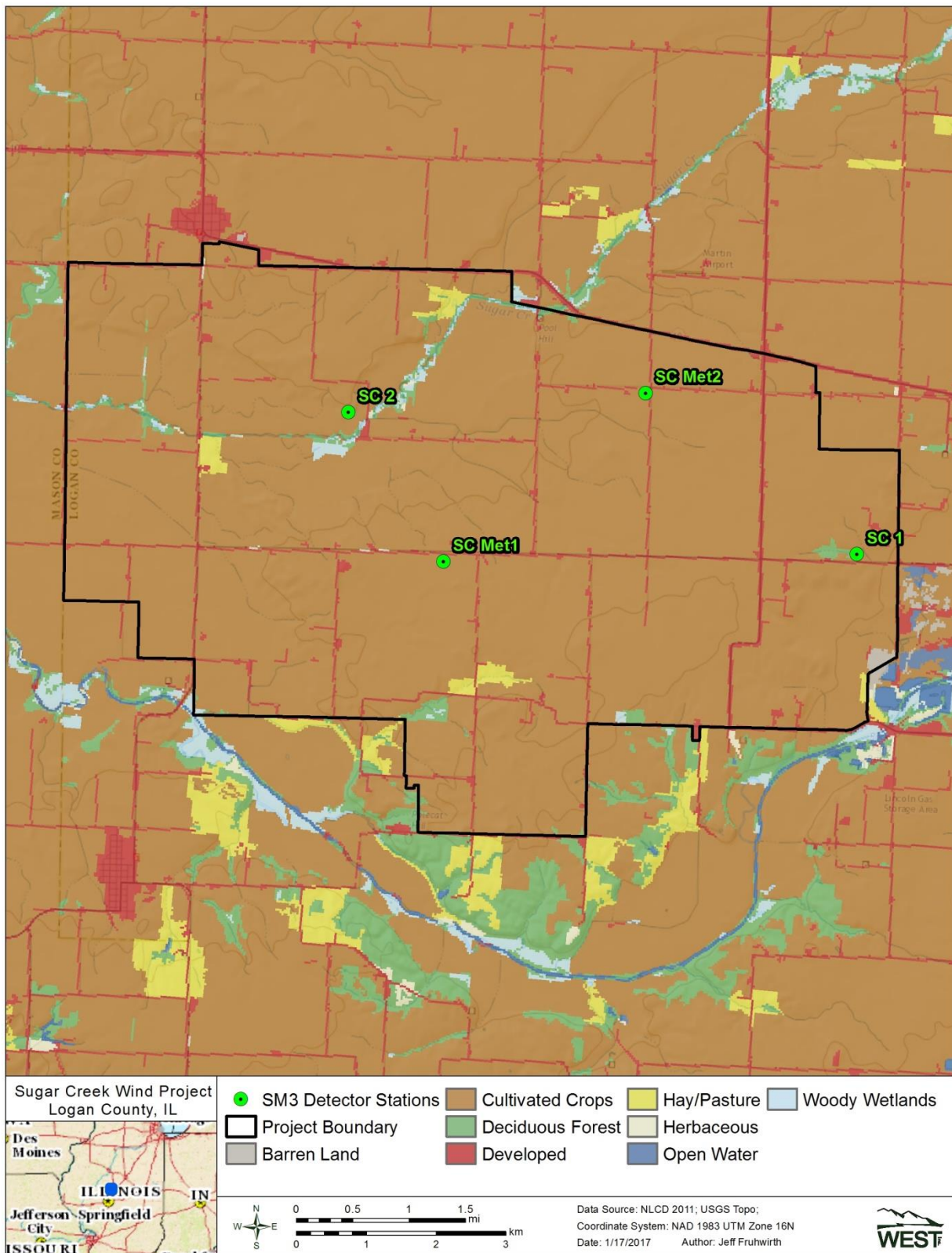


Figure 2. National Land Cover Database land cover types, and location of acoustic detector stations in the Sugar Creek Wind Project, Logan County, Illinois (USGS NLCD 2011, Homer et al. 2015).



**Table 1. National Land Cover Database land cover types within the Sugar Creek Wind Energy Project, Logan County, Illinois.**

Land Cover Type	Acres	% Composition
Cultivated Crops	16,525.4	93.1
Developed	749.9	4.2
Pasture/Hay	151	0.9
Woody Wetlands	86.6	0.5
Developed, Medium Intensity	25.0	0.1
Barren Land	20.2	0.1
Herbaceous	14.3	0.1
<b>Total</b>	<b>17,749.2</b>	<b>100</b>

Source: USGS NLCS 2011, Hormel et al. 2015

### Overview of Bat Diversity in the Project Area

Nine species of bats have the potential to occur in the Project area, based on distribution ranges and habitat preferences (Feldhamer et al. 2015; Table 2), two of which are federally and state-listed: the federal/state endangered Indiana bat (INBA, *Myotis sodalis*) and federal/state threatened northern long-eared bat (NLEB, *M. septentrionalis*).

**Table 2. Species of bats, categorized by echolocation call frequency, with potential to occur in the Sugar Creek Wind Project area, Logan County, Illinois, based on distribution, ranges, and habitat preferences<sup>1</sup>.**

Common Name	Scientific Name
<b>High-Frequency (&gt; 30 kHz)</b>	
eastern red bat	<i>Lasiurus borealis</i>
little brown bat	<i>Myotis lucifugus</i>
northern long-eared bat <sup>2</sup>	<i>Myotis septentrionalis</i>
Indiana bat <sup>2</sup>	<i>Myotis sodalis</i>
evening bat	<i>Nycticeius humeralis</i>
tri-colored bat	<i>Perimyotis subflavus</i>
<b>Low-Frequency (&lt; 30 kHz)</b>	
big brown bat	<i>Eptesicus fuscus</i>
hoary bat	<i>Lasiurus cinereus</i>
silver-haired bat	<i>Lasionycteris noctivagans</i>

<sup>1</sup> Potential of occurrence according to Feldhamer et al. 2015

<sup>2</sup> Federally and state-listed species (USFWS 1967, Illinois DNR 2015, USFWS 2016a)

## METHODS

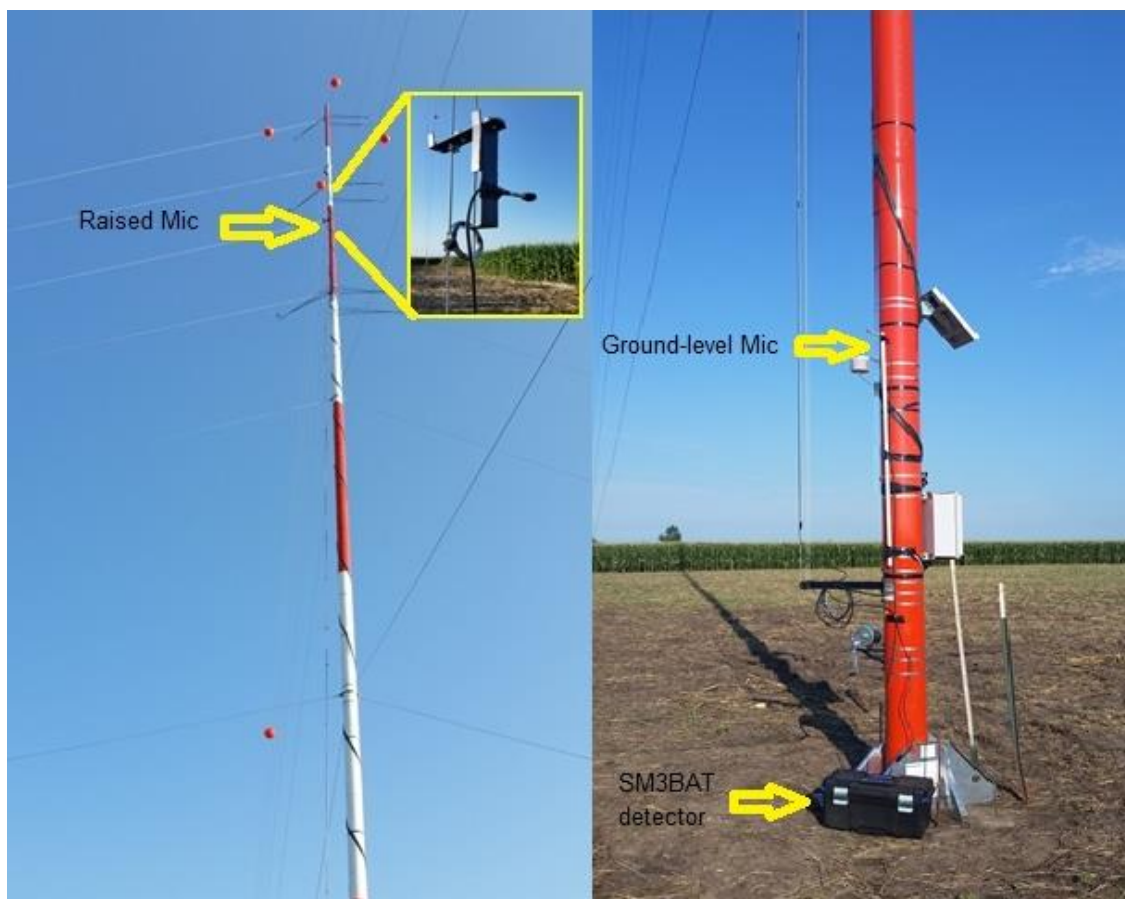
### Bat Acoustic Surveys

#### Survey Stations

Full-spectrum SM3BAT acoustic detectors (Wildlife Acoustics, Concord, Massachusetts) were used to measure bat activity at four stations established in the Project area from July 20, 2016, and November 4, 2016. Two stations were located at meteorological towers (met tower stations) in cropland habitat, which was the dominant land cover type and representative of potential turbine locations; and two stations established adjacent to forest edges (forest edge stations), in areas likely to be used by bats for foraging and/or roosting (Figure 2).

Each SM3BAT detector and battery was placed on the ground in weather-resistant housing (Figure 3). Detectors at the two met tower stations included two microphones, one near ground level (ground detector; approximately 10 feet (ft; three meters [m]) above ground level [AGL]), and another microphone within the rotor-swept height (raised detector; approximately 164 ft [45 m] AGL); detectors at the two forest edge stations included one ground microphone; approximately 10 ft (three m) AGL, for a total of six microphones recording data simultaneously during this study.

Ground-level microphones were elevated using poly-vinyl chloride (PVC) poles; raised microphones were elevated on met towers, affixed to a K-Bat (Pat. Pend; KB Energy Renewable Solutions, Arlington, Wyoming) bracket high-tension pulley winch system (Figure 3). Each detector was programmed to turn on approximately 30 minutes (min) before sunset and turn off approximately 30 min after sunrise each day.



**Figure 3. Examples of ground-level and raised microphones (mic) attached to SM3BAT detectors used at acoustic stations within the Sugar Creek Wind Project, Logan County, Illinois.**

## Data Collection and Call Analysis

Full-spectrum SM3BAT detectors used a broadband high-frequency Wildlife Acoustics SMM-U1 omni-directional ultrasonic microphone to detect the echolocation calls of bats. Echolocation calls were digitally processed and stored on a high-capacity secure digital (SD) card. The resulting files were viewed in automated acoustic identification software, including Kaleidoscope Pro® 3.1.7 software (Kaleidoscope; Wildlife Acoustics, Inc. 2016) and AnaLook® 4.9j software (AnaLook; 2004), as digital sonograms (sound spectrographs) that showed variation in sound frequency and duration over time. Sonogram displays were used to distinguish bat calls from other types of ultrasound (e.g., wind, insect calls) and to determine the call frequency and identify the species of bat that generated the calls, when possible.

Bat passes, defined as a sequence of at least two echolocation calls (pulses) produced by an individual bat with no pause between calls of more than one second (Fenton 1980), were sorted into high frequency (HF) and low frequency (LF) groups, based upon echolocation call sound frequency, using AnaLook. HF bats included eastern red bats (*Lasiurus borealis*), evening bats (*Nycticeius humeralis*), and *Myotis* species, which typically produce echolocation calls at minimum frequencies greater than 30 kilohertz (kHz). LF bats included big brown bats (*Eptesicus fuscus*), silver-haired bats (*Lasionycteris noctivagans*), and hoary bats (*Lasiurus cinereus*), which typically emit echolocation calls with minimum frequencies lower than 30 kHz (Table 2).

All bat calls were classified to species group by visually comparing call characteristics to a known call library. Call characteristics such as minimum frequency, slope, and duration were used to identify calls. HF calls were assigned to eastern red bat/evening bat, tri-colored bat (*Perimyotis subflavus*), or *Myotis* spp., and LF bat calls were assigned to hoary bat or big brown bat/silver-haired bat groups. Calls that could not be assigned to one of these species groups were classified as unknown.

## Statistical Analysis

The number of bat passes per detector-night is a standard metric used for measuring bat activity (Kunz et al. 2007a), and this metric was used as an index of mean bat activity in the Project area. A detector-night was defined as one detector operating for one entire night. Bat passes per detector-night were calculated for all bats, HF bats, and LF bats. Bat pass rates represent indices of bat activity and do not represent numbers of individuals. The number of bat passes was determined by an experienced bat biologist using AnaLook.

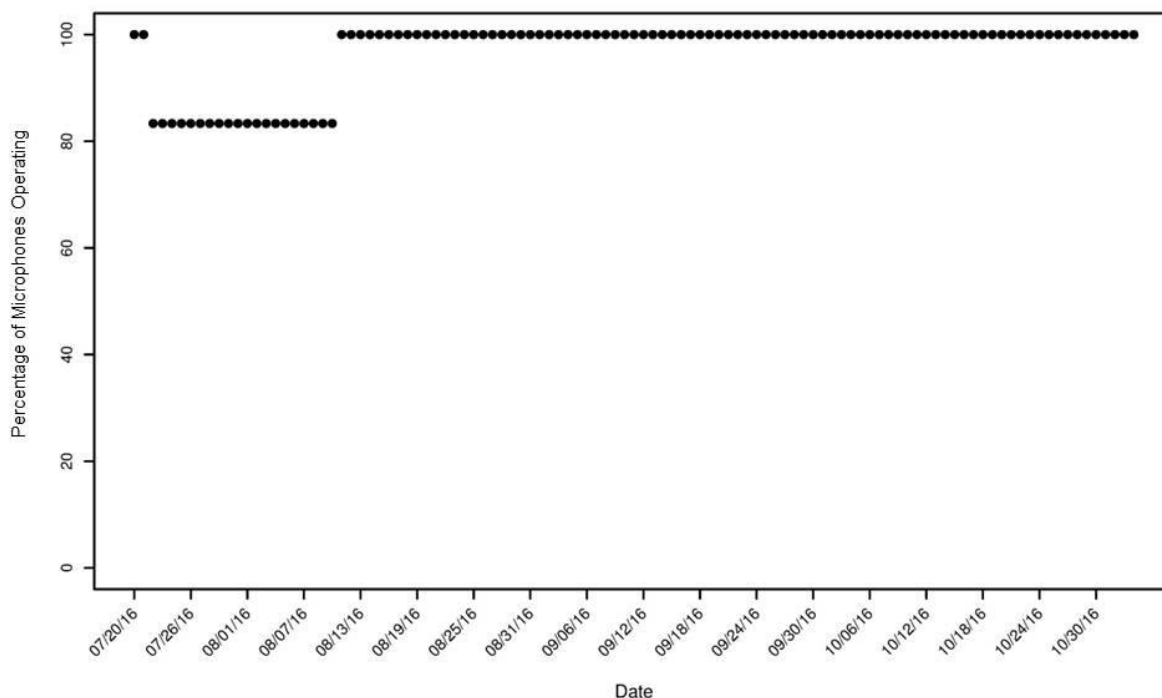
Mean bat activity was also calculated for a standardized Fall Migration Period (FMP), defined here as the period from August 1 - October 15. A period of peak sustained bat activity was defined as the seven-day period with the highest average bat activity. If multiple seven-day periods equaled the peak sustained bat activity rate, all dates in these seven-day periods were reported. These, and all multi-detector averages in this report, were calculated as an unweighted average of total bat activity at each detector.

### Federally Listed Bat Acoustic Analysis

The USFWS call analysis procedure outlined in the *Range-Wide Indiana Bat Summer Survey Guidelines* (Guidelines; USFWS 2016b) was used to identify potential calls made by the INBA and NLEB. Bat calls were quantitatively identified using Kaleidoscope Pro<sup>®</sup> (Kaleidoscope). All calls identified as INBA or NLEB by Kaleidoscope were verified via qualitative call analysis by an experienced bat biologist (Kevin Murray) with the required USFWS qualifications as outlined in the Guidelines (USFWS 2016b). If a survey night exceeded the maximum likelihood threshold (MLE; p-value less than 0.05) for INBA or NLEB, all files from that night were reviewed qualitatively. If call sequences were not characteristic of INBA or NLEB, contained distinct calls produced by species other than INBA or NLEB, or were of insufficient quality, they were reclassified as another species or as unknown. Per the Guidelines (USFWS 2016b), INBA or NLEB were considered present at sites with probable INBA or NLEB calls flagged by automated analysis that were verified by qualitative review.

### RESULTS

Bat activity was monitored for a total of 622 detector-nights between July 20, 2016, and November 4, 2016. The SM3BAT detectors operated correctly for 96.4% of the study period (Figure 4). The solitary data gap resulted from one malfunctioning raised microphone from July 22 to August 13.



**Figure 4. Operational status (percent) of six bat detector microphones during each night of the bat acoustic study, conducted in the Sugar Creek Wind Project in Logan County, Illinois, from July 20 - November 4, 2016.**

A total of 14,222 bat passes were recorded over the study period. Bat activity varied among microphone location and acoustic station, and ranged from 7.93±0.92 to 57.67±6.55 bat passes per detector-night (Table 3).

*Spatial Variation*

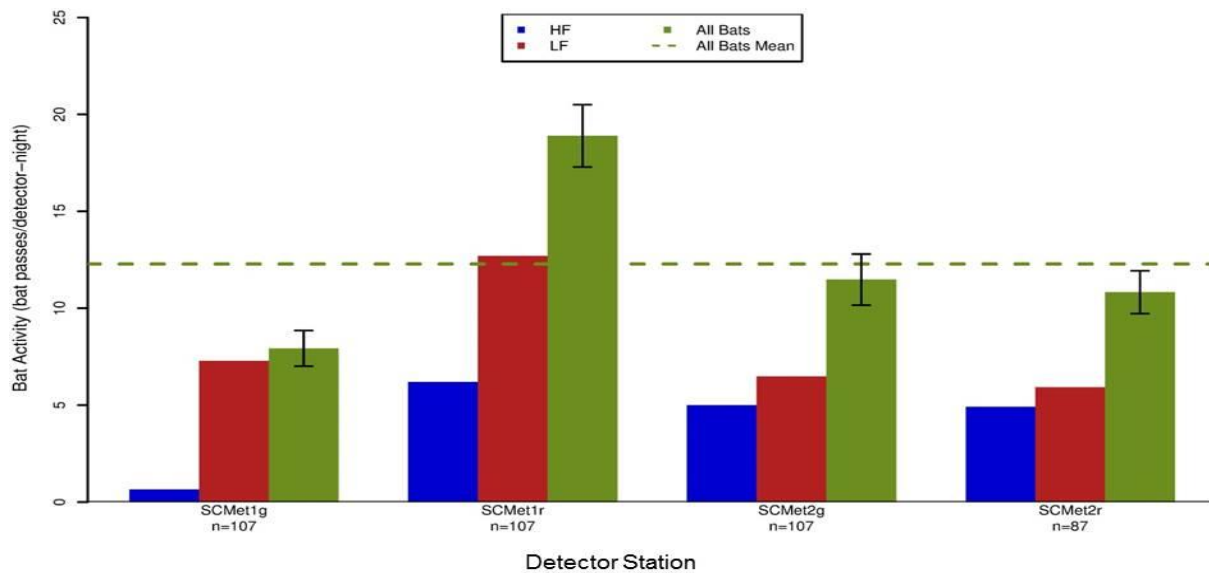
Bat activity was higher at the forest edge locations than both ground and raised met tower microphones (Table 3). Bat activity recorded at forest edge locations was more than twice that of the raised met tower microphones and more than three times that recorded by met tower ground microphones. At the met tower locations, raised microphone activity was higher than the ground level microphones (Table 3).

**Table 3. Number of bat passes recorded at fixed met tower stations and forest edge stations during the bat acoustic study conducted in the Sugar Creek Wind Project in Logan County, Illinois, from July 20 – November 4, 2016.**

<b>SM3BAT Station</b>	<b>Microphone Location</b>	<b># of High-Frequency Bat Passes</b>	<b># of Low-Frequency Bat Passes</b>	<b>Total Bat Passes</b>	<b>Detector-Nights</b>	<b>Mean Bat Passes/Night<sup>±</sup></b>
SCMET1g	Ground	69	779	848	107	7.93±0.92
SCMET1r	Raised	663	1,358	2,021	107	18.89±1.61
SCMET2g	Ground	534	694	1,228	107	11.48±1.32
SCMET2r	Raised	427	515	942	87	10.83±1.10
<b>Overall MET Ground</b>		<b>603</b>	<b>1,473</b>	<b>2,076</b>	<b>214</b>	<b>9.70±1.10</b>
<b>Overall MET Raised</b>		<b>1,090</b>	<b>1,873</b>	<b>2,963</b>	<b>194</b>	<b>14.86±1.25</b>
<b>Overall All MET</b>		<b>1,693</b>	<b>3,346</b>	<b>5,039</b>	<b>408</b>	<b>12.28±1.05</b>
SC1	Ground	1,902	1,110	3,012	<b>107</b>	28.15±3.70
SC2	Ground	4,346	1,825	6,171	<b>107</b>	57.67±6.55
<b>Overall Forest Edge</b>		<b>6,248</b>	<b>2,935</b>	<b>9,183</b>	<b>214</b>	<b>42.91±4.61</b>

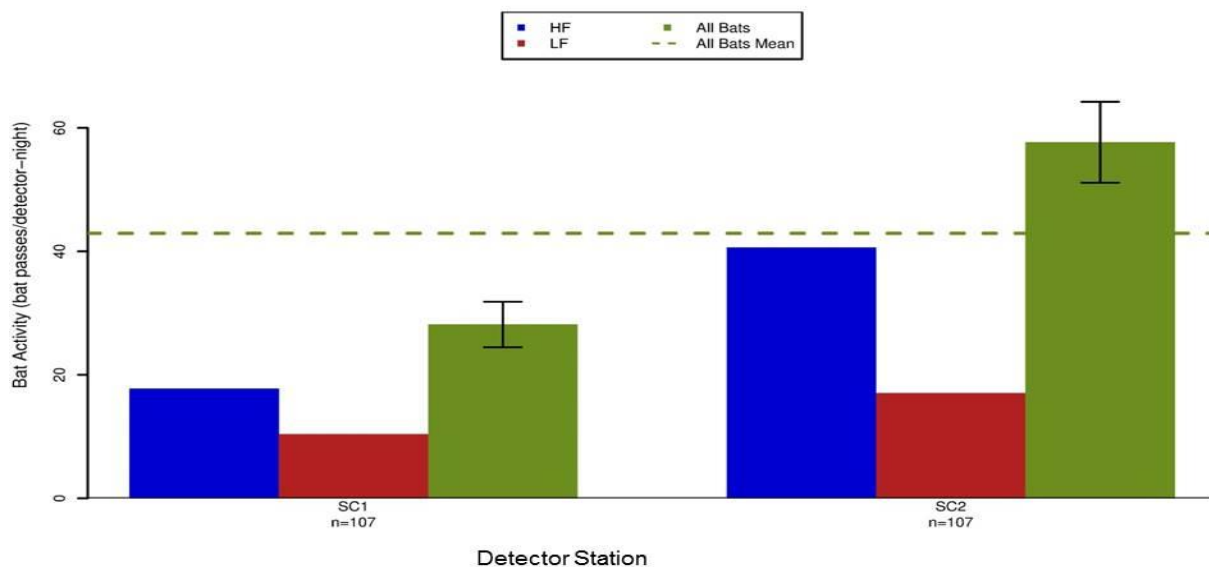
<sup>±</sup> bootstrapped standard error.

Overall bat activity was higher at the SCMET1 raised microphone than at the SCMET2 raised microphone, primarily due to higher levels of LF bat activity at SCMET1 (Table 3, Figure 5). Bat activity for ground detectors at SCMET1 and SCMET2 stations was similar (Table 3); however, LF calls represented the majority of activity at SCMET1 (Figure 5). The SC2 forest edge station recorded more than twice as much activity as the SC1 forest edge station (Table 3), including more HF, LF, and total bat passes (Figure 6).



**Figure 5. Number of high-frequency (HF) and low-frequency (LF) bat passes per detector-night recorded at two met tower locations with both ground (g) and raised (r) microphones, during the bat acoustic study conducted in the Sugar Creek Wind Project, Logan County, Illinois, from July 20 – November 4, 2016.**

Note: The bootstrapped standard errors are represented on the 'All Bats' columns.



**Figure 6. Number of high-frequency (HF) and low-frequency (LF) bat passes per detector-night recorded at the two forest edge locations, during the bat acoustic study conducted in the Sugar Creek Wind Project, Logan County, Illinois, from July 20 – November 4, 2016.**

Note: The bootstrapped standard errors are represented on the 'All Bats' columns.

Temporal Variation

Met Tower Stations

Bat activity at met tower stations was highest from late July through early September (Figures 7a and 7b). Activity of LF bats was generally higher than HF bats activity at raised mics, except during most of August and again during the last week of the study period (10/29 - 11/3) when it was similar (Figure 7a). Activity of LF bats was higher than HF bats at met tower ground mics throughout the study (Figure 7b). No discernable patterns were observed between the FMP and the entire study period (Table 4). The peak period of bat activity at met tower stations, composed primarily of LF bat activity, was from July 20 - July 27, 2016. The greatest peak of HF bat activity was during the period from August 16 - August 22, 2016 (Table 5), although this peak was driven by HF activity at raised mics, and peak activity at ground mics was one to two weeks earlier (Figure 7b). In general, bat activity was higher at raised microphones than ground microphones during all weeks, except during the first week of the study period (Figure 8).

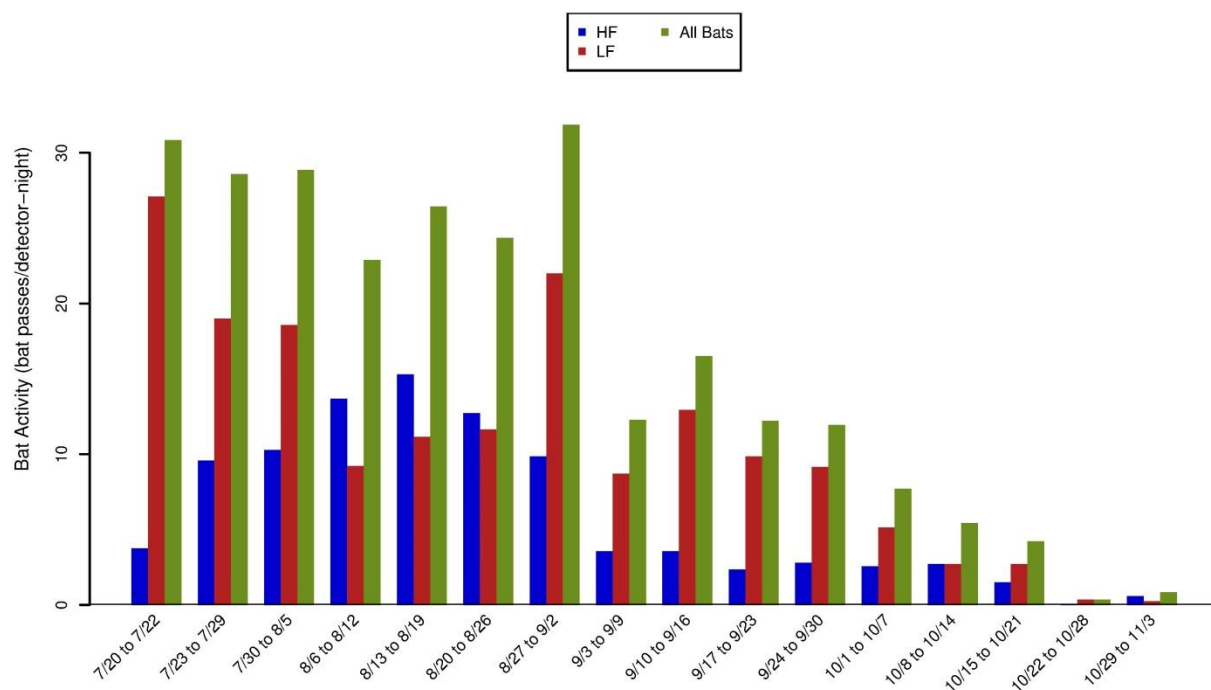


Figure 7a. High-frequency (HF), low-frequency (LF), and all bats seasonal activity recorded at two meteorological tower stations with raised microphones, during the bat acoustic study conducted in the Sugar Creek Wind Project, Logan County, Illinois, from July 20 – November 4, 2016

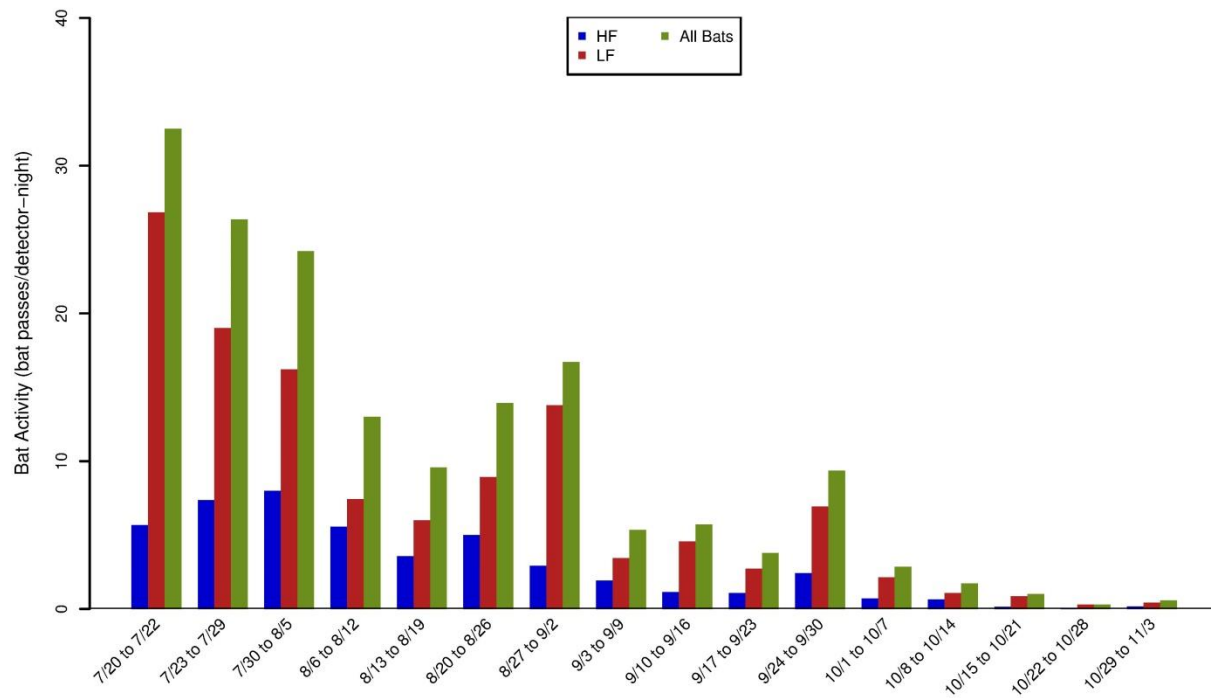


Figure 7b. High-frequency (HF), low-frequency (LF), and all bats seasonal activity recorded at two meteorological tower stations with ground microphones, during the bat acoustic study conducted in the Sugar Creek Wind Project, Logan County, Illinois, from July 20 – November 4, 2016



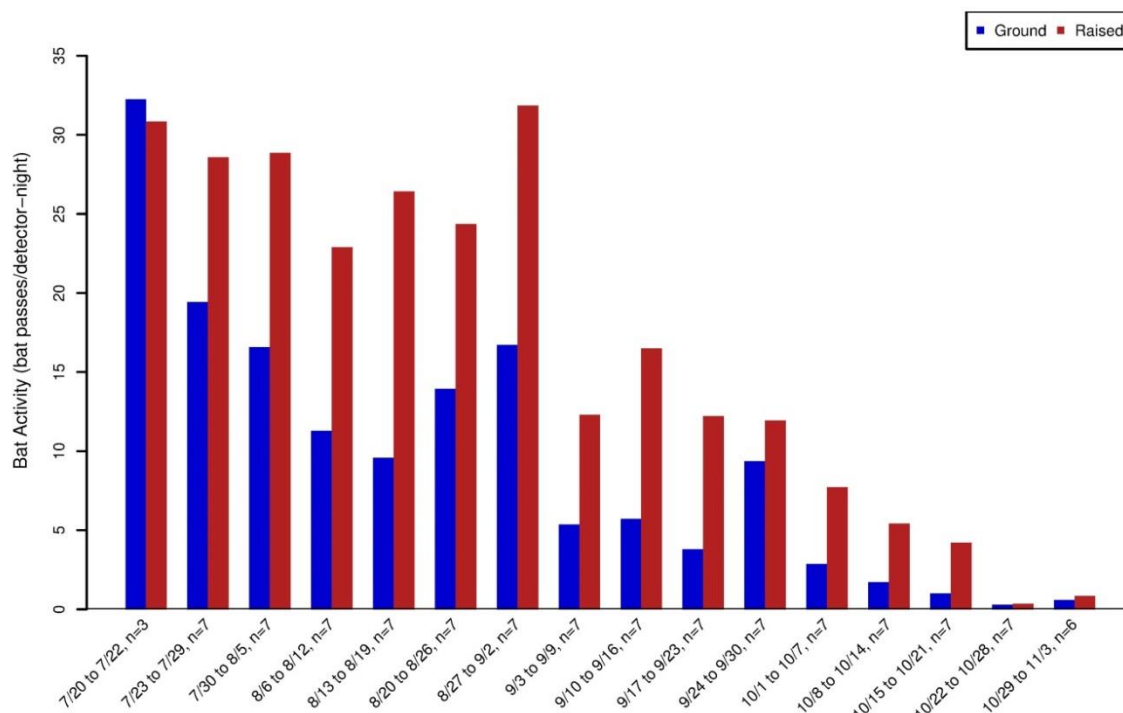
**Table 4. Number of high-frequency (HF), low-frequency (LF), and all bats (AB) passes per detector-night recorded at meteorological tower stations in the Sugar Creek Wind Project in Logan County, Illinois, during the entire study period and the fall migration period.**

SM3BAT Station/Location	Call Frequency	Fall Migration Period	Entire Study Period
		July 30 – October 14, 2016	July 20 – November 4, 2016
SCMET1/ Ground	LF	7.22	7.28
	HF	0.68	0.64
	AB	7.90	7.93
SCMET1/ Raised	LF	14.17	12.69
	HF	7.39	6.20
	AB	21.56	18.89
SCMET2/ Ground	LF	6.09	6.49
	HF	5.32	4.99
	AB	11.42	11.48
SCMET2/ Raised <sup>1</sup>	LF	7.06	5.92
	HF	6.28	4.91
	AB	13.34	10.83
<b>Ground Totals</b>	LF	<b>6.88±0.80</b>	<b>6.66±0.76</b>
	HF	<b>2.82±0.34</b>	<b>3.00±0.38</b>
	AB	<b>9.70±1.06</b>	<b>9.66±1.04</b>
<b>Raised Totals</b>	LF	<b>9.31±0.88</b>	<b>10.62±0.86</b>
	HF	<b>5.55±0.62</b>	<b>6.83±0.76</b>
	AB	<b>14.86±1.27</b>	<b>17.45±1.30</b>
<b>Overall</b>	LF	<b>8.09±0.80</b>	<b>8.64±0.74</b>
	HF	<b>4.18±0.39</b>	<b>4.92±0.48</b>
	AB	<b>12.28±1.02</b>	<b>13.55±1.00</b>

<sup>1</sup> No data from SCMET2 Raised available from July 22 – August 13, 2016, due to microphone malfunction this period.

**Table 5. Periods of peak activity for high-frequency (HF), low-frequency (LF), and all bats at the meteorological tower stations, during the bat acoustic study conducted in the Sugar Creek Wind Project, Logan County, Illinois, from July 20 – November 4, 2016.**

Species Group	Start Date of Peak Activity (month/day/year)	End Date of Peak Activity (month/day/year)	Bat Passes per Detector-Night
HF	08/16/2016	08/22/2016	10.75
LF	07/20/2016	07/26/2016	23.70
<b>All Bats</b>	<b>07/20/2016</b>	<b>07/26/2016</b>	<b>29.96</b>



**Figure 8. All bats seasonal activity recorded at the two meteorological tower locations with both ground and raised microphones, during the bat acoustic study conducted in the Sugar Creek Wind Project from July 20 - November 4, 2016.**

Forest Edge Stations

Bat activity at ground stations near forest edges varied throughout the study period, but was highest in late July. Activity of HF bats was higher than LF bats at forest edge stations during all weeks, except the last week of September (Figure 9). Patterns in LF, HF, and all bat activity were similar between the overall study period and the FMP (Table 6). The peak period of bat activity at forest edge stations, composed primarily of HF bat activity, was from July 20 - July 26, 2016. The greatest peak of LF bat activity was during the period from September 25 - October 1, 2016 (Table 7).

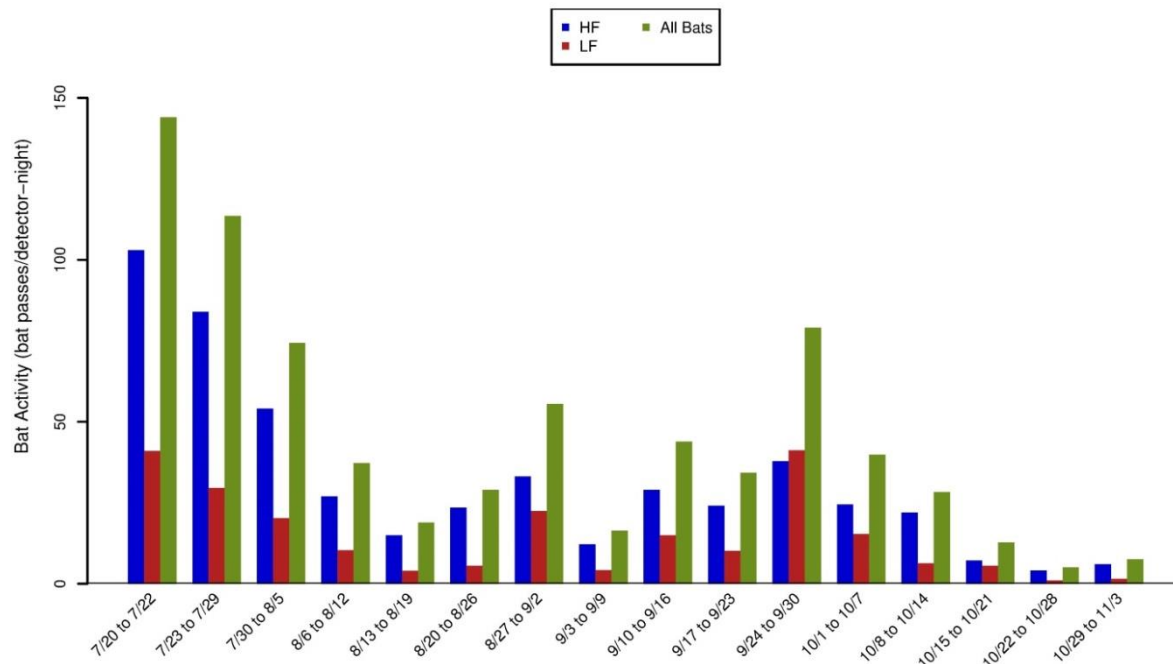


Figure 9. High-frequency (HF), low-frequency (LF), and all bats seasonal activity recorded at forest edge stations with ground microphones, during the bat acoustic study conducted in the Sugar Creek Wind Project area from July 20 - November 4, 2016.

Table 6. Number of HF, LF, and all bat passes per detector-night, recorded at forest edge stations in the Sugar Creek Wind Project in Logan County, Illinois, during the entire study period and the fall migration period.

SM3BAT Station/Location	Call Frequency	Fall Migration Period	Entire Study Period
		July 30 – October 14, 2016	Jul 20 – November 4, 2016
SC1/Ground	LF	11.25	10.37
	HF	19.03	17.78
	AB	30.27	28.15
SC2/Ground	LF	16.87	17.06
	HF	35.86	40.62
	AB	52.73	57.67
Overall	LF	14.06±2.27	13.71±1.90
	HF	27.44±2.93	29.20±3.21
	AB	41.50±4.77	42.91±4.76

**Table 7. Periods of peak activity for HF, LF, and all bats at the forest edge stations, during the bat acoustic study conducted in the Sugar Creek Wind Energy Project, Logan County, Illinois, from July 20 – November 4, 2016.**

<b>Species Group</b>	<b>Start Date of Peak Activity (month/day/year)</b>	<b>End Date of Peak Activity (month/day/year)</b>	<b>Bat Passes per Detector-Night</b>
HF	07/20/2016	07/26/2016	94.14
LF	09/25/2016	10/01/2016	42.86
<b>All Bats</b>	<b>07/20/2016</b>	<b>07/26/2016</b>	<b>127.57</b>

*Species Composition*

During the study period (i.e., all nights when any detector was functioning), 55.8% of bat passes were classified as HF and 44.2% of bat passes were classified as LF. As shown in Table 3 and Figure 8, the majority of calls detected at met tower locations were LF calls (71.0% and 63.2%, for ground and raised microphones, respectively). Conversely, as shown in Table 3 and Figure 9, the majority of calls detected at forest edge locations were HF calls (68.0%). Overall, the majority of HF calls (78.7%) were recorded at forest edge stations; in contrast, relatively equal percentages of LF calls were recorded at forest edge and met tower stations (46.7% and 53.3%, respectively).

A total of 14,374 call sequences were analyzed using Kaleidoscope Pro, 65 of which (0.5%) were identified as calls from INBA or NLEB. However, 41 of the calls identified by Kaleidoscope as INBA or INBA were reclassified during qualitative review as eastern red bats. Additionally, one call was reclassified as a big brown bat, two calls were reclassified as unknown *Myotis* calls, and 15 call sequences were not identifiable because they contained only fragmentary calls and/or noise. No INBAs were identified during qualitative review of calls. The remaining six call sequences, recorded at three acoustic stations by ground microphones during six different nights in August and September, 2016 (Table 8), were identified as NLEB during qualitative review. Probability of occurrence values (p-values) for NLEB at three of these sites was <0.05.

**Table 8. Summary of federally listed bat calls verified during qualitative review of acoustic data collected at met tower and forest edge stations, during the bat acoustic study conducted in the Sugar Creek Wind Project, Logan County, Illinois, from July 20 – November 4, 2016. .**

<b>Date (month/day/year)</b>	<b>SM3BAT Station/Location</b>	<b># of NLEB Calls</b>
08/01/2016*	SC 1/Ground	1
08/02/2016*	SC 1/Ground	1
08/05/2016	SC MET2/Ground	1
08/30/2016	SC MET2/Ground	1
08/30/2016*	SC 1/Ground	1
09/04/2016	SC 2/Ground	1

\*NLEB occurrence p-values on these nights was >0.05, indicating statistically weaker evidence of presence.

## DISCUSSION

Although acoustic data may not accurately predict post-construction fatality rates (Hein et al. 2013), this information can provide insights into the timing and location of possible impacts of wind development on bat populations (Kunz et al. 2007a,b; Britzke et al. 2013) and inform potential mitigation strategies (Weller and Baldwin 2012).

Low activity of NLEB was documented at the site, and only at ground based microphones. No activity by INBA was documented throughout the study. These data suggest risk of impact to these species may be low; however, the acoustic monitoring conducted at the site does not represent a presence/absence survey for listed bat species and acoustic data have not accurately predicted post-construction fatalities in the past (Hein et al. 2013).

Post-construction monitoring studies of wind energy facilities show that: a) migratory tree-roosting species (e.g., eastern red bat, hoary bat, and silver-haired bat) compose approximately 78% of reported bat fatalities; b) the majority of fatalities occur during the fall migration season (August and September); and c) most fatalities occur on nights with relatively low wind speeds (Arnett et al. 2008, 2013; Arnett and Baerwald 2013).

Bat activity recorded in the Project area ranged from 7.93±0.92 to 57.67±6.55 bat passes per detector-night. The highest average level of bat activity was observed at forest edge stations (42.91±4.61 bat passes per detector-night). By comparison, the overall average bat activity at met tower stations (12.28±1.05 bat passes per detector-night) was less than one-third of that recorded near potential bat habitat, suggesting that siting turbines away from forested cover within the Project area may decrease mortality of some bat species resulting from Project-related activities. The USFWS recommends turbines be sited at least 1,000 ft (304.8 m) from forested land cover to avoid federally listed bat species mortality during the summer maternity season (USFWS 2011).

Of the two federally listed species with potential to occur in the Project area, only NLEB calls were identified during this acoustic bat study. All identified NLEB calls were recorded by ground microphones, the majority being recorded at forest edge stations. This suggests that NLEBs are less likely to fly within the rotor-swept zone of turbines, and siting turbines away from forested

land cover within the Project area will likely reduce the potential of NLEB mortality resulting from Project-related activities during the summer. No INBA calls were identified during this study, but if INBA are present, then siting away from forested land cover may also reduce INBA mortality during the summer. At least 43 NLEB fatalities and seven INBA fatalities are known to have occurred at wind energy facilities, and the majority of these fatalities have been observed during the FMP (Pruitt and Okajima 2014, Gruver and Bishop-Boros 2015). These results suggest that migratory flights of INBA and NLEB during FMP may not be as closely associated with forested cover; therefore, siting away from forested land cover may not eliminate fatality risk during FMP for these federally listed species.

Comparison of fatality rates at wind energy facilities in the Midwest region of North America indicate that the majority (approximately two-thirds) of bat fatality studies in this region reported fewer than five bat fatalities/MW/year (Figure 10). While relationships between pre-construction acoustic activity levels and post-construction bat fatality levels at wind energy facilities remain difficult to establish (Hein et al. 2013), it is probable that bat fatality rates attributable to Project activities will be similar to those observed at other projects in the Midwest.

## Regional Bat Fatality Rates

Midwest

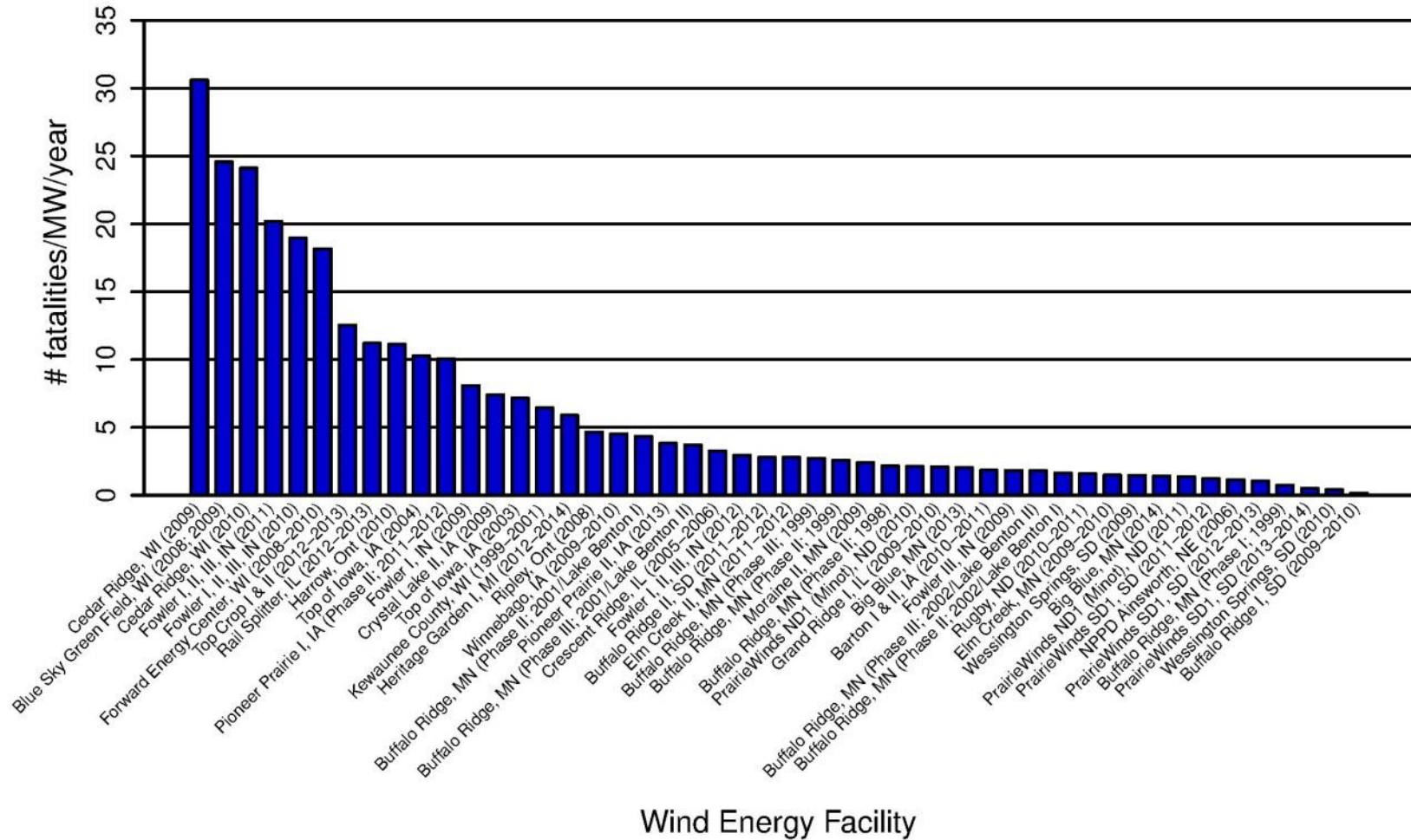


Figure 10. Bat fatality rates (number of bats per megawatt per year) from publicly-available studies at wind energy facilities in the Midwest region of North America.

**Figure 10 (continued). Fatality rates for bats (number of bats per MW per year) from publicly-available studies at wind energy facilities in the Midwest and Southeast regions of the U.S.**

Data from the following sources:

Facility, Location	# Bat Fatalities/MW/year	Reference	Facility, Location	# Bat Fatalities/MW/year	Reference
Cedar Ridge, WI (2009)	30.61	BHE Environmental 2010	Buffalo Ridge, MN (Phase II; 1999)	2.59	Johnson et al. 2000
Blue Sky Green Field, WI (2008; 2009)	24.57	Gruver et al. 2009	Moraine II, MN (2009)	2.42	Derby et al. 2010d
Cedar Ridge, WI (2010)	24.12	BHE Environmental 2011	Buffalo Ridge, MN (Phase II; 1998)	2.16	Johnson et al. 2000
Fowler I, II, III, IN (2011)	20.19	Good et al. 2012	Prairie Winds ND1 (Minot), ND (2010)	2.13	Derby et al. 2011c
Fowler I, II, III, IN (2010)	18.96	Good et al. 2011	Grand Ridge I, IL (2009-2010)	2.1	Derby et al. 2010g
Forward Energy Center, WI (2008-2010)	18.17	Grodsky and Drake 2011	Big Blue, MN (2013)	2.04	Fagen Engineering 2014
Top Crop I & II (2012-2013)	12.55	Good et al 2013a	Barton I & II, IA (2010-2011)	1.85	Derby et al. 2011a
Rail Splitter, IL (2012-2013)	11.21	Good et al 2013b	Fowler III, IN (2009)	1.84	Johnson et al. 2010b
Harrow, Ont (2010)	11.13	Natural Resources Solutions Inc. 2011	Buffalo Ridge, MN (Phase III; 2002/Lake Benton II)	1.81	Johnson et al. 2004
Top of Iowa, IA (2004)	10.27	Jain 2005	Buffalo Ridge, MN (Phase II; 2002/Lake Benton I)	1.64	Johnson et al. 2004
Pioneer Prairie I, IA (Phase II; 2011-2012)	10.06	Chodachek et al. 2012	Rugby, ND (2010-2011)	1.6	Derby et al. 2011b
Fowler I, IN (2009)	8.09	Johnson et al. 2010a	Elm Creek, MN (2009-2010)	1.49	Derby et al. 2010c
Crystal Lake II, IA (2009)	7.42	Derby et al. 2010a	Wessington Springs, SD (2009)	1.48	Derby et al. 2010f
Top of Iowa, IA (2003)	7.16	Jain 2005	Big Blue, MN (2014)	1.43	Fagen Engineering 2015
Kewaunee County, WI (1999-2001)	6.45	Howe et al. 2002	Prairie Winds ND1 (Minot), ND (2011)	1.39	Derby et al. 2012c
Heritage Garden I, MI (2012-2014)	5.9	Kerlinger et al 2014	Prairie Winds SD1, SD (2011-2012)	1.23	Derby et al. 2012d
Ripley, Ont (2008)	4.67	Jacques Whitford 2009	NPPD Ainsworth, NE (2006)	1.16	Derby et al. 2007
Winnebago, IA (2009-2010)	4.54	Derby et al. 2010e	Prairie Winds SD1, SD (2012-2013)	1.05	Derby et al. 2013
Buffalo Ridge, MN (Phase II; 2001/Lake Benton I)	4.35	Johnson et al. 2004	Buffalo Ridge, MN (Phase I; 1999)	0.74	Johnson et al. 2000
Pioneer Prairie II, IA (2013)	3.83	Chodachek et al 2014	Prairie Winds SD1, SD (2013-2014)	0.52	Derby et al. 2014
Buffalo Ridge, MN (Phase III; 2001/Lake Benton II)	3.71	Johnson et al. 2004	Wessington Springs, SD (2010)	0.41	Derby et al. 2011d
Crescent Ridge, IL (2005-2006)	3.27	Kerlinger et al. 2007	Buffalo Ridge I, SD (2009-2010)	0.16	Derby et al. 2010b
Fowler I, II, III, IN (2012)	2.96	Good et al. 2013c			
Elm Creek II, MN (2011-2012)	2.81	Derby et al. 2012b			
Buffalo Ridge II, SD (2011-2012)	2.81	Derby et al. 2012a			
Buffalo Ridge, MN (Phase III; 1999)	2.72	Johnson et al. 2000			



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**SUGAR CREEK WIND HCP**

Appendix A  
October 7, 2021

# **Appendix B**

Mitigation Plan

**Bat Habitat Mitigation Plan**  
**for the**  
**Sugar Creek Wind Project**  
**Adams County, Illinois**



**PREPARED BY**

Magnolia Land Partners LLC

166 West Washington Street, Suite 700

Chicago, IL 60602

**SUBMITTED September 8, 2020**



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## Exhibits

### “Exhibit A” – Mitigation Site Maps

- A-1 General Vicinity Map
- A-2 Map of Conservation Area
- A-3 USGS Topographic Map

### “Exhibit B” – Management and Monitoring Documents

- B-1 Management Security Analysis and Schedule
- B-2 Endowment Agreement
- B-3 Development Plan
- B-4 Management Plan

### “Exhibit C” – Real Estate Records and Assurances

- C-1 Title Review
- C-2 Approved-as-to-form Conservation Easement Deed

### “Exhibit D” – Resource Equivalency Analysis

### “Exhibit E” – Phase I Environmental Site Assessment

### “Exhibit F” – Biological Resources Surveys

- F-1 Acoustic Survey Report

F-2 Forested Habitat Assessment

“Exhibit G” – Other Documentation, Permits, Amendments, or Revisions

G-1 Bat Mitigation Parcel Selection Framework for HCPs in Illinois Checklist

## I. Introduction

Magnolia Land Partners LLC (“Magnolia”) has prepared this Bat Habitat Mitigation Plan (“Mitigation Plan”) for the Sugar Creek Wind Project (“Project”) on behalf of Sugar Creek Wind One LLC (“Applicant”). The purpose of this plan is to satisfy the bat mitigation component of the Project’s Incidental Take Permit and associated Habitat Conservation Plan (“HCP”) through the preservation and enhancement of the Adams County Mitigation Site (“Mitigation Site”). This Mitigation Plan will be implemented upon approval of the HCP and this plan in accordance with the schedule set forth in the HCP.

This document addresses mitigation that will be provided at the Mitigation Site. The proposed mitigation at the Mitigation Site will offset possible take of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*), (collectively, the “Target Species”) by enhancing and permanently protecting threatened high value summer habitat for the Target Species.

The 102-acre Mitigation Site is located in the town of Clayton in Adams County, Illinois. The Mitigation Site is located approximately eighty miles west of the Project. The Mitigation Site is generally bound by private forested and agricultural land and 1353<sup>rd</sup> Lane to the southeast.

Mitigation Site figures are included as **Exhibit A**. A vicinity map is included as **Exhibit A-1** and shows the location of the Mitigation Site in relation to the Project and nearby Target Species maternity roost records. **Exhibit A-2** provides a view of the Mitigation Site on aerial background.

The Mitigation Site is located at 2595 1353<sup>rd</sup> Lane in Clayton, IL. The approximate center point of the Mitigation Site is provided below.

Physical Address:	Coordinates (WGS 84):
2595 1353 <sup>rd</sup> Lane	39.950° N
Clayton, IL 62324	-91.015° W

Driving directions from Kellerville, IL are as follows:

1. Head south on E 3000<sup>th</sup> St/County Rd 3000 E toward N 1200<sup>th</sup> Ave/County Rd 1200 N for 315 feet.
2. Turn right at the 1<sup>st</sup> cross street onto N 1200<sup>th</sup> Ave/County Rd 1200 N and continue west for 4.4 miles.
3. Turn right onto E 2575<sup>th</sup> St and continue north for 1.0 miles.
4. Turn slightly right as E 2575 St becomes N 1353<sup>rd</sup> Ln and continue northeast for 0.3 miles to arrive at the Mitigation Site.

## II. Purpose of Management Plan

Loss and fragmentation of roosting and foraging habitat has been identified as a major contributor to the loss in population of Indiana bats and northern long-eared bats. The Mitigation Site is located in a highly agricultural area, and much of the remaining forested habitat is fragmented by agricultural land. The purpose of this plan is to provide protection for Indiana bat and northern long-eared bat summer habitat by enhancing and placing a conservation easement on a tract of mature native hardwood forest habitat and managing it for the benefit of the Target Species.

### III. Goal of Management Plan

The goal of the management plan is to facilitate an increase in Target Species populations via:

- Preventing removal of potential roost trees;
- Reforesting a recently released agricultural field with desirable tree species;
- Promoting healthy forest growth by controlling non-native invasive species growth; and
- Periodically monitoring habitat conditions to ensure the Mitigation Site continues to provide high quality roosting and foraging habitat for the Target Species.

### IV. Species Information

#### A. Target Species Life History

##### 1. Indiana Bat Life History

The Indiana bat was listed as endangered in 1967 due to episodes of people disturbing hibernating bats in caves during winter, resulting in the death of large numbers of bats. Indiana bats are vulnerable to disturbance because they hibernate in large numbers in only a few caves. (The largest hibernaculum supports nearly 200,000 bats.) Other threats that have contributed to the Indiana bat's decline include commercialization of caves, loss of summer habitat due to deforestation for logging and development, pesticides and other contaminants, and most recently, white-nose syndrome. Indiana bats are quite small, weighing only one-quarter of an ounce, although in flight they have a wingspan of 9 to 11 inches. Their fur is dark brown to black. They hibernate during winter in caves or abandoned mines with high levels of humidity and stable temperatures between 32° F and 50° F. During summer, they roost under the peeling bark and in crevices of live trees and standing dead trees, known as snags. In addition to living trees and snags of any species with sloughing bark, cracks, or crevices, the following tree species are considered to be high-value potential roost trees: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), mockernut hickory (*Carya tomentosa*), pignut hickory (*Carya glabra*), red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), black locust (*Robinia pseudoacacia*), sugar maple (*Acer saccharum*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), eastern cottonwood (*Populus deltoides*), northern red oak (*Quercus rubra*), scarlet oak (*Quercus coccinea*), black oak (*Quercus velutina*), chestnut oak (*Quercus montana*), and white oak (*Quercus alba*). Males tend to roost solitarily, while females may roost in groups of over 100, known as maternity colonies. Indiana bats eat a variety of flying insects found along rivers or lakes and in uplands.

##### 2. Northern Long-Eared Bat Life History

The northern long-eared bat is one of the species most vulnerable to white-nose syndrome and was listed as federally threatened in 2015 due to population declines attributed to white-nose syndrome and habitat loss. They are slightly smaller than Indiana bats, with average wingspans of 9 to 10 inches. Their fur is typically medium to dark brown on the back, and a lighter pale brown on the underside. As their name suggests, they can be distinguished from other bats in the genus *Myotis* by their relatively long ears. They utilize similar habitat to Indiana bats, hibernating in caves and mines and roosting in the summer under the bark and

in crevices of live trees and snags. They also have diets similar to those of Indiana bats, consisting of various flying insects. Both Indiana and northern long-eared bats have been recognized as being valuable controls on the populations of disease spreading insects such as mosquitos and agricultural pests such as moths.

## B. Existing Threats

Mitigation Site assessments led to the identification of the following conditions as possible threats to the Target Species population and the habitat they occupy:

### 1. Loss of Forest Habitat

The Mitigation Site is located in an area that is used extensively for agriculture. In addition, timber stands may be cut to extract valuable lumber. It is estimated that lumber was last extracted on the Mitigation site approximately 15 years ago, and many valuable timber trees remain. Any native forested habitat in the region is at risk of deforestation for logging and agricultural use.

### 2. Invasive Species Growth

Non-native invasive species growth was noted within and adjacent to the Mitigation Site. These species can outcompete native plant growth and can negatively alter the composition of the ecosystem by preventing regenerative growth. Excessive invasive species growth in the understory of forest habitat may reduce utilization as foraging habitat by the Target Species.

## V. Mitigation Site Information

Magnolia will serve as the mitigation agent and land manager for the Adams County Mitigation Site and will be responsible for implementation of this Mitigation Plan in addition to achieving performance standards, monitoring, and management of the Mitigation Site. The Mitigation Site management and monitoring documents are included as **Exhibit B**. Great Rivers Land Trust will serve as the easement holder and long-term steward for the Mitigation Site.

The Mitigation Site parcel is currently owned by Jeff and Diane Hughes. The Mitigation Site is free and clear of any easements or encumbrances that would interfere with the ability to protect and conserve the Mitigation Site. A title review for the property is included as **Exhibit C-1: Title Review**. Contact information for each party is provided below.

### **Mitigation Agent / Land Manager**

Magnolia Land Partners LLC  
(847) 287-6025  
166 West Washington St, Suite 700  
Chicago, IL 60602

### **Easement Holder**

Great Rivers Land Trust  
(618) 467-2265  
PO Box 821  
Alton, IL 62002

### **Property Owners**

Jeff & Diane Hughes  
(217) 257-0696  
2595 1353<sup>rd</sup> Lane  
Clayton, IL 62324

## VI. Mitigation Site Selection & Baseline Status

The parcel included in the Mitigation Site was selected due to the ecological benefits its management and permanent protection would provide to the Target Species. The Mitigation Site contains a total of 102.3

acres of summer habitat for the Target Species. Approximately 94.1 acres contain contiguous mature, deciduous broadleaf forest habitat. An adjacent 7.4-acre area was identified to be in an early successional state after being released from agricultural use. There are several agricultural fields found on the same parcel as the Mitigation Site that are enrolled in the Cropland Reserve Program (“CRP”). A Phase I Environmental Site Assessment was performed on the Mitigation Site property and no recognized environmental conditions were identified. The results of this survey are included as **Exhibit E**.

The Mitigation Site is likely to be used by the Target Species based on the Bat Mitigation Parcel Selection Framework for Habitat Conservation Plans in Illinois developed by the USFWS. The checklist for the Mitigation Site is provided as **Exhibit G-1**. The Mitigation Site is located within the Curl Creek-McKee Creek Subwatershed (HUC 071300110202), which contains several recorded maternity roosts for both Indiana bats and northern long-eared bats. The locations of the maternity roost records can be found in **Exhibit A-1**. Additionally, acoustic surveys were performed on the Mitigation Site in July of 2020. The locations of the acoustic monitors are shown on the Mitigation Site map included as **Exhibit A-2**, and a report of the acoustic survey results is included as **Exhibit F-1**. Kaleidoscope Pro identified presence of both Target Species; however visual vetting of acoustic data could only confirm calls consistent with Indiana bats. Calls of the following federally listed or candidate species were confirmed on the Mitigation Site: Indiana bat, gray bat (*Myotis grisescens*), little brown bat (*Myotis lucifugus*), and tri-colored bat (*Perimyotis subflavus*).

Habitat for the Target Species in the vicinity of the Mitigation Site is highly fragmented by agricultural activities, primarily raising crops. Additionally, many of the tree species found in the forest on the Mitigation Site are valuable lumber trees. Clearing for agricultural and forestry use is an ever-present threat to the forested habitat in this area. The combination of development pressures, documented use by the Target Species, and fragmented habitat in the area make the Mitigation Site a valuable conservation area for the Target Species.

A forested habitat assessment performed on the Mitigation Site indicated that the 94.1 acre Conservation Area within the Mitigation Site presents as high-quality summer habitat for the Target Species, due to the age and species composition of the forest and snag density. As described in **Exhibit B-3**, enhancement activities will be performed in the identified 7.4-acre supplemental planting area to increase the habitat value to the Target Species. The forested habitat assessment report is included as **Exhibit F-2**. Historical aerial photography and conversations with the landowner indicates that lumber was last extracted from the forest included in the Mitigation Site approximately 15 years ago, and the restoration area was released from agriculture 15-16 years ago. Several unnamed tributaries to Curl Creek run through the Mitigation Site. These aquatic features provide excellent foraging habitat for the Target Species.

## **VII. Management Plan**

The goal of this management plan is to benefit the Target Species by enhancing and permanently protecting the forested habitat on the Mitigation Site which currently contains high-quality roosting and foraging habitat for the Target Species. It is expected that the habitat will persist without any direct management actions. The restoration work to be performed on the identified restoration area is outlined in **Exhibit B-3**. To ensure the continued value of the Mitigation Site to the Target Species, the Mitigation Site will be periodically monitored to ensure it meets the performance standards set forth in **Exhibit B-4**.

## **VIII. Adaptive Management**

Should one of the monitoring visits indicate that the Mitigation Site's performance standards are not being met, the Land Manager shall take action to correct any deficiencies. Specific events that would trigger either adaptive management or a changed circumstance event and the appropriate responses are listed in **Exhibit B-4**.

# EXHIBIT A

## MITIGATION SITE MAPS

### **Contents**

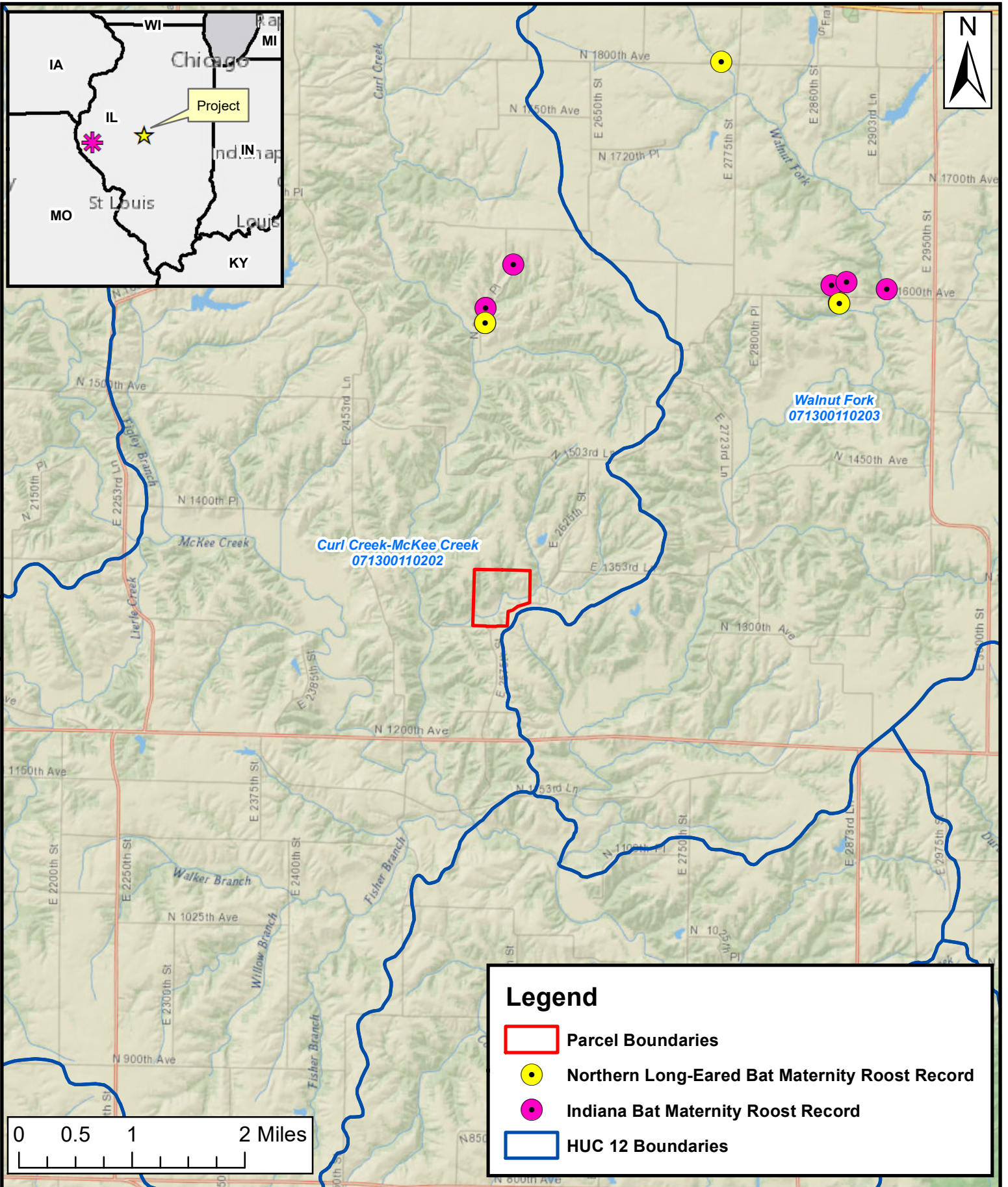
- A-1. General Vicinity Map
- A-2. Map of Mitigation Site
- A-3. USGS Topographic Map









**EXHIBIT A-1**  
**GENERAL VICINITY MAP**





**Legend**

-  Parcel Boundaries
-  Northern Long-Eared Bat Maternity Roost Record
-  Indiana Bat Maternity Roost Record
-  HUC 12 Boundaries

### Vicinity Map

Adams County Mitigation Site  
Adams County, IL



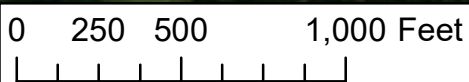
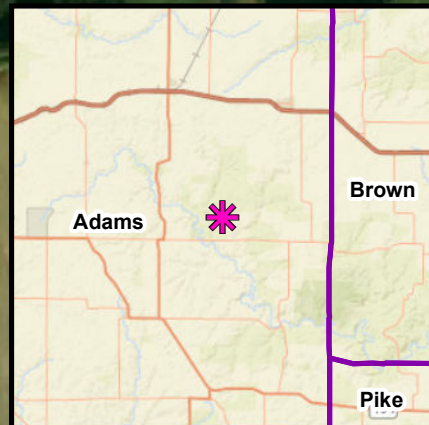
Magnolia

Date: August 2020

Source: USGS, USFWS, Esri

**EXHIBIT A-2**  
**MAP OF MITIGATION SITE**





**Legend**

- Acoustic Monitor Points
- Parcel Boundaries
- Conservation Area - 94.1 Acres
- Supplemental Planting & Conservation Area - 7.4 Acres
- CRP Enrolled Land

## Conservation Area

Adams County Mitigation Site  
Adams County, IL



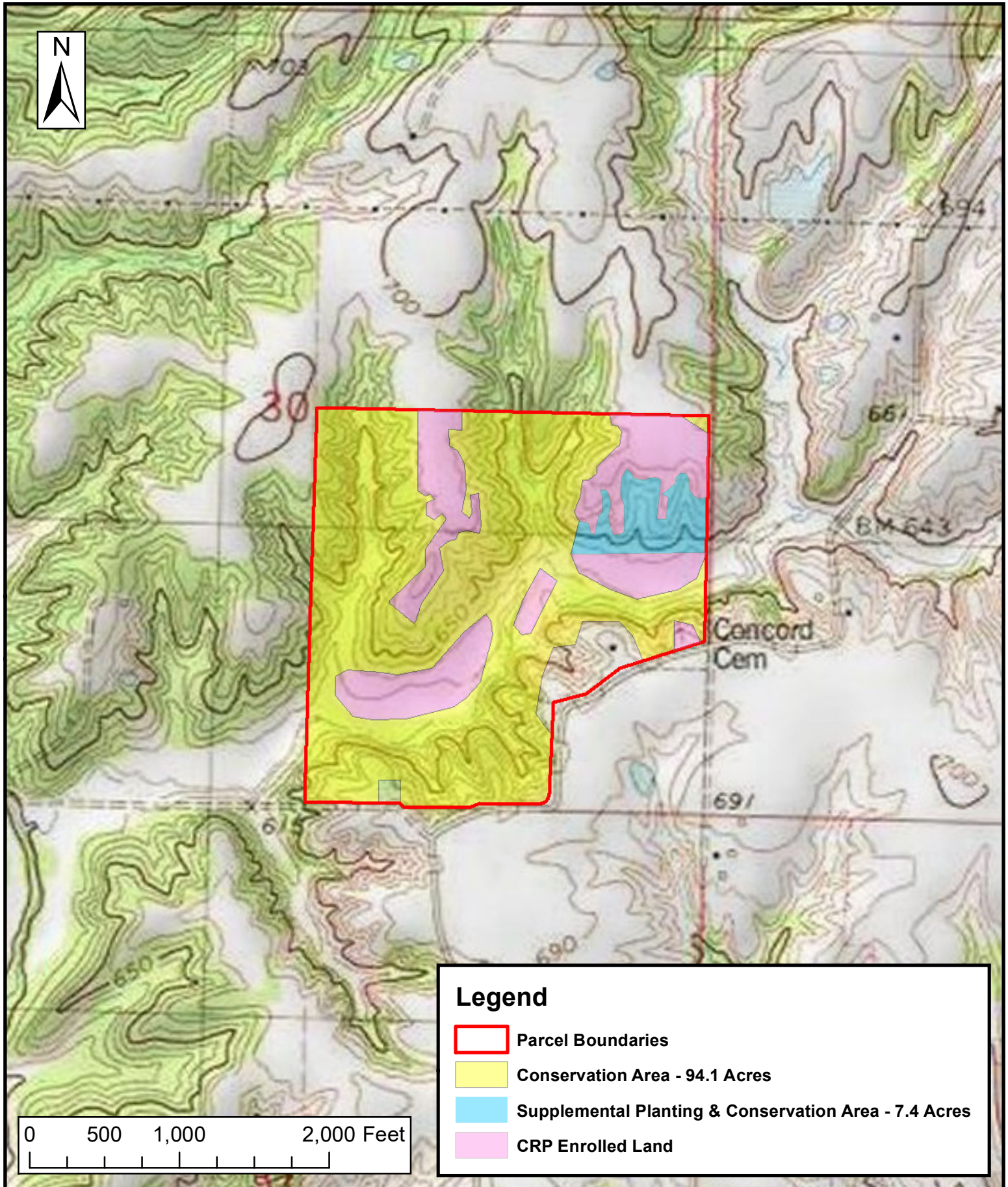
Magnolia

Date: August 2020





Source: USGS, Esri

**EXHIBIT A-3**  
**USGS TOPOGRAPHIC MAP**





**Legend**

-  Parcel Boundaries
-  Conservation Area - 94.1 Acres
-  Supplemental Planting & Conservation Area - 7.4 Acres
-  CRP Enrolled Land

**USGS Quadrangle Map**  
Adams County Mitigation Site  
Adams County, IL



Magnolia

Date: August 2020

Source: USGS, Esri

# EXHIBIT B

## MANAGEMENT AND OPERATION DOCUMENTS

### Contents

- B-1. Management Security Analysis and Schedule
- B-2. Endowment Agreement
- B-3. Development Plan
- B-4. Management Plan



## EXHIBIT B-1

### MANAGEMENT SECURITY ANALYSIS AND SCHEDULE

**Description:** The annual cost of monitoring and habitat restoration and management described in the Management Plan (**Exhibit B-4**) will be funded through the interest generated by the principal constituting the Endowment Fund. The anticipated costs of management for the Adams County Mitigation Site were calculated using the attached Stewardship Cost Calculator. A copy of the Mitigation Site's Stewardship Cost Calculator is incorporated as part of this exhibit. These costs include estimates of time, equipment and funding necessary to conduct the basic monitoring site visits, management and reporting. The Endowment Fund will be provided to a USFWS-approved third-party upon Mitigation Site Establishment.

**Schedule:** The Endowment Fund will be funded via a cash deposit upon Mitigation Site establishment.





**ENDOWMENT PAYMENT SCHEDULE  
SUGAR CREEK CONSERVATION AREA**

FIRST CALENDAR YEAR OF WORK WITH ENDOWMENT FUNDS ("YEAR 1")

2021  
3.5% Endowment Fund Target Rate of Return

\$33,617.33 FULL ENDOWMENT AMOUNT (Including 5% contingency)

**LEGEND**

- Cells with Automatic Formulas
- Intentionally Left Blank
- Headings and Reference Info.
- Anticipated Payment Schedule

**ENDOWMENT PAYMENT SCHEDULE YEARS 1-30**

YEAR	EVERY 2 YEARS	YEAR 3 & EVERY 7 YEARS	PAYMENT SCHEDULE	EXPECTED ENDOWMENT TOTAL
Year 1	\$635.55		\$635.55	\$36,636.58
Year 2			\$0.00	\$37,918.86
Year 3	\$635.55	\$385.55	\$1,021.10	\$38,224.92
Year 4			\$0.00	\$39,562.80
Year 5	\$635.55		\$635.55	\$40,311.95
Year 6			\$0.00	\$41,722.86
Year 7	\$635.55	\$11,327.05	\$11,962.60	\$31,220.56
Year 8			\$0.00	\$32,313.28
Year 9	\$635.55		\$635.55	\$32,808.70
Year 10			\$0.00	\$33,957.00
Year 11	\$635.55		\$635.55	\$34,509.95
Year 12			\$0.00	\$35,717.80
Year 13	\$635.55		\$635.55	\$36,332.37
Year 14		\$11,327.05	\$11,327.05	\$26,276.95
Year 15	\$635.55		\$635.55	\$26,561.09
Year 16			\$0.00	\$27,490.73
Year 17	\$635.55		\$635.55	\$27,817.36
Year 18			\$0.00	\$28,790.97
Year 19	\$635.55		\$635.55	\$29,163.10
Year 20			\$0.00	\$30,183.81
Year 21	\$635.55	\$11,327.05	\$11,962.60	\$19,277.64
Year 22			\$0.00	\$19,952.36
Year 23	\$635.55		\$635.55	\$20,015.14
Year 24			\$0.00	\$20,715.67
Year 25	\$635.55		\$635.55	\$20,805.17
Year 26			\$0.00	\$21,533.35
Year 27	\$635.55		\$635.55	\$21,651.47
Year 28		\$11,327.05	\$11,327.05	\$11,082.22
Year 29	\$635.55		\$635.55	\$10,834.55
Year 30			\$0.00	\$11,213.76

**ENDOWMENT PAYMENT SCHEDULE CALCULATIONS <sup>1,2</sup>**

CATEGORY	SPECIFIC ACTIVITY (Briefly Describe)	EVERY 2 YEARS	EVERY 7 YEARS
Task 1	Biennial Qualitative Monitoring	\$260.55	-
	Wages (3.5 hrs.)	\$175.00	-
	Travel Cost (114 miles)	\$65.55	-
	Supplies/Miscellaneous	\$20.00	-
Task 2	Vegetation Monitoring <sup>3</sup>	-	\$385.55
	Wages (6 hrs.)	-	\$300.00
	Travel Cost (114 miles)	-	\$65.55
	Supplies/Miscellaneous	-	\$20.00
Task 3	Report and Work Plan Prep	\$250.00	\$250.00
	Wages (5 hrs.)	\$250.00	\$250.00
Task 4	Report and Work Plan Submission & Coordination	\$125.00	\$200.00
	Wages (2.5 hrs., 4 hrs.)	\$125.00	\$200.00
Task 5	Adaptive Management <sup>4</sup>	-	\$10,741.50
<b>TOTALS</b>		<b>\$635.55</b>	<b>\$11,327.05</b>

<sup>1</sup> All disbursements will be adjusted for inflation by Endowment Holder upon payment per the Recipient Agmt.

<sup>2</sup> The hourly wage for such projects is \$50 on average.

<sup>3</sup> This task also occurs during Year 3.

<sup>4</sup> Calculation: 102.3 acres x 30% invasive treatment x \$350/acre

**EXHIBIT B-2**  
**ENDOWMENT AGREEMENT**



## **SUGAR CREEK WIND PROJECT LONG-TERM FUNDING AGREEMENT**

This Sugar Creek Wind Project Long-Term Funding Agreement (“Agreement”) is entered by and among Unique Places to Save (“Foundation”), Great Rivers Land Trust (“Recipient”), and Magnolia Land Partners LLC (“Magnolia” or “Sponsor”), (together, the “Parties,” and individually, a “Party”), as of the date of the signature of the last Party to sign (such date, the “Effective Date”).

WHEREAS, the U.S. Fish and Wildlife Service (“USFWS”), an agency within the U.S. Department of the Interior, has jurisdiction over the conservation and protection of fish, wildlife, and native plants pursuant to the Endangered Species Act, 16 U.S.C. § 1531 et seq. and the Fish and Wildlife Coordination Act, 16 U.S.C. § 661 et seq. USFWS oversees the establishment, use, operation, and maintenance of the Sugar Creek Mitigation Site (“Mitigation Site”), located in Adams County, Illinois.

WHEREAS, the Bat Habitat Mitigation Plan for the Sugar Creek HCP (“Mitigation Plan”) sponsored by Magnolia, that was submitted for approval to USFWS on \_\_\_\_\_, requires Magnolia to establish a long-term financing or funding mechanism to provide ongoing payment for specified land management, maintenance, and monitoring of the real property comprising the Mitigation Site (“Mitigation Property”) in accordance with the Mitigation Plan and associated long-term management plan that identifies the specific land management activities that are required to be performed on the Bank Property to improve, conserve, and/or protect the habitat and other ecological values of the Mitigation Property (“Management Plan”). The Mitigation Property, comprised of approximately 102.3 acres, including contiguous mature, deciduous broadleaf forest habitat will be managed in accordance with the Mitigation and associated Management Plan.

WHEREAS, Magnolia is also the Sponsor under this Agreement and is responsible to protect and manage for conservation purposes the Mitigation Property in accordance with the Mitigation Plan.

WHEREAS, the Foundation is a charitable not-for-profit corporation and is a tax exempt organization under Section 501(c)(3) of the Internal Revenue Code, and is authorized to hold and administer funds for the long-term management and maintenance of mitigation lands and mitigation and conservation bank properties.

WHEREAS, the Mitigation Plan provides for the establishment of a fund to pay the costs of the management and maintenance of the Mitigation Property (“Endowment Fund”) to be held and managed by the Foundation in trust as a neutral fiduciary.

WHEREAS, the Mitigation Plan incorporates by reference and attaches this Agreement and the USFWS’s approval of the Mitigation Plan constitutes its approval of this Agreement as the document governing the intent, uses, benefits, purposes, and duration of the Endowment Fund, and the terms and conditions under which it will be established, held, and administered by the Foundation.

NOW, THEREFORE, in consideration of the mutual promises made herein, and for other and further consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

## **I. PURPOSES**

- A. The purposes of this Agreement are to establish an Endowment Fund for the Mitigation Site to be held by the Foundation in trust for the benefit of the Mitigation Property, and to set forth the Parties' respective responsibilities with respect to the funds to be held in and administered from the Endowment Fund.
- B. If and to the extent the funds are subject to the Uniform Prudent Management of Institutional Funds Act ("UPMIFA"), this Agreement is the record under which the funds are transferred to, and held by, the Foundation, and as such shall be considered the "gift instrument" for purposes of UPMIFA. As reflected by its incorporation into the Mitigation Agreement, this Agreement shall be deemed in all respects to set forth the USFWS's approval as to the intent, uses, benefits, purposes, and duration of the Endowment Fund.

## **II. ACCOUNT ESTABLISHMENT, INVESTMENT, AND ADMINISTRATION**

- A. This Agreement authorizes the Foundation to hold the Endowment Fund as requested by and received from the Sponsor, in the amount of thirty-three thousand six hundred seventeen dollars and thirty-three cents (\$33,617.33), to be deposited in one lump sum, to be held in trust for the long-term management, maintenance, and monitoring of the Mitigation Property, in accordance with the Mitigation Plan, including this Agreement, and the Management Plan, dated \_\_\_\_\_, all of which have been approved by the USFWS as part of the Mitigation Plan.
- B. The Sponsor shall pay (or cause to be paid) to the Foundation a single, one-time payment of Two Thousand dollars (\$2,000) ("Account Establishment Fee") for the Foundation's establishment of a uniquely identifiable financial account constituting the Endowment Fund. The Foundation's receipt of the Account Establishment Fee is an express condition precedent to the effectiveness of the Foundation's obligations under this Agreement. The Account Establishment Fee is in addition to the Endowment Fund amount as set forth in Section II.A. above and the "Annual Fee" as set forth in Section II.C. below. The Parties agree, as soon as practicable after the Foundation's receipt of both the Account Establishment Fee and funds for deposit into the Endowment Fund, to invest the funds comprising the Endowment Fund in accordance with the Foundation's Investment Policy for Long-Term and Endowment Fund Accounts held by the Foundation, the current version of which is attached hereto as Attachment A and as the same may be modified from time to time in accordance with its terms. The Recipient shall have no right or responsibility with respect to the investment or financial management of the Endowment Fund under this Agreement or otherwise.
- C. The Endowment Fund shall be subject to an annual fee of one percent (1%) ("Annual Fee") of the Endowment Fund's balance for the Foundation's annual administration, operation, reporting, and accounting of the Endowment Fund. The Foundation shall assess and collect the Annual Fee either quarterly or annually, in either case at the Foundation's election, during each year in which the

account is in existence. The Foundation shall collect the Annual Fee by deducting it from the balance of the Endowment Fund.

- D. The Foundation shall submit to the Recipient (and, if requested, to the USFWS) an activity report for the Endowment Fund by March 15 of each calendar year the Endowment Fund is in existence. In each activity report, the Foundation shall report on the balance of the Endowment Fund at the beginning of the calendar year; deposits; disbursements; fees; earnings, gains, losses and other investment activity accruing to the Endowment Fund during the previous calendar year; administrative expenses; the balance of the Endowment Fund at the end of the calendar year; and the specific asset allocation percentages of the portfolio in which the Endowment Fund funds is invested. If requested, the Foundation shall also provide to the USFWS a copy of its most recent financial statement as prepared by an independent auditor.
- E. Disbursements from the Endowment Fund shall be made in accordance with Section IV of this Agreement, entitled Recipient Land Management. The Parties to this Agreement expressly agree and acknowledge that the USFWS may, at any time after providing prior written notice to the Foundation and the Recipient, direct or approve in writing a different form or mechanism for disbursements from the Endowment Fund or specify an increase or decrease in the amount to be disbursed from the Endowment Fund to the Recipient. The Recipient and the Foundation further agree and acknowledge that the Foundation shall be obligated to follow such written direction or approval of the USFWS and shall, upon receipt of any such written notice from the USFWS, make disbursements in accordance with the USFWS's direction or approval.

### **III. FOUNDATION'S FIDUCIARY OBLIGATIONS AND LIMITATIONS ON LIABILITY**

- A. The Foundation shall have a duty of loyalty to the Mitigation Property with respect to the Endowment Fund, and shall not use or borrow against funds in the Endowment Fund for its own benefit, except for assessment and collection of the fees due to the Foundation or its financial institutions, or as otherwise approved, permitted or directed by the USFWS pursuant to this Agreement.
- B. The Foundation shall not be liable to the USFWS, the Sponsor, the Recipient, or any other entities or persons for losses arising from investment of funds in the Endowment Fund that is consistent with this Agreement.

### **IV. RECIPIENT LAND MANAGEMENT**

- A. Performance of Land Management Activities. The Recipient has agreed to perform the specific land management activities set forth in the Management Plan that are required to be performed on the Mitigation Property to improve, conserve, and/or protect the habitat and other ecological values of the Mitigation Property ("Land Management Activities") on the Mitigation Property as part of its obligations under the Mitigation Plan. Funding to pay the costs of the Land Management Activities shall be provided in accordance with the terms and conditions set forth below. If, at any time, the Management Plan, the Land Management Activities, the Endowment Assessment, or Endowment Payment Schedule (as such term is defined below) is amended or otherwise modified as permitted

by the Mitigation Plan, then:

1. The Recipient shall immediately notify the Foundation in writing of such amendment or modification;
  2. The Recipient shall transmit to the Foundation as soon as practicable the amended Management Plan, Land Management Activities, Endowment Assessment, or Endowment Payment Schedule, as applicable, along with the corresponding written approval by the USFWS of each such amended document; and
  3. Any amended Management Plan, Land Management Activities (and associated costs), Endowment Assessment, and Endowment Payment Schedule, as approved by the USFWS, shall upon receipt by the Foundation supersede and replace their original counterparts, and shall thereafter govern as the "Management Plan," "Land Management Activities," "Endowment Assessment," and "Endowment Payment Schedule" under this Agreement.
- B. Funding for Land Management Activities. The Foundation hereby agrees to disburse funds from the Endowment Fund to the Recipient to pay the costs of Recipient's performance of the Land Management Activities on the Mitigation Property, upon the terms and conditions set forth below.
- C. Scope of Services to be Performed. The Recipient will perform the Land Management Activities as set forth in the Management Plan and the Endowment Assessment. The Recipient will pay for the costs of such Land Management Activities using the funds disbursed to it under this Agreement. The Parties agree and acknowledge that the Management Plan and the Endowment Assessment were created by or on behalf of the Sponsor and approved by the USFWS. The Foundation is expressly entitled to rely on the validity of the USFWS approval and the accuracy and validity of the Management Plan and the Endowment Assessment without independent verification. The Foundation shall not be liable in any respect to the USFWS, the Recipient, or to any other entities or persons, for errors, omissions, inaccuracies, or other elements of the Management Plan or the Endowment Assessment, whether contained therein or omitted therefrom, including but not limited to the sufficiency or adequacy of the Endowment Fund calculated pursuant to the Endowment Assessment. The Parties agree and acknowledge that the Recipient is required to perform Land Management Activities on the Mitigation Property under the Mitigation only to the extent funds are made available to the Recipient under this Agreement to pay for performance of such Land Management Activities. In addition, in the event an amendment is made to the Management Plan that changes the Land Management Activities identified in the Endowment Assessment or Endowment Payment Schedule, thereby requiring an amendment to the Endowment Assessment, the Foundation shall not be liable to USFWS, the Recipient, or to any other entities or persons for any decision by USFWS to approve the amendment to the Endowment Assessment or the Endowment Payment Schedule in any way that impairs the viability of the Endowment Fund as a source of funding for the Land Management Activities on the Mitigation Property.
- D. Payment.
1. *Payment in the Ordinary Course.*

- a. In consideration of the Land Management Activities to be performed by the Recipient, the Foundation shall disburse to the Recipient from the Endowment Fund annual, advance payments (each such payment, an “Endowment Payment”) which the Recipient shall use to pay the costs of Land Management Activities to be performed by the Recipient throughout the forthcoming calendar year. Unless the USFWS directs or approves otherwise in a written instrument delivered to the Foundation, each Endowment Payment will be made for the amount requested by the Recipient in a written payment request (hereinafter, a “Payment Request”) submitted to the Foundation pursuant to this Section D (as adjusted by a measure of inflation as described below in this subsection). Each Payment Request is subject to a maximum annual dollar limit calculated as the total dollar value of Land Management Activities, exclusive of any contingency amount or any incremental amount for non-annual work items (the funds for such non-annual work items such as the seven-year habitat assessment to be paid in full in the calendar year immediately preceding the calendar year in which the applicable work item is to be performed), for the applicable calendar year as set forth in the Endowment Assessment. An Endowment Payment Schedule (as hereinafter defined) created and/or approved by the Recipient and approved by the USFWS reflecting the foregoing, i.e., the total dollar value of Land Management Activities for each calendar year, including annual and applicable non-annual occurrence expenses, exclusive of any contingency amount, set forth in the Endowment Assessment (“Endowment Payment Schedule”), is attached to this Agreement as Attachment B, and incorporated herein by reference. Payment Requests shall be made in accordance with the Endowment Payment Schedule except as otherwise provided in this Agreement. Each Endowment Payment shall be adjusted by a measure of inflation over the period of time since the Endowment Assessment was completed. The measure of inflation shall be calculated using the United States Department of Labor’s Bureau of Labor Statistics’ Consumer Price Index Midwest Region, or the successor of such index over the same period of time.
  
- b. The Recipient must submit to the Foundation the written confirmation specified in Section IV.D.1.a. (or the Foundation must have received another applicable written approval from the USFWS) on or before the date of its first Payment Request. The Recipient must submit to the Foundation a Payment Request between July 1 and November 15 of a calendar year in order to receive an Endowment Payment to fund Land Management Activities in the immediately following calendar year. Absent the express written approval of the USFWS, the Recipient will not be eligible to receive an Endowment Payment for the immediately forthcoming calendar year if the Recipient has failed to submit to the Foundation a Payment Request between July 1 and November 15 of the then-current calendar year. The Foundation will disburse Endowment Payments in December for Payment Requests properly submitted to the Foundation in the period from the immediately prior July 1 through November 15.

- c. The Recipient shall submit all Payment Requests via email, fax, or mail to the Foundation. In the event an alternate method of requesting payment becomes available in the future, such as an online payment request system, the Foundation will notify the Recipient and provide appropriate instructions. All Payment Requests must include a written statement by the Recipient that (i) the Endowment Payment will be used exclusively for payment of expenses of Recipient for Land Management Activities and (ii) the Recipient reasonably expects the Land Management Activities specified in the Endowment Assessment for the applicable calendar year to be actually necessary in that year.
2. *USFWS Suspension or Reduction of Payments for Performance Reasons.* In accordance with the terms of the Mitigation Plan, the USFWS may conduct periodic site visits and/or other evaluations of the Mitigation Property in order to monitor the progress and effectiveness of Land Management Activities performed by the Recipient. If at any time the USFWS determines that the Land Management Activities are not being performed in a satisfactory manner (including, without limitation, that the Land Management Activities are not being performed in accordance with the Management Plan or applicable laws or regulations), the USFWS may issue a written stop-payment notice (hereinafter a “Stop Payment Notice”) to the Foundation. A Stop Payment Notice will instruct the Foundation either to suspend or reduce Endowment Payments to the Recipient until the Foundation is otherwise notified in writing by the USFWS. The Foundation shall be entitled to rely on any Stop Payment Notice received from the USFWS and shall be obligated to follow the instructions contained therein. The Foundation shall not be liable in any manner to the Recipient or to any other entities or persons by virtue of following the instruction of the USFWS contained in any Stop Payment Notice.
3. *USFWS Suspension or Reduction of Payments for Financial Reasons.* From time to time the Foundation’s financial advisors may advise that the Management Fund has decreased to levels that may threaten its continued existence as a source of funding for Land Management Activities, whether due to unexpected investment performance or otherwise. The Foundation shall notify the USFWS and Recipient of any such appraisal and upon receipt of such notice, the Recipient shall propose appropriate modifications to continued Endowment Payments and associated Land Management Activities, if any, in order to protect the long-term viability of the Management Fund. The USFWS will approve or disapprove such proposal and shall so notify the Recipient and Foundation in writing. The Foundation will be obligated to follow the written response of the USFWS with respect to any such modifications. Neither the Foundation nor the Recipient shall be liable in any manner to the USFWS or any other entities or persons by virtue of following the approval of the USFWS contained in any notice issued under this Subsection 3.
4. *One-time Payments.* Whether upon request by the Recipient or otherwise, the USFWS may give approval to the Foundation in writing to disburse a specific amount of funding from the Endowment Fund not contemplated by the Management Plan or Endowment Assessment to the Recipient so that the Recipient may perform an activity, or activities, which the USFWS determines to be consistent with the management of the Mitigation Property. The



Foundation will disburse any such one-time payment within thirty (30) business days of receipt of the USFWS's approval. A one-time payment may fund, but is not necessarily restricted to, an unforeseen circumstance and/or a specific amount of funding from the contingency amount in the Endowment Fund. Upon receipt of such one-time payment, the Recipient shall, as soon as practicable, perform whatever activity, or activities, the one-time payment is intended to fund as directed or approved by the USFWS. The Recipient and the Foundation hereby acknowledge that any approval by the USFWS under this Subsection 4 for the Foundation to disburse a one-time payment not contemplated by the Management Plan or Endowment Assessment may impair or preclude the viability of the Endowment Fund as a source of funding for the Land Management Activities on the Mitigation Property. Neither the Foundation nor the Recipient shall be liable to the USFWS or to any other entities or persons for any decision by the USFWS to direct a one-time payment under this Subsection 4 that impairs the viability of the Endowment Fund as a source of funding for the Land Management Activities on the Mitigation Property.

5. *Overages in Payments.* Any portion of an Endowment Payment that remains unspent by the Recipient as of the end of the calendar year in which such amount was expected to be spent in accordance with the Endowment Assessment shall be deemed an "overage" for purposes of this subsection. Any overage shall be (i) retained and accounted for by the Recipient; (ii) used by the Recipient exclusively for payment of costs of the immediately following year's Land Management Activities; (iii) reflected as a deduction from the amount of the Payment Request submitted by the Recipient for the immediately following year; and (iv) deducted from the amount of the Endowment Payment made by the Foundation for such following year.
  
  6. *USFWS Assignment of Replacement Recipient.* The USFWS may, at the request of the Sponsor or Recipient, as applicable, approve the appointment of a replacement Recipient ("Replacement Recipient") proposed by the Sponsor or Recipient, as applicable. The Replacement Recipient approved by the USFWS shall assume the rights and responsibilities of the "Recipient" hereunder, including but not limited to the right to receive Endowment Payments and other payments under this Agreement and the obligation to perform the Land Management Activities. In the event the USFWS approves the appointment of a Replacement Recipient, written notification of the Replacement Recipient and the USFWS approval will be provided by the Sponsor or Recipient, as applicable, to the Foundation, the Replacement Recipient, and any Conservation Easement Grantee. The Foundation shall have no obligation to make disbursements from the Endowment Fund to the Replacement Recipient unless and until: 1) Replacement Recipient executes an assignment and assumption agreement with the Recipient that is acceptable to the Foundation whereby: a) the Recipient assigns and otherwise transfers in all respects to Replacement Recipient all rights, obligations, title and interest held by the Recipient in this Agreement; and b) the Replacement Recipient agrees to accept such Assignment and assume all rights, obligations, title, and interest of the Recipient; or 2) this Recipient Agreement is terminated and Replacement Recipient enters into a substitute Recipient Agreement with the Foundation.
- E. Review and Reporting Requirements. The Recipient shall submit to the Foundation and the USFWS

an annual funding report (“Annual Funding Report”) for each calendar year this Agreement is in effect. Each Annual Funding Report shall be submitted by the Recipient between January 1 and January 31, or at least thirty (30) days prior to the effective date of termination of this Agreement. The Annual Funding Report shall (i) describe in reasonable detail the Land Management Activities performed by the Recipient during the immediately preceding calendar year or in the event of termination the then-current calendar year (in either case, the “Reporting Period”); (ii) detail all expenses incurred by or on behalf of the Recipient for Land Management Activities performed during the Reporting Period; (iii) describe any discrepancy between the Land Management Activities expected to be performed during the Reporting Period in accordance with the Management Plan and the Endowment Assessment and the Land Management Activities actually performed during the Reporting Period; and (iv) describe any discrepancy between the costs of Land Management Activities as modeled in the Endowment Assessment and the costs of Land Management Activities actually performed during the Reporting Period.

The Parties expressly agree and acknowledge that the Foundation is entitled to rely on the accuracy and validity of the Annual Funding Reports submitted by the Recipient and shall have no duty to independently verify the information set forth therein. The Parties further agree and acknowledge that, except as otherwise expressly permitted or required by this Agreement, the Foundation shall have neither the right nor the obligation to reduce, suspend, or otherwise modify Endowment Payments based on the contents of any Annual Funding Report, and that any remedial action under this Agreement or otherwise with respect to Endowment Payments based on the contents of any Annual Funding Report shall be the exclusive right and/or obligation of the USFWS.

F. Compliance with Laws; Indemnification.

1. In conducting the Land Management Activities and performing its obligations under this Agreement, the Recipient agrees to conduct all such activities in compliance with all applicable Federal, State, and local laws, regulations, and ordinances; and to secure all appropriate and necessary public or private permits, approvals, and consents.
2. The Foundation and Recipient shall indemnify and hold harmless each other, and their respective officers, directors, agents, representatives, and employees in respect of any and all claims, injuries, losses, diminution in value, damages, liabilities, whether or not currently due, and related expenses (including without limitation, settlement costs and any legal or other expenses for investigating or defending any actions or threatened actions) arising from or in connection with any breach by the indemnifying Party of its obligations under this Agreement (including, in the case of the Recipient, of its obligation to perform the Land Management Activities).
3. The terms of this Section IV.F. will survive termination of this Agreement.

**V. TERM, TERMINATION, AND TRANSFER**

- A. This Agreement shall continue in full force and effect unless and until terminated by either party, which termination shall be effective on the date specified by either party in a written notice

delivered to the other party not less than one hundred eighty (180) days prior to the intended date of termination. Notwithstanding the immediately preceding sentence, regardless of the date that notice of termination is provided and the passage of the intervening minimum one hundred eighty (180) day notice period, termination is not effective unless and until the Foundation has transferred in an orderly fashion the custody, control or other power necessary for the investment, management, and administration of all the funds in the Endowment Fund (other than funds in an amount equal to any fees due and owing to the Foundation or its financial institutions) to an entity identified or approved in writing by the USFWS.

- B. Prior to the effective date of termination of this Agreement, the Foundation shall transfer all funds remaining in the Endowment Fund, other than fees due and owing to the Foundation or its financial institutions, to an entity designated by the USFWS to serve as a successor.
- C. Within ninety (90) days following final disbursement of the funds in the Endowment Fund to any successor, the Foundation shall provide to the Recipient (and, if requested, the USFWS) a final financial activity report on the Account.

## **VI. CONTACT INFORMATION AND COMMUNICATIONS**

- A. All approvals, notices, reports, and other communications required or permitted under this agreement shall be in writing and delivered by first-class mail, overnight mail, receipt-confirmed facsimile, electronic mail, or electronic PDF format. Each party agrees to notify the other promptly after any change in name representative, address, telephone, or other contact information.
- B. If any notice or communication is required or permitted to be delivered to the USFWS hereunder, such notice or communication shall be delivered to the USFWS lead contact identified in Section VI.C. below.
- C. The individuals named below shall be the representatives of the Sponsor and the Foundation for purposes of this Agreement:

Foundation Primary: Michael Scisco  
Conservation & Mitigation Specialist  
Unique Places to Save  
P.O. Box 1183  
Chapel Hill, NC 27514  
Phone: (505) 603-3636  
Email: mscisco@uniqueplacestosave.org

Foundation Alternate: Administrator  
Unique Places to Save  
P.O. Box 1183  
Chapel Hill, NC 27514  
Phone: (919) 603-3636  
Email: info@uniqueplacestosave.org

Sponsor: Mark Bernstein  
Managing Partner  
Magnolia Land Partners LLC  
166 W. Washington Street, Suite 700  
Chicago, IL 60602  
Phone: (847) 287-6025  
Email: mark@mitigation.org

Recipient: Alley Ringhausen  
Great Rivers Land Trust  
PO Box 821  
Alton, IL 62002  
Phone: (618) 467-2265  
Email: pcwprlt@gmail.com

USFWS Lead: Kraig McPeck  
Field Supervisor  
Rock Island, Illinois Field Office  
1511 47<sup>th</sup> Avenue  
Moline, IL 61265  
Phone: (309) 757-5800  
Email: kraig\_mcpeek@fws.gov

- D. The Parties agree and acknowledge that any change to their respective Representatives as set forth in Section VI.C. above shall not constitute an amendment to this Agreement and may be effected through written notice to the other Party.

## **VII. MISCELLANEOUS PROVISIONS**

- A. If any provision of this Agreement is held to be unlawful or invalid by any court of law with duly established jurisdiction over this Agreement, the parties intend that the remainder of this Agreement shall remain in full force and effect notwithstanding the severance of the unlawful or invalid provision(s).
- B. Except as otherwise provided in this Agreement, this Agreement may be amended only by a written amendment, signed by the Parties, and approved by the USFWS. Counterpart originals, facsimile copies, and/or portable document format (pdf) versions of signed amendments are acceptable and will be treated as binding originals, but this Agreement may not be amended via electronic mail.
- C. Each of the Parties is acting in its independent capacity in entering into and carrying out this Agreement and not as an agent, employee, or representative of the other Party.

- D. The Parties will cooperate in good faith to achieve the objectives of this Agreement and to avoid disputes. The Parties will use good faith efforts to resolve disputes at the lowest organizational level and, if a dispute cannot be so resolved, the Parties will then elevate the dispute to the appropriate officials within their respective organizations.
- E. Nothing contained in this Agreement is intended to unlawfully delegate the USFWS's duties or to limit the authority of the USFWS to fulfill its statutory or regulatory responsibilities.
- F. This Agreement shall not be the basis of any claims, rights, causes of action, challenges, or appeals by any person not a Party to this Agreement, except that the Parties acknowledge that the USFWS shall have the rights expressly assigned to it hereunder.
- G. This Agreement shall be governed by and interpreted in accordance with the laws of the State of Illinois, disregarding principles of conflicts of law. Venue for any action arising out of this Agreement shall be in the [insert applicable court].
- H. Any waiver by either Party of any term or provision of this Agreement shall be given in writing. No waiver shall be construed as a waiver of any other provision of this Agreement, nor shall such waiver be construed as a waiver of such provision respecting any other event or circumstance.
- I. The headings used in this Agreement are for convenience only and shall not determine or limit the interpretation, construction or meaning of this Agreement.
- J. This Agreement may be executed in one or more counterparts, each of which shall be considered an original, but all of which together shall constitute one and the same instrument.
- K. This Agreement represents the entire agreement of the Parties with respect to the subject matter hereof and may not be amended, except in writing signed by each Party hereto.
- L. Each Party to this Agreement warrants to the other that its respective signatory has full right and authority to enter into and consummate this Agreement and the transactions contemplated hereby.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective authorized representatives, intending to be bound legally.

FOUNDATION

UNIQUE PLACES TO SAVE

By: \_\_\_\_\_ Date: \_\_\_\_\_

RECIPIENT

GREAT RIVERS LAND TRUST

By: \_\_\_\_\_ Date: \_\_\_\_\_

SPONSOR

MAGNOLIA LAND PARTNERS LLC

By: \_\_\_\_\_ Date: \_\_\_\_\_

Mark Bernstein, Managing Partner

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ACKNOWLEDGED:

USFWS

U.S. FISH AND WILDLIFE SERVICE

By: \_\_\_\_\_ Date: \_\_\_\_\_

ATTACHMENT A

Investment Policy for Long-Term and Endowment Funds



# Investment Policy for Long-Term and Endowment Funds

*October 2019*

## **Purpose**

This policy establishes investment objectives, policies, guidelines and eligible securities related to conservation easement stewardship and long-term land management cash assets held by Unique Places to Save (“UP2S”) primarily for investment purposes (“Investment Funds”). In doing so the policy:

- Clarifies the delegation of duties and responsibilities concerning the management of Investment Funds.
- Identifies the criteria against which the investment performance of the organization’s investments will be measured.
- Communicates the objectives to the Board of Directors (“Board”), staff, investment managers, brokers, donors and funding sources that may have involvement.
- Confirms policies and procedures relative to the expenditure of Investment Funds.
- Serves as a review document to guide the ongoing oversight of the management of the organizations’ investments.

## **Delegation of Responsibilities**

The Board has a direct oversight role regarding all decisions that impact UP2S Investment Funds. The Board has delegated supervisory responsibility for the management of our Investment Funds to the Mitigation Program Manager (“Manager”). Specific responsibilities of the various bodies and individuals responsible for the management of our Investment Funds are set forth below:

### **Responsibilities of the Board**

The Board shall ensure that its fiduciary responsibilities concerning the proper management of UP2S Investment Funds are fulfilled through appropriate investment structure, internal and external management, and portfolio performance consistent with all policies and procedures. The Board shall approve investment policies and objectives that reflect the long-term investment-risk orientation of the endowment.

### **Responsibilities of the Manager**

The Manager is not held accountable for less than desirable outcomes, rather for adherence to procedural prudence, or the process by which decisions are made in respect to endowment assets. In consideration of the foregoing, the Manager is responsible for the development, recommendation, implementation and maintenance of all policies relative to UP2S Investment Funds and shall:

- Develop and/or propose policy recommendations to the Board with regard to the



management of all Investment Funds.

- Recommend long-term and short-term investment policies and objectives for our Investment Funds, including the study and selection of asset classes, determining asset allocation ranges, and setting performance objectives.
- Determine that Investment Funds are prudently and effectively managed and any necessary investment consultants and/or other outside professionals, if any.
- Monitor and evaluate the performance of all those responsible for the management of Investment Funds.
- Recommend the retention and/or dismissal of investment consultants and/or other outside professionals.
- Receive and review reports from investment consultants and/or other outside professionals, if any.
- Periodically meet with investment consultants and/or other outside professionals management, investment consultants and/or other outside professionals.
- Convene regularly to evaluate whether this policy, investment activities, risk management controls and processes continue to be consistent with meeting the goals and objectives set for the management of Investment Funds.
- Oversee the day-to-day operational investment activities of all Investment Funds subject to policies established by the Board.
- Contract with any necessary outside service providers, such as: investment consultants, investment managers, banks, and/or trust companies and/or any other necessary outside professionals.
- Ensure that the service providers adhere to the terms and conditions of their contracts; have no material conflicts of interests with the interests of UP2S; and, performance monitoring systems are sufficient to provide the Board with timely, accurate and useful information.
- Regularly meet with any outside service providers to evaluate and assess compliance with investment guidelines, performance, outlook and investment strategies; monitor asset allocation and rebalance assets, as directed by the Board and in accordance with approved asset allocation policies, among asset classes and investment styles; and, tend to all other matters deemed to be consistent with due diligence with respect to prudent management of Investment Funds.
- Comply with official accounting and auditing guidelines regarding due diligence and ongoing monitoring of investments, especially alternative investments. Prepare and issue periodic status reports to the Board.

### **Investment Considerations**

All individuals responsible for managing and investing UP2S Investment Funds must do so in good faith and with the care that an ordinarily prudent person in a like position would exercise under similar circumstances. In making any decision relative to the expenditure of Investment Funds, each of the following factors must be considered, and properly documented, in the minutes or other records of the applicable decision-making body:

- General economic conditions.
- Possible effect of inflation or deflation.
- Expected tax consequences, if any, of investment decisions or strategies.
- The role that each investment or course of action plays within the overall investment portfolio of the fund.

- Expected total return from the income and appreciation of investments.
- Other resources of the organization.
- The needs of the organization and the fund to make distributions and preserve capital.
- An asset's special relationship or special value, if any, to the organization's purposes.

## **Guidelines for Investing**

The investment goal of the total return fund is to achieve a total return (income and appreciation) of 5% after inflation, over a full market cycle (3-5 years). The following guidelines apply to the three main investment asset classes:

### **Money Market Funds**

*Allowable range - Minimum 5%; Maximum 45% of total assets*

A quality money market fund will be utilized for the liquidity needs of the portfolio whose objective is to seek as high a current income as is consistent with liquidity and stability of principal. The fund will invest in "money market" instruments with remaining maturates of one year or less, that have been rated by at least one nationally recognized rating agency in the highest category for short-term debt securities. If non-rated, the securities must be of comparable quality.

### **Equities**

*Allowable Range - Minimum 20%; Maximum 60% of total assets*

The equity component of the portfolio will consist of high-quality equity securities traded on the New York, NASDAQ or American Stock exchanges. The securities must be screened for above average financial characteristics such as price-to-earnings, return-on-equity, debt-to-capital ratios, etc.

No more than 5% of the equity portion of the account will be invested in any one issuer. As well, not more than 20% of the equity portion of the account will be invested in stocks contained within the same industry.

It is acceptable to invest in an equity mutual fund(s) adhering to the investment characteristics identified above, as long as it is a no-load fund, without 12(b)(1) charges, which maintains an expense ratio consistent with those other funds of similar investment styles as measured by the Lipper and/or Morningstar rating services.

Prohibited equity investments include initial public offerings, restricted securities, private placements, derivatives, options, futures and margined transactions.

***Exceptions to the prohibited investment policy may be made only when assets are invested in a Mutual Fund(s) that periodically utilizes prohibited strategies to mitigate risk and enhance return.***

### **Fixed Income**

*Allowable Range - Minimum 35%; Maximum 75% of total assets*

Bond investments will consist solely of taxable, fixed income securities that have an investment-grade rating (BBB or higher by Standard & Poor's and Baa or higher by Moody's) that possess a liquid secondary market. If the average credit quality rating disagrees among the two rating agencies, then use the lower of the two as a guideline.

No more than 5% of the fixed income portfolio will be invested in corporate bonds of the same issuer. As well, not more than 20% of the fixed income portfolio will be invested in bonds of issuers in the same industry.

The maximum average maturity of the fixed income portfolio will be 10 years, with not more than 25% of the bond portfolio maturing in more than 10 years.

Prohibited securities include private placements, derivatives (other than floating-rate coupon bonds), margined transactions and foreign denominated bonds.

*Exceptions to the prohibited investment policy may be made only when assets are invested in a Mutual Fund(s) that periodically utilizes prohibited strategies to mitigate risk and enhance return.*

### **Other Investments**

*Allowable Range - at discretion of Board*

UP2S may consider other types of investments in non-wasting assets which shall be approved by a majority of the Board and comply with investment return and goal guidelines of UP2S.

### **Performance Measurements Standards**

The benchmarks to be used in evaluating the performance of the two main asset classes will be:

- Equities: S&P 500 Index- Goal: exceed the average annual return of the index over a full market cycle (3-5 years)
- Fixed Income: Lehman Brothers Government/Corporate Index- Goal: exceed the average annual return of the index over a full market cycle (3-5 years).

It will be the responsibility of the Manager to regularly review the performance of the investment account and investment policy guidelines, and report to the Board at least annually with updates and recommendations as needed.

### **Expenditure Considerations**

The Board of Directors and the Manager are responsible for the establishment of a balanced reserve fund spending policy to: (a) ensure that over the medium-to-long term, sufficient investment return shall be retained to preserve and grow its economic value as a first priority; and, (b) to provide funds for the annual operating budget in an amount which is not subject to large fluctuations from year-to-year to the extent possible.

### **Expenditure of Investment Funds**

All decisions relative to the expenditure of Investment Funds must assess the uses, benefits, purposes and duration for which the Investment Fund was established, and, if relevant, consider the factors:

- The duration and preservation of the Investment Fund.
- Purpose or purposes of the Investment Fund.
- Contractual agreements directly related to the expenditure of a portion or all of the Investment Fund.

- General economic conditions.
- Possible effect of inflation or deflation.
- Expected total return from income and appreciation of investments.

- Other organizational resources.
- All applicable investment policies.
- Where appropriate, alternatives to spending from the institutional fund and the possible effects of those alternatives.

For each decision to appropriate Investment Funds for expenditure, an appropriate contemporaneous record should be kept and maintained describing the nature and extent of the consideration that the appropriate body gave to each of the stipulated factors.

ATTACHMENT B

Endowment Payment Schedule

**ENDOWMENT PAYMENT SCHEDULE  
SUGAR CREEK CONSERVATION AREA**

2021	FIRST CALENDAR YEAR OF WORK WITH ENDOWMENT FUNDS ("YEAR 1")
3.5%	Endowment Fund Target Rate of Return
\$33,617.33	FULL ENDOWMENT AMOUNT (Including 5% contingency)

**LEGEND**

- Cells with Automatic Formulas
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- Headings and Reference Info.
- Anticipated Payment Schedule

**ENDOWMENT PAYMENT SCHEDULE YEARS 1-30**

YEAR	EVERY 2 YEARS	YEAR 3 & EVERY 7 YEARS	PAYMENT SCHEDULE	EXPECTED ENDOWMENT TOTAL
Year 1	\$635.55		\$635.55	\$36,636.58
Year 2			\$0.00	\$37,918.86
Year 3	\$635.55	\$385.55	\$1,021.10	\$38,224.92
Year 4			\$0.00	\$39,562.80
Year 5	\$635.55		\$635.55	\$40,311.95
Year 6			\$0.00	\$41,722.86
Year 7	\$635.55	\$11,327.05	\$11,962.60	\$31,220.56
Year 8			\$0.00	\$32,313.28
Year 9	\$635.55		\$635.55	\$32,808.70
Year 10			\$0.00	\$33,957.00
Year 11	\$635.55		\$635.55	\$34,509.95
Year 12			\$0.00	\$35,717.80
Year 13	\$635.55		\$635.55	\$36,332.37
Year 14		\$11,327.05	\$11,327.05	\$26,276.95
Year 15	\$635.55		\$635.55	\$26,561.09
Year 16			\$0.00	\$27,490.73
Year 17	\$635.55		\$635.55	\$27,817.36
Year 18			\$0.00	\$28,790.97
Year 19	\$635.55		\$635.55	\$29,163.10
Year 20			\$0.00	\$30,183.81
Year 21	\$635.55	\$11,327.05	\$11,962.60	\$19,277.64
Year 22			\$0.00	\$19,952.36
Year 23	\$635.55		\$635.55	\$20,015.14
Year 24			\$0.00	\$20,715.67
Year 25	\$635.55		\$635.55	\$20,805.17
Year 26			\$0.00	\$21,533.35
Year 27	\$635.55		\$635.55	\$21,651.47
Year 28		\$11,327.05	\$11,327.05	\$11,082.22
Year 29	\$635.55		\$635.55	\$10,834.55
Year 30			\$0.00	\$11,213.76

**ENDOWMENT PAYMENT SCHEDULE CALCULATIONS <sup>1,2</sup>**

CATEGORY	SPECIFIC ACTIVITY (Briefly Describe)	EVERY 2 YEARS	EVERY 7 YEARS
Task 1	Biennial Qualitative Monitoring	\$260.55	-
	Wages (3.5 hrs.)	\$175.00	-
	Travel Cost (114 miles)	\$65.55	-
	Supplies/Miscellaneous	\$20.00	-
Task 2	Vegetation Monitoring <sup>3</sup>	-	\$385.55
	Wages (6 hrs.)	-	\$300.00
	Travel Cost (114 miles)	-	\$65.55
	Supplies/Miscellaneous	-	\$20.00
Task 3	Report and Work Plan Prep	\$250.00	\$250.00
	Wages (5 hrs.)	\$250.00	\$250.00
Task 4	Report and Work Plan Submission & Coordination	\$125.00	\$200.00
	Wages (2.5 hrs., 4 hrs.)	\$125.00	\$200.00
Task 5	Adaptive Management <sup>4</sup>	-	\$10,741.50
<b>TOTALS</b>		<b>\$635.55</b>	<b>\$11,327.05</b>

<sup>1</sup> All disbursements will be adjusted for inflation by Endowment Holder upon payment per the Recipient Agmt.

<sup>2</sup> The hourly wage for such projects is \$50 on average.

<sup>3</sup> This task also occurs during Year 3.

<sup>4</sup> Calculation: 102.3 acres x 30% invasive treatment x \$350/acre

## EXHIBIT B-3

### DEVELOPMENT PLAN

The purpose of the Development plan is to enhance 7.4 acres to provide high-quality habitat for the Target Species. The identified enhancement area contains early successional forest habitat as opposed to the mature forest found elsewhere within the Bank Site. This area is dominated by eastern redcedar (*Juniperus virginiana*), as is common in early successional forest, and contains hardwood saplings in the understory. Eastern redcedar is not considered by USFWS to be a desired roost tree species, and may prevent/slow the growth of desired hardwood species. The restoration of the identified 7.4 acres will consist of two main actions: cutting eastern redcedar to reduce competition for desired tree species, and supplemental planting of desired hardwood tree species.

#### **Performance Standards**

The performance standards for the restoration area will not deviate from the performance standards outlined in the Sugar Creek HCP. For ease of reference, the performance standards are included below:

- Tree density: 381 native trees/acre or canopy cover > 60%
- Snag density: 5 snags with DBH > 7 in./acre
- Native understory composition: woody invasive species < 20% cover in the understory

#### **Management Actions**

All management actions will be performed following the appropriate Illinois conservation practice standards. The conservation practice standards used to develop this plan may include but are not limited to: CPS-314: Brush Management, CPS-315: Herbaceous Weed Treatment, CPS-327: Conservation Cover, CPS-490: Tree/Shrub Site Preparation, and CPS-612: Tree/Shrub Establishment.

#### *Cutting Eastern Redcedar*

In order to reduce competition for desired species, the eastern redcedar growing in the restoration area will be cut down or killed via chemical treatment and left standing as snags. Any individuals with DBH ≤ 7 in. will be mechanically cut down, and the resulting stumps will be treated with an appropriate herbicide solution to prevent regrowth. Individuals with DBH > 7 in. will be left standing as snags to ensure compliance with performance standards. Methods used to kill targeted individuals may include but are not limited to hack-and-squirt, frill cutting, and stem injection. An appropriate herbicide solution will be used for each method, and all herbicide use will be performed in accordance with the label. All mechanical control will be performed outside of the bat active season (Nov. 1-March 14).

New canopy gaps caused by removing redcedar may allow opportunities for new invasive plant species growth. All invasive species near each treated redcedar will be proactively managed using a combination of mechanical and chemical means. The restoration area will be closely monitored for invasive species outbreaks, and any noted outbreaks that threaten the Mitigation Site's ability to meet the performance standards will be managed using a combination of mechanical and chemical means.





### *Supplemental Planting*

The restoration area currently contains hardwood saplings in the understory at a density that does not meet the performance standard. The restoration area will be planted with desired hardwood species so that the stand reaches a density of 544 trees/acre, in accordance with the Sugar Creek HCP. Species to be planted will be selected based on availability following guidance from the most recent Indiana Bat Recovery Plan.

To prepare the site, first planting locations will be selected at a spacing of 8'x10'. Trees will only be planted in areas with insufficient levels of hardwood saplings. A 2 square foot area will be mechanically cleared of all vegetation at each planting location to reduce competition for planted species.

Following site preparation, trees will be planted by hand to prevent disturbance to existing habitat. In accordance with the HCP, planted trees will be monitored three and seven years after planting to ensure a survival rate of at least 70%. Should the survival rate drop below 70%, replanting will occur. Invasive species coverage will also be monitored during these events.



## **EXHIBIT B-4**

### **MANAGEMENT PLAN**

The Management Period commences upon filing of the Conservation Easement (hereafter “Mitigation Site Establishment”) and ends upon the thirtieth anniversary of Mitigation Site Establishment.

The USFWS Guidelines define suitable summer foraging and roosting habitat for Indiana bats and northern long-eared bats as a wide variety of forested/wooded habitats where they roost, forage, and travel, as well as some adjacent and interspersed non-forested habitats. Suitable habitat includes forests and woodlots containing potential roosts. The Mitigation Site is composed of this habitat, and will be managed to continue to provide suitable summer maternity habitat for Indiana bats and northern long-eared bats. Additional management and monitoring activities will be performed during the Management Period as described below.

#### **Financial Assurances**

The Endowment (**Exhibit B-1**) will provide financial assurances to ensure these activities will be implemented in a timely fashion and that Mitigation Site performance standards are maintained through the Management Period. Mitigation Agent will fund the Endowment (**Exhibit B-2**) through a single payment upon Mitigation Site establishment. The Management Plan will be funded by interest from the Endowment Fund.

#### **Performance Standards**

The Mitigation Site will follow the performance standards outlined in the Sugar Creek HCP. For ease of reference, the performance standards are repeated below. The overarching goal of these performance standards is that the Mitigation Site remains high quality summer habitat for the Target Species.

1. Tree density: 381 native trees/acre or canopy cover > 60%;
2. Snag density: 5 snags with DBH > 7 in./acre; and
3. Native understory composition: woody invasive species < 20% cover in the understory.

#### **Management Tasks**

##### **Task 1. Biennial Monitoring**

**Objective:** Confirm that mitigation requirements are being met and no easement violations have occurred.

**Threshold for Action:** Every two years following the first full year after Mitigation Site Establishment for the life of the permit

Aerial photography or a walkthrough by the Land Manager will be used to determine that all mitigation requirements are being met, no changed circumstance events have occurred, and to identify possible easement violations.



## **Task 2. Restoration Area Monitoring**

**Objective:** Ensure sufficient survival of planted trees in the restoration area

**Threshold for Action:** Years three and seven following restoration work.

The Land Manager will conduct monitoring to ensure a sufficient survival rate of trees planted in the restoration area. These monitoring events will be to confirm a 70% survival rate of planted species. Invasive species levels within the restoration areas will also be assessed during the year three monitoring event. Should either monitoring visit indicate that the restoration area has fallen below target metric values, maintenance will occur in the form of additional planting to a rate of 70% of the original planting rate.

## **Task 3. Invasive Species Monitoring**

**Objective:** Ensure no invasive plant species threaten the quality of the habitat for the Target Species

**Threshold for Action:** Every seven years following first full year after Mitigation Site Establishment for the life of the permit

The Land Manager will conduct invasive species monitoring to identify invasive species growth that threatens the ability of the Mitigation Site to meet the Native Understory Composition performance standard. Should any invasive species that threaten the function of the Mitigation Site for Target Species habitat be present, they must be controlled to remove that threat within three years.

## **Task 4. Preparation and Submission of Monitoring Reports**

**Objective:** Prepare and Submit monitoring reports to the USFWS by January 31 following the reporting year

**Threshold for Action:** Each calendar year in which a mitigation action or monitoring event is actively conducted

The Land Manager will submit a monitoring report to USFWS following every year in which any management or monitoring action is performed. Each monitoring report will include, at a minimum, the following:

- A site summary of the vegetation communities present, anything of note that occurred during the monitoring period, and information on whether or not the project(s) are meeting the performance standards described above.
- A discussion of invasive species present within the Mitigation Site, and if >20% at any site, mapping of locations and proposed treatment actions.
- Summary of any maintenance activities conducted during the monitoring period, and an outline of any maintenance activities anticipated during the following monitoring period.
- Photographs from permanent photo locations.



### **Task 5. Adaptive Management**

**Objective:** Implement management actions to ensure the Mitigation Site continues to meet Performance Standards.

**Threshold for Actions:** The Land Manager will make every attempt to correct deficiencies and address Mitigation Site risks proactively. The Land Manager will notify the USFWS proactively in any such case. Before considering any adaptive management changes to the Management Plan, the USFWS will consider whether such actions will help ensure the continued viability of the Mitigation Site's biological resources.

Below are scenarios that would trigger adaptive management as the proposed management action.

*Trigger* – The trigger for the Land Manager to implement corrective action is if one or more invasive species that threaten success of the Mitigation Site are documented. The goal is to manage the Mitigation Site such that the percent wood invasive species cover does not exceed 20%.

*Response* – Invasive species will be removed or threat posed by invasive species will be controlled using best management practices that will have no ground disturbance and the least possible impacts to the Target Species within three years of the monitoring event that identifies the presence.

*Trigger* – The trigger for the Land Manager to implement corrective action is if density of standing snags or potential roost tree species with DBH >7 in. falls below five per acre.

*Response* – In coordination with USFWS, trees will be selected, girdled and left standing as snags to increase the density of standing snags. An appropriate number of trees will be girdled by hand throughout the Mitigation Site to bring the density of snags with DBH >7 in. above the performance standard of five per acre. If girdled trees do not have an adequate amount of solar exposure to the trunk, any trees with <5 in. DBH within 30 feet and south of the girdled tree will be cut by hand, and non-potential roost trees with DBH between 5 and 11 in. will be girdled by hand to increase the value of the tree as a potential roost.

### **Task 6. Address Changed Circumstance Event**

**Objective:** Address a change in mitigation project viability due to the impact of a natural disaster, such as a drought, flood, storm, or fire.

**Threshold for Action:** In the event that a natural disaster destroys all or part of the habitat at the Mitigation Site, the ability of the mitigation project to provide secure habitat for the Target Species may be compromised. The Land Manager will work with the USFWS and the Applicant to conduct a site visit and habitat assessment to determine the status of the mitigation project within three months of becoming aware that a natural disaster is likely to have impacted the Mitigation Site.

If the assessment results indicate that the Mitigation Site no longer provides suitable habitat for the Target Species, the Land Manager and Applicant will work with the USFWS to evaluate potential options for restoration of the Mitigation Site or applying the Changed Circumstance Funds towards an alternative mitigation option.



# EXHIBIT C

## REAL ESTATE RECORDS AND ASSURANCES

### Contents

- C-1. Title Review
- C-2. Approved-as-to-form Conservation Easement Deed



**EXHIBIT C-1**  
**TITLE REVIEW**



# Adams County Abstract & Title Co.

231 N 6th St, Quincy IL 62301-2905 • (217) 222-2090 • FAX (217) 222-2694

## OWNERSHIP SEARCH NO. OS-2020-063

Max Jones

max@mitigation.org

Names covered by this ownership search: Jeffery M. & Deana M. Hughes

Address: 2595 N. 1353<sup>rd</sup> Ln., Clayton, IL

1. I DO HEREBY CERTIFY, that I have examined the Tract Index on record in the Office of the Recorder of Deeds in and for Adams County, Illinois, for the real estate described as follows:

See Exhibit "A" attached

From my examination I find as follows:

NOTE: This search is subject to all recorded easements, rights of ways, protective covenants and to building and easement lines as shown on subdivision plat, if applicable

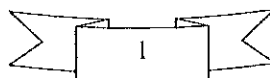
DEEDS OF RECORD Book/Page/Document No.:

Quit Claim Deed 417/226  
Quit Claim Deed 417/227  
Quit Claim Deed 417/228  
Quit Claim Deed 417/229  
Warranty Deed 417/230  
Warranty Deed 447/884  
Quit Claim Deed 482/565  
Warranty Deed 511/112  
Affidavit of Non-Development & Non-Production 620/10194  
Warranty Deed 620/10195  
Warranty Deed 706/778  
Warranty Deed 706/779  
Warranty Deed 2010R-12477

HOWEVER, I do not certify as to the ownership of the fee simple title to said real estate.

MORTGAGES Book/Page/Document No.: During the period covered by this Ownership, I find unreleased mortgages against the above described real estate as follows:

Illinois Mortgage 2010R-12478  
Illinois Mortgage 2015R-00948



OTHER DOCUMENTS Book/Page/Document No.: During the period covered by this Ownership, I also find the following documents filed against the above described real estate as follows:

Oil & Gas Lease 5 O&G/649  
Oil & Gas Lease 5 O&G/950  
Right of Way Easement 12RW/2343  
Right of Way Easement 14RW/2697  
Right of Way Easement 709/5292

2. FURTHER, I DO HEREBY CERTIFY that I have examined the records of the above county for Judgment Liens, Federal Tax Liens, Illinois Income Tax Liens, Mobile Home Tax Liens, Unemployment Compensation Contribution Tax Liens, Sales Tax Liens, Mechanic's Liens, Old Age Assistance Liens, Real Estate Tax Liens, or Miscellaneous State Excise Tax Liens. From my examination, I find indexed no such liens which would be a lien against the above described real estate during the period of this ownership search shown above, and against the names shown above for 20 years preceding the ownership search end date shown above, except as follows:

Judgments Book/Page/Document No.:

NONE

Other Liens Book/Page/Document No.:

NONE

UCC Statements Book/Page/Document No.:

NONE

3. FURTHER, I DO HEREBY CERTIFY that I have examined the indices of the Circuit Clerk's Office. From my examination, I find indexed nothing which would affect the above described real estate during the period of this search, except as follows:

NONE

I DO NOT CERTIFY as to Special Assessments or Special Taxes, nor do I certify as to judgments or bankruptcy proceedings, in the United States District Court of the Central District of Illinois; nor have I searched the Statewide Illinois Tax Lien Registry web site.

Taxes:

P.I.N. 10-0-0322-000-00

Taxes for the years 2019 & 2020 are not yet due and payable.

2018 taxes in the amount of \$2,868.70 are paid.

Taxes for the 5 years prior appear paid in full.

Ownership search begin date: February 28, 1961 at 3:10 P.M

Ownership search end date: at May 13, 2020; 4:30 P.M



Respectfully submitted,

*James D. Gregory TAE*

Jim D. Gregory  
Vice President

**NOTE: THIS IS NOT A TITLE INSURANCE POLICY, GUARANTEE OR OPINION OF TITLE AND SHOULD NOT BE RELIED UPON AS SUCH. LIABILITY UNDER THIS SEARCH IS LIMITED TO \$500.00.**

**EXHIBIT A**

---

The Southeast Quarter (SE $\frac{1}{4}$ ) of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian;

EXCEPT that part lying South and East of the centerline of the public highway running in a Northeasterly-Southwesterly direction through said Southeast Quarter (SE $\frac{1}{4}$ );

ALSO EXCEPT all that part now being used for cemetery purposes;

All situated in the County of Adams, in the State of Illinois.

QUIT CLAIM DEED

417/226

The Grantors, Roger G. Goertz, an heir of the estate of Albert John Goertz, deceased, and Wilma Goertz, the wife of Roger G. Goertz, each in their own right and each as the spouse of the other,

of the County of Adams and State of Illinois, for and in consideration of the sum of Ten (\$10.00) Dollars and other valuable consideration in hand paid, CONVEYS and QUIT CLAIMS to John L. Powers and Donna L. Powers, husband and wife, not as tenants in common, but in joint tenancy with right of survivorship

all interest in the following described Real Estate:

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, except the following described tract: Beginning at a point on the Section line of the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30), where the public highway crosses said Section line, at the center of said highway, running thence South Ten (10) Rods, thence West Twenty-three (23) Rods to the public highway, thence along the South side of the public highway North-easterly to the place of beginning, being one-half acre more or less,

situated in the County of Adams, in the State of Illinois, hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State

Dated this January, A. D. 19 61  
Signed, Sealed and Delivered in the Presence of  
Roger G. Goertz (SEAL)  
Wilma Goertz (SEAL)

STATE OF ILLINOIS,  
County of Adams  
I, L. F. Lenzellin, a Notary Public in and for said County, in the State of Illinois, do hereby certify that Roger G. Goertz, an heir of the estate of Albert John Goertz, deceased, and Wilma Goertz, the wife of Roger G. Goertz, each in their own right and each as the spouse of the other,



QUIT CLAIM DEED

417/287

The Grantors, Howard E. Goertz, an heir of the estate of Albert John Goertz, deceased, and Wanda Goertz, the wife of Howard E. Goertz, each in their own right and each as the spouse of the other

of the County of Adams and State of Illinois, for and in consideration of the sum of Ten (\$10.00) Dollars and other valuable consideration in hand paid, CONVEYS and QUIT CLAIMS to John L. Powers and Donna L. Powers, husband and wife, not as tenants in common, but in joint tenancy with right of survivorship

all interest in the following described Real Estate:

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, except the following described tract: Beginning at a point on the Section line of the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30), where the public highway crosses said Section line, at the center of said highway, running thence South Ten (10) Rods, thence West Twenty-three (23) Rods to the public highway, thence along the South side of the public highway North-easterly to the place of beginning, being one-half acre more or less;

CONVEYS and QUIT CLAIMS to John L. Powers and Donna L. Powers, husband and wife, not as tenants in common, but in joint tenancy with right of survivorship

situated in the County of Adams, in the State of Illinois, hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State

Dated this 21st day of January, A. D. 1961

Signed, Sealed and Delivered in the Presence of

Howard E. Goertz (SEAL) X
Wanda Goertz (SEAL) X

STATE OF ILLINOIS, County of Adams,

George J. Lewis, a Notary Public in and for said County,

in the State aforesaid, do hereby certify that Howard E. Goertz, an heir of the estate of Albert John Goertz, deceased, and Wanda Goertz, the wife of Howard E. Goertz, each in their own right and each as the spouse of the other

personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, appeared before me this day in person and acknowledged that they



signed, sealed and delivered the said instrument including the release and waiver of the right of homestead, as their free and voluntary act, for the use and purpose therein expressed. GIVEN Under My Hand and Notarial Seal this 21st day of January, 1961

Signature of George J. Lewis

QUIT CLAIM DEED

417/238

The Grantors, Marie Hardy, an heir of the estate of Albert John Goertz, deceased, and Harold Hardy, the husband of Marie Hardy, each in their own right and each as the spouse of the other,

of the County of Adams and State of Illinois, for and in consideration of the sum of Ten (\$10.00) Dollars and other valuable consideration CONVEY and QUIT CLAIMS to John L. Powers and Donna L. Powers, husband and wife, not as tenants in common, but in joint tenancy with right of survivorship.

all interest in the following described Real Estate:

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, except the following described tracts: Beginning at a point on the section line of the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30), where the public highway crosses said Section line, at the center of said highway, running thence South Ten (10) Rods, thence West Twenty-three (23) Rods to the public highway, thence along the South side of the public highway North-easterly to the place of beginning, being one-half acre more or less,

for and in consideration of the sum of Ten (\$10.00) Dollars and other valuable consideration CONVEY and QUIT CLAIMS to John L. Powers and Donna L. Powers, husband and wife, not as tenants in common, but in joint tenancy with right of survivorship.

situated in the County of Adams, in the State of Illinois, hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State

Dated this 28th day of January, A. D. 1961

Signed, Sealed and Delivered in the Presence of Marie Hardy (SEAL), Marie Hardy (SEAL), Harold Hardy (SEAL), Harold Hardy (SEAL)

STATE OF ILLINOIS, County of Adams,

I, George J. Lewis, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Marie Hardy, an heir of the estate of Albert John Goertz, deceased, and Harold Hardy, the husband of Marie Hardy, each in their own right and each as the spouse of the other,



personally known to me to be the same persons whose names are subscribed to the foregoing instrument, and that they executed the same, appeared before me in person and acknowledged the same to be their act and deed.

QUIT CLAIM

417/329

The Grantor, Bessie H. Goertz, a widow and an heir of the Estate of Albert John Goertz, deceased

of the County of Adams and State of Illinois, for and in consideration of the sum of Ten (\$10.00) Dollars and other valuable consideration in hand paid, CONVEY, S... and QUIT CLAIM S... to John L. Powers and Donna L. Powers, husband and wife, not as tenants in common, but as joint tenants with right of survivorship

all interest in the following described Real Estate:

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, except the following described tract; Beginning at a point on the Section line on the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30), where the public highway crosses said Section line, at the center of said highway, running thence South Ten (10) Rods, thence West Twenty-three (23) Rods to the public highway, thence along the South side of the public highway North-easterly to the place of beginning, being one-half acre more or less,

of the County of Adams and State of Illinois, for and in consideration of the sum of Ten (\$10.00) Dollars and other valuable consideration in hand paid, CONVEY, S... and QUIT CLAIM S... to John L. Powers and Donna L. Powers, husband and wife, not as tenants in common, but as joint tenants with right of survivorship

situated in the County of Adams, in the State of Illinois, hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State

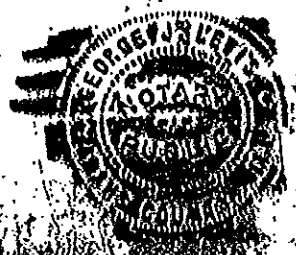
Dated this 21st day of January, A. D. 19 61

Signed, Sealed and Delivered in the Presence of } Bessie M. Goertz (SEAL)  
Bessie H. Goertz XBRACK  
(SEAL)  
(SEAL)

STATE OF ILLINOIS,  
County of Adams,

George J. Lewis, Notary Public in and for said County, in the State aforesaid, do hereby certify that Bessie H. Goertz, a widow and an heir of the Estate of Albert John Goertz, deceased

personally known to me to be the same person whose name is subscribed to the foregoing instrument, as having executed the same, appeared before me this day in person and acknowledged that she signed, sealed and delivered the said instrument including the release and waiver of the right of homestead, as her free and voluntary act, for the use and purpose therein set forth.



George J. Lewis Notary Public  
21st

417/230

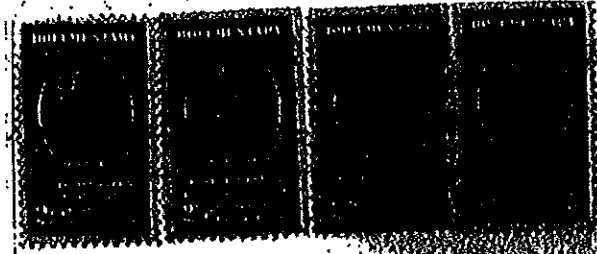
No. 239 Filed this 28th, day of February A.D., 1961 at 3:11 o'clock P.M.  
WARRANTY DEED P. A. M. PRINTERS 1004 Cedar St. Quincy, Ill.

The Grantor, s. John L. Powers and Donna L. Powers, husband and wife, each in their own right and each as the spouse of the other, respectively,

of the County of Adams and State of Illinois, for and in consideration of the sum of Ten (\$10.00) Dollars and other valuable consideration XEROXERS in hand paid, CONVEY and WARRANT to Cyril A. Elkus and Marian Elkus, husband and wife, nat. as tenants in common, but as joint tenants, with right of survivorship

the following described Real Estate:

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, except the following described tract: Beginning at a point on the Section line of the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30); where the public highway crosses said Section line, at the center of said highway, running thence South Ten (10) Rods, thence West Twenty-three (23) Rods to the public highway, thence along the South side of the public highway North-easterly to the place of beginning, being one-half acre more or less,



situated in the County of Adams, in the State of Illinois, hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State of Illinois.

BUYERS ASSUME THE TAXES FOR THE YEAR 1961

Dated this 28th day of February, A. D. 1961.

Signed, Sealed and Delivered in the Presence of John L. Powers (SEAL) Donna L. Powers (SEAL)

STATE OF ILLINOIS, County of Adams ss.

I, [Signature] a Notary Public in and for said County, in the State aforesaid, do hereby certify that John L. Powers and Donna L. Powers, husband and wife,

personally known to me to be the same person whose name is in the foregoing instrument; as having executed the same, appeared before me this day, and that they signed, sealed and delivered the said instrument, and that the same was given to them free and voluntary and for the purpose therein set forth.



GIVEN under my Hand and Seal of Office this 28th Day of February, 1961.

447/884

No. 12098 Filed on the 15th day of October 1971 at 11:25 A.M.

CREATOR: 314 B. 4th, CHICAGO, ILL. 2

Document No. 12098 filed for Record in Recorder's Office Adams County, Illinois October 15, 1971 at 11:25 o'clock A.M.

WARRANTY DEED

THE GRANTOR, S, CYRIL A. ELBUS and MARIAN ELBUS, husband and wife, each Individually and as spouse of the other,

of the County of Adams and State of Illinois, for and in consideration of the sum of Ten Dollars and other good and valuable consideration,

ROBERT E. CROOKS and MAXINE M. CROOKS, husband and wife, not as tenants in common but in joint tenancy,

the following described Real Estate:

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, except the following described tract: Beginning at a point on the Section line on the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30), where the public highway crosses said Section line, at the center of said highway, running thence South Ten (10) rods, thence West Twenty-three (23) rods to the public highway, thence along the South side of the public highway Northeasterly to the place of beginning, being one-half acre, more or less, situated in the County of Adams and State of Illinois;



hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State of Illinois.

Dated this 11th day of November A. D. 19 61.

Signed, Sealed and Delivered in the Presence of

Cyril A. Elbus (SEAL)
Marian Elbus (SEAL)
Marian Elbus (SEAL)

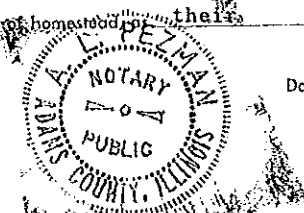
STATE OF ILLINOIS, } ss.
County of Adams, }

I, A. L. Egelman, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Cyril A. Elbus and Marian Elbus, husband and wife, individually and each as the spouse of the other,

personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same. appeared before me this day in person and acknowledged that they

signed, sealed and delivered the said instrument including the release and waiver of the right of homestead, their free and voluntary act, for the uses and purposes therein set forth.

GIVEN under my Hand and Notarial Seal, this 11th Day of November A. D. 1961.



A. L. Egelman
Notary Public.

The tax statements for the year 1971 and subsequent years shall be sent to NAME Robert E. Crooks ADDRESS Clayton, Ill. 62324



482 | 565

QUIT CLAIM DEED—

THE GRANTOR , Maxine M. Crooks, a divorced person not having remarried and former wife of Robert E. Crooks

of the County of Adams and State of Illinois, for and in consideration of FEN (\$10,00) DOLLARS, in hand paid, CONVEYED and QUIT CLAIM to Robert E. Crooks

the following described Real Estate:

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, except the following described tract: Beginning at a point on the Section line on the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30), where the public highway crosses said Section line, at the center of said highway, running thence South Ten (10) rods, thence West Twenty-three (23) rods to the public highway, thence along the South side of the public highway, thence along the South side of the public highway Northeasterly to the place of beginning, being one-half acre, more or less, situated in the County of Adams and State of Illinois.

situated in the County of Adams, in the State of Illinois, hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State of Illinois.

Dated this 22nd day of September, A. D. 1972. (SEAL) x Maxine M. Crooks (SEAL) (SEAL) (SEAL) (SEAL) (SEAL)

STATE OF ILLINOIS, } ss. COUNTY OF ADAMS, }

I, SANDRA TOMLIN, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Maxine M. Crooks, a divorced person not having remarried and former wife of Robert E. Crooks

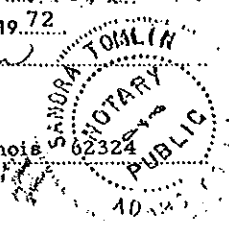
personally known to me to be the same person whose name is subscribed to the foregoing Instrument, as having executed the same, appeared before me this day in person and acknowledged that she signed, sealed and delivered the said instrument including the release and waiver of the right of Homestead, as her free and voluntary act, for the uses and purposes therein set forth.

GIVEN Under My Hand and Notarial Seal, this 22nd day of September, A. D., 1972.

Sandra Tomlin Notary Public

The tax statements for the year 19 and subsequent years shall be sent to

NAME Robert E. Crooks ADDRESS Clayton, Illinois



517/112

WARRANTY DEED

THE GRANTORS, Robert E. Crooks, a divorced person not now married, and never having remarried,

of the County of Adams and State of Illinois, for and in consideration of Ten (\$10.00) Dollars and other good & valuable consideration in hand paid, CONVEY and WARRANT to Dennis L. Tresch and Susan N. Tresch, husband and wife, as joint tenants and not as tenants in common, with right of survivorship,

the following described Real Estate:

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, except the following described tract: Beginning at a point on the section line on the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30) where the public highway crosses said section line, at the center of said highway, running thence South Ten (10) rods, thence West Twenty-three (23) rods to the public highway, thence along the South side of the public highway Northeastly to the place of beginning, being one-half acres, more or less, subject to an Oil & Gas Lease recorded in Book 5 of Oil & Gas, at page 649, and to Oil & Gas Lease recorded in Book 5 of Oil & Gas, at page 950, in the Recorder's Office of Adams County, Illinois,

situated in the County of Adams, in the State of Illinois, hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State of Illinois. Grantees herein agree and assume to pay general real estate taxes for the year 1988, and all subsequent years thereto.

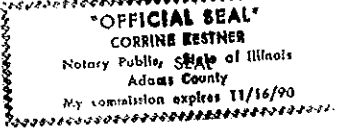
Dated this 14th day of June A.D. 19 88

Robert E. Crooks (SEAL) Robert E. Crooks (SEAL)

THIS IS A SPLIT OR DIVISION OF AN EXISTING PIECE

STATE OF ILLINOIS, COUNTY OF ADAMS,

ss. Corinne J. Keatner a Notary Public in, and for said County and State aforesaid, DO HEREBY CERTIFY, that Robert E. Crooks, a divorced person not now married, and never having remarried,



personally known to me to be the same person whose name is he signed, sealed and delivered the said instrument as his free and voluntary act, for the uses and purposes therein set forth, including the release and waiver of the right of homestead.

Given under my hand and official seal, this 14th day of June A.D. 19 88

Corinne J. Keatner (SEAL) NOTARY PUBLIC

DOCUMENTARY STAMPS

Exempt under provisions of Paragraph Section 4, Real Estate Transfer Tax Act.

Date Buyer, Seller or Representative

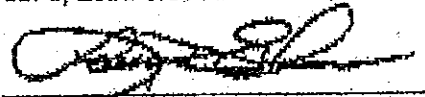
DEED PREPARED BY Gerald L. Timmerwijke

The tax statements for the year 19 88 and subsequent years shall be sent to

NAME Dennis L. & Susan N. Tresch ADDRESS

other, 24, 1986, gages, nk and, to-wit: THE, Instru- ttested, NY, dent, State, ing in- nd ac- ry act, ion for, 19 88, QUINCY, IL. 62301

No. 200310194 Book 620 Page 10194  
Adams County, State of Illinois  
RECORDED  
Jul 3, 2003 9:08 AM Fees \$25.00



Larry D. Ehmen, County Recorder

**Towne & Country Abstract**

AFFIDAVIT OF NON-DEVELOPMENT AND NON-PRODUCTION

STATE OF ILLINOIS )  
 ) SS  
COUNTY OF ADAMS )

I, Susan N. Tresch, formerly Susan N. White, first being duly sworn on oath, depose and say:

1. That I am an adult person, over the age of twenty-one years, and a resident of Adams County, Illinois.

2. That I am the sole owner of the following described real estate:

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, except the following described tract: Beginning at a point on the Section line on the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30) where the public highway crosses said Section line, at the center of said highway, running thence South Ten (10) rods, thence West Twenty-three (23) rods to the public highway, thence along the South side of the public highway Northeasterly to the place of beginning, being one-half acre, more or less, situated in the County of Adams, in the State of Illinois,

3. I acquired title to said real estate with my husband, Dennis L. Tresch, now deceased, by deed dated June 14, 1988 and filed June 21, 1988.

4. That subsequent to acquiring title, I became aware that said real estate is encumbered with two Oil and Gas Leases, more particularly described as follows:

A. Oil and Gas Lease from Robert E. Crooks to Henry Energy Corporation dated February 16, 1983, filed February 22, 1983 in Book 5 of Oil and Gas records at page 649 (includes other land); and

B. Oil and Gas Lease from Robert E. Crooks to Abundant Energy Corporation dated June 29, 1983, filed July 12, 1983 in Book 5 of Oil and Gas records at page 950 (includes other land)

5. Said Oil and Gas Leases provide that they will remain in force for terms of 90 days and 6 months, respectively, and as long thereafter as oil or gas or either of them was

produced from said real estate.

6. That since I acquired title to said real estate with my husband, said leases have never been extended by the payment of any additional sum of money, by written agreement or otherwise, nor have said leases been pooled with other Oil and Gas Leases on other real estate.

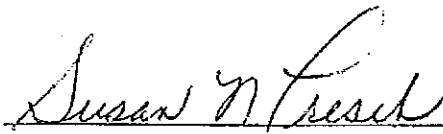
7. That at all times covered by this Affidavit, continuously, from the date I acquired title to said real estate to the date hereof, I have been well acquainted with all activities on said real estate.

8. That from and after the date I acquired title to said real estate, to and including the date hereof, no well has been drilled, no oil or gas has been produced, nor has there been any exploration or mining for oil or gas on the real estate described herein by either of said Lessees or any other person, firm or corporation acting pursuant to the terms of either said lease or otherwise, and therefore said leases have expired by the terms thereof and are no longer of any legal force or effect.

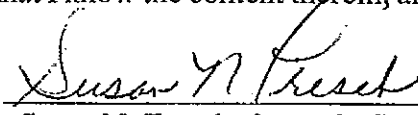
9. That upon learning that these Oil and Gas Leases have not been released of record, I made a diligent inquiry to locate said Lessees, and I have not been able to find a telephone listing or address for said Lessees.

10. That this Affidavit is given to explain title to the real estate described herein, to induce First American Title Insurance Company to issue a policy of title insurance thereon, and to induce William H. Ausmus and Deborah M. Ausmus to purchase said real estate.

Dated this 28th day of June, 2003.

  
Susan N. Tresch, formerly Susan N. White

I, Susan N. Tresch, formerly Susan N. White, hereby swear and affirm that I have read the foregoing Affidavit by me subscribed, that I know the content therein, and that the same is true and correct.

  
Susan N. Tresch, formerly Susan N. White

STATE OF ILLINOIS    )  
  ) SS  
COUNTY OF ADAMS    )

I, Mark G. Field, a Notary Public in and for the County and State aforesaid, do hereby certify that Susan N. Tresch, formerly Susan N. White, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that she signed, sealed and delivered the said instrument as her free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this 28th day of June, 2003.

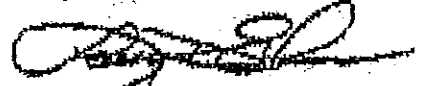


*Mark G. Field*

Notary Public

RECORDED

Jul 3, 2003 9:10 AM Fees \$25.00



Larry D. Ehmen, County Recorder

WARRANTY DEED

Statutory (Illinois)

The tax statements for  
the year 2003 and  
subsequent years shall  
be sent to:

William H. Ausmus and Deborah M. Ausmus

2616 N. 1353rd Ln  
Clayton, IL 62324

Towne & Country Abstract

P.I.N.: 10-0-0322-000-00 (split)

**THE GRANTOR**, Susan N. Tresch, formerly Susan N. White, a married person whose spouse has no homestead interest in the real estate described herein, of the County of Adams and State of Illinois, for and in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration in hand paid **CONVEYS** and **WARRANTS** to William H. Ausmus and Deborah M. Ausmus, husband and wife, not as tenants in common, but as joint tenants with the right of survivorship, the following described real estate:

All that part of the Southeast Quarter of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian lying South and East of the centerline of the public highway running in a Northeasterly-Southwesterly direction through said Southeast Quarter, except the following described tract: Beginning at a point on the Section line on the East side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30) where the public highway crosses said Section line, at the center of said highway, running thence South Ten (10) rods, thence West Twenty-three (23) rods to the public highway, thence along the South side of the public highway Northeasterly to the place of beginning, being one-half acre, more or less, situated in the County of Adams, in the State of Illinois, (see)

Subject to the following:

1. Right of Way Easement to Adams Electrical Co-Operative recorded in Book 12 of Right of Ways at page 2343;
2. Right of Way Easement to Adams Electrical Co-Operative recorded

in Book 14 of Right of Ways at page 2697; and

3. Easements and rights of way as the same appear of record,

hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State of Illinois.

Grantees herein assume and agree to pay real estate taxes for the year 2003, and real estate taxes for all subsequent years.

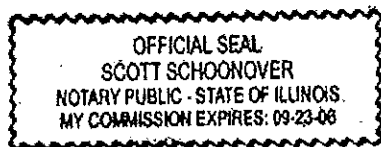
Dated this 28th day of June, 2003.

Susan N. Tresch  
Susan N. Tresch, formerly Susan N. White

STATE OF ILLINOIS    )  
  ) SS  
COUNTY OF ADAMS    )

I, Scott Schoonover, a Notary Public in, and for said County and State aforesaid, DO HEREBY CERTIFY, that Susan N. Tresch, formerly Susan N. White, a married person whose spouse has no homestead interest in the real estate described herein, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that she signed, sealed and delivered the said instrument as her free and voluntary act, for the uses and purposes therein set forth, including the release and waiver of the right of homestead.

Given under my hand and official seal, this 28 day of June, 2003.



Scott Schoonover  
Notary Public



This is a split or division of an existing piece

This transaction is (in compliance with)  
(exempt under) Section 1(b) \_\_\_\_\_ of the  
Plat Act. (765 ILCS 205/0.01 et seq.)

---

Date Buyer, Seller or Representative

Exempt under provisions of Paragraph \_\_  
Section 31-45 of the Property Tax Code.

---

Date Buyer, Seller or Representative

Deed Prepared By:  
John R. Longlett



# PTAX-203

## Illinois Real Estate Transfer Declaration

Do not write in this area.  
This space is reserved for the County Recorders Office use.

County: No. 200310195 Book 620 Page 10195  
Adams County, State of Illinois

Date: RECORDED  
Jul 3, 2003 9:10 AM Fees \$25.00

Doc. No.:

Vol.:

*[Signature]*  
Larry D. Ehmen, County Recorder

Page:

Received by:

Please read the instructions before completing this form.

### Step 1: Identify the property and sale information.

1 N. 1353rd Lane, Clayton  
Street address of property (or 911 address, if available)  
Clayton Concord  
City or village Township

2 Write the total number of parcels to be transferred. 1

3 Write the parcel identifying numbers and lot sizes or acreage.\*  
Parcel identifying number Lot size or acreage  
a 10-0-0322-000-00 (split) 19.2  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

Write additional parcel identifiers and lot sizes or acreage in Step 3.

4 Date of deed/trust document: 0 6 / 2 0 0 3  
Month Year

5 Type of deed/trust document\*(Mark with an "X"):  
 Warranty deed  
 Quit claim deed  Executor deed  Trustee deed  
 Other (specify): \_\_\_\_\_

6  Yes  No Will the property be the buyer's principal residence?\*

7  Yes  No Was the property advertised for sale or sold using a real estate agent?\*

8 Identify the property's current and intended primary use.

Current Intended (Mark only one item per column with an "X")

a  Vacant land/lot  
b  Residence (single-family, condominium, townhome, or duplex)  
c  Mobile home residence  
d  Apartment building (6 units or less) No. of units: \_\_\_\_\_  
e  Apartment building (over 6 units) No. of units: \_\_\_\_\_  
f  Office  
g  Retail establishment  
h  Commercial building (specify)\*: \_\_\_\_\_  
i  Industrial building  
j   Farm  
k  Other (specify)\*: 1

9 Identify any significant physical changes in the property since January 1 of the previous year and write the date of the change. (Mark with an "X")

Demolition/damage  Additions  Major remodeling  
 New construction  Other (specify): \_\_\_\_\_  
Date of significant change\*: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Month Year

10 Identify only the items that apply to this sale. (Mark with an "X".)

a  Fulfillment of installment contract--year contract Initiated\*: \_\_\_\_\_  
b  Sale between related individuals or corporate affiliates  
c  Transfer of less than 100 percent interest\*  
d  Court-ordered sale\*  
e  Sale in lieu of foreclosure  
f  Condemnation  
g  Auction sale  
h  Seller/buyer is a relocation company  
i  Seller/buyer is a financial institution\* or government agency  
j  Buyer is a real estate investment trust  
k  Buyer is a pension fund  
l  Buyer is an adjacent property owner  
m  Buyer is exercising an option to purchase\*  
n  Trade of property (simultaneous)\*  
o  Sale-leaseback  
p  Other (specify)\*: \_\_\_\_\_

### Step 2: Calculate the amount of transfer tax due.

Note: Round Lines 11 through 17 to the next highest whole dollar. If the amount on Line 11 is over \$1 million and the property's current use on Line 8 above is marked "e," "f," "g," "h," "i," or "k," complete Form PTAX-203-A, Illinois Real Estate Transfer Declaration Supplemental Form A.

11 Full actual consideration*	11 \$	31,000
12a Amount of personal property included in the purchase*	12a \$	
12b Was the value of a mobile home included on Lines 11 and 12a?	12b <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
13 Subtract Line 12a from Line 11. This is the net consideration for real property.	13 \$	31,000
14 Amount for other real property transferred to the seller (in a simultaneous exchange) as part of the full actual consideration on Line 11*	14 \$	
15 Outstanding mortgage amount to which the transferred real property remains subject*	15 \$	
16 If this transfer is exempt, use an "X" to identify the provision.*	16 <input type="checkbox"/> b <input type="checkbox"/> k <input type="checkbox"/> m	
17 Subtract Lines 14 and 15 from Line 13. This is the net consideration subject to transfer tax.	17 \$	31,000
18 Divide Line 17 by 500. Round the result to the next highest whole number (e.g., 61.002 rounds to 62).	18	62
19 Illinois tax stamps -- multiply Line 18 by 0.50.	19 \$	31.00
20 County tax stamps -- multiply Line 18 by 0.25.	20 \$	15.50
21 Add Lines 19 and 20. This is the total amount of transfer tax due.	21 \$	46.50

\* See instructions.  
PTAX-203 (R-7/00)  
ID:3100

This form is authorized in accordance with 35 ILCS 200/31-1 et seq. Disclosure of this information is REQUIRED. This form has been approved by the Forms Management Center. IL-492-0227

## WARRANTY DEED

Deed Prepared By:  
Snowden & Snowden  
237 N 6th St, Suite 101  
Quincy IL 62301-2938

The tax statements for the year  
2005 and subsequent years shall  
be sent to:

Gerald Lierly Jr.  
2466 Hwy 24  
Camp Point, Ill. 62320

THE GRANTOR, Susan N. Tresch, a married person, whose spouse has no homestead interest, for and in consideration of Ten and 00/100 Dollars (\$10.00) and other good and valuable consideration, in hand paid, CONVEYS and WARRANTS to Chad M. Markert, the following described real estate:

The Southeast Quarter (SE $\frac{1}{4}$ ) of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, **EXCEPT** that part lying South and East of the centerline of the public highway running in a Northeasterly-Southwesterly direction through said Southeast-Quarter (SE $\frac{1}{4}$ ), situated in the County of Adams, in the State of Illinois.

Permanent Index No. 10-0-0322-000-00

Commonly known as: N 1200th Ave., Clayton, IL 62324

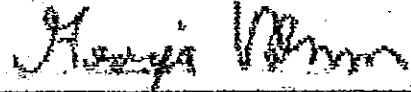
Said Grantor hereby releases and waives all rights under and by virtue of the Homestead Exemption Laws of the State of Illinois.

### SUBJECT TO:

- 1) Real estate taxes for the year 2005 and subsequent years.
- 2) Right of Way Easement to Adams Electrical Co-Operative recorded in Book 12 of Right of Ways, at Page 2343 and Book 14 of Right of Ways, at Page 2697.

No. 200600778 Book 706 Page 778  
Adams County, State of Illinois  
RECORDED

Jan 25, 2006 3:48 PM Fees \$452.00  
Rental Housing Support Program  
\$10.00 State Surcharge Paid Date: 01/25/2006



Georgia Vain, Adams County Clerk/Recorder

Adams County Abstract

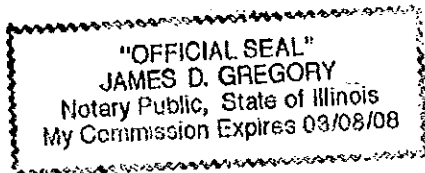
Dated this 24th day of JANUARY, A.D. 2006

Susan N. Tresch  
Susan N. Tresch

STATE OF ILLINOIS )  
  ) SS  
COUNTY OF ADAMS )

I, JAMES D GREGORY, a Notary Public in and for said County and State aforesaid, DO HEREBY CERTIFY, that Susan N. Tresch, personally known to me (or proved to me on the basis of satisfactory evidence) to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that she signed, sealed and delivered the said instrument as her free and voluntary act, for the uses and purposes therein set forth, including the release and waiver of the right of homestead.

Given under my hand and official seal this 24th day of JANUARY, 2006



James D. Gregory  
Notary Public



# PTAX-203

## Illinois Real Estate Transfer Declaration

No. 200600778 Book 706 Page 778  
 Adams County, State of Illinois  
**RECORDED**  
 Date: Jan 25, 2006 3:48 PM Fees \$452.00  
 Rental Housing Support Program  
 \$10.00 State Surcharge Paid Date: 01/25/2006

Please read the instructions before completing this form. This form can be completed electronically at [www.revenue.state.il.us/retd](http://www.revenue.state.il.us/retd).

County:

Date:

Doc. No.:

Vol.:

Page:

Received by:

*Georgia Volm*  
 Georgia Volm, Adams County Clerk/Recorder

### Step 1: Identify the property and sale information.

1 N 1200th Avenue  
 Street address of property (or 911 address, if available)  
Clayton Concord  
 City or village Township

2 Write the total number of parcels to be transferred. 1  
 3 Write the parcel identifying numbers and lot sizes or acreage.\*  

Parcel Identifying number	Lot size or acreage
a <u>10-0-0322-000-00</u>	<u>138.80 acres</u>
b _____	_____
c _____	_____
d _____	_____

Write additional parcel identifiers and lot sizes or acreage in Step 3.

4 Date of deed/trust document: 01 / 2006  
 Month Year

5 Type of deed/trust document\* (Mark with an "X"):  
 Warranty deed  
 Quit claim deed  Executor deed  Trustee deed  
 Other (specify): \_\_\_\_\_

6  Yes  No Will the property be the buyer's principal residence?\*

7  Yes  No Was the property advertised for sale or sold using a real estate agent?\*

8 Identify the property's current and intended primary use.  
 Current Intended (Mark only one item per column with an "X")

<input type="checkbox"/>	<input type="checkbox"/>	Vacant land/lot
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Residence (single-family, condominium, townhome, or duplex)
<input type="checkbox"/>	<input type="checkbox"/>	Mobile home residence
<input type="checkbox"/>	<input type="checkbox"/>	Apartment building (6 units or less) No. of units: _____
<input type="checkbox"/>	<input type="checkbox"/>	Apartment building (over 6 units) No. of units: _____
<input type="checkbox"/>	<input type="checkbox"/>	Office
<input type="checkbox"/>	<input type="checkbox"/>	Retail establishment
<input type="checkbox"/>	<input type="checkbox"/>	Commercial building (specify)*: _____
<input type="checkbox"/>	<input type="checkbox"/>	Industrial building
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Farm
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify)*: _____

9 Identify any significant physical changes in the property since January 1 of the previous year and write the date of the change. (Mark with an "X")  
 Demolition/damage  Additions  Major remodeling  
 New construction  Other (specify): \_\_\_\_\_  
 Date of significant change\*: \_\_\_\_\_ / \_\_\_\_\_ Year  
 Month Year

10 Identify only the items that apply to this sale. (Mark with an "X")

<input type="checkbox"/>	Fulfillment of installment contract — year contract initiated*:
<input type="checkbox"/>	Sale between related individuals or corporate affiliates
<input type="checkbox"/>	Transfer of less than 100 percent interest*
<input type="checkbox"/>	Court-ordered sale*
<input type="checkbox"/>	Sale in lieu of foreclosure
<input type="checkbox"/>	Condemnation
<input type="checkbox"/>	Auction sale
<input type="checkbox"/>	Seller/buyer is a relocation company
<input type="checkbox"/>	Seller/buyer is a financial institution* or government agency
<input type="checkbox"/>	Buyer is a real estate investment trust
<input type="checkbox"/>	Buyer is a pension fund
<input type="checkbox"/>	Buyer is an adjacent property owner
<input type="checkbox"/>	Buyer is exercising an option to purchase*
<input type="checkbox"/>	Trade of property (simultaneous)*
<input type="checkbox"/>	Sale-leaseback
<input type="checkbox"/>	Other (specify)*: _____

### Step 2: Calculate the amount of transfer tax due.

Note: Round Lines 11 through 17 to the next highest whole dollar. If the amount on Line 11 is over \$1 million and the property's current use on Line 8 above is marked "e," "f," "g," "h," "i," or "k," complete Form PTAX-203-A, Illinois Real Estate Transfer Declaration Supplemental Form A.

11	Full actual consideration*	\$	<u>277,600.00</u>
12a	Amount of personal property included in the purchase*	\$	<u>0.00</u>
12b	Was the value of a mobile home included on Lines 11 and 12a?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
13	Subtract Line 12a from Line 11. This is the net consideration for real property.	\$	<u>277,600.00</u>
14	Amount for other real property transferred to the seller (in a simultaneous exchange) as part of the full actual consideration on Line 11*	\$	<u>0.00</u>
15	Outstanding mortgage amount to which the transferred real property remains subject*	\$	<u>0.00</u>
16	If this transfer is exempt, use an "X" to identify the provision.*		<input type="checkbox"/> b <input type="checkbox"/> k <input type="checkbox"/> m
17	Subtract Lines 14 and 15 from Line 13. This is the net consideration subject to transfer tax.	\$	<u>277,600.00</u>
18	Divide Line 17 by 500. Round the result to the next highest whole number (e.g., 81.002 rounds to 82).		<u>556</u>
19	Illinois tax stamps — multiply Line 18 by 0.50.	\$	<u>278.00</u>
20	County tax stamps — multiply Line 18 by 0.25.	\$	<u>139.00</u>
21	Add Lines 19 and 20. This is the total amount of transfer tax due.	\$	<u>417.00</u>

\* See Instructions.  
 PTAX-203 (R-7/00)

This form is authorized in accordance with 35 ILCS 200/31-1 et seq. Disclosure of this information is REQUIRED. This form has been approved by the Forms Management Center. IL-492-0227

**WARRANTY DEED**

THIS INDENTURE WITNESSETH that the Grantor, **CHAD M. MARKERT** of the City of Mt. Sterling, County of Brown and State of Illinois, for and in consideration of the sum of TEN DOLLARS (\$10.00) and OTHER GOOD AND VALUABLE CONSIDERATION IN HAND PAID, CONVEYS and WARRANTS to **GERALD E. LIERLY, JR.**, an undivided one-half (1/2) interest in the following described real estate, to-wit:

The Southeast Quarter (SE1/4) of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, EXCEPT that part lying South and East of the centerline of the public highway running in a Northeasterly-Southwesterly direction through said Southeast Quarter (SE1/4), situated in the County of Adams, in the State of Illinois.

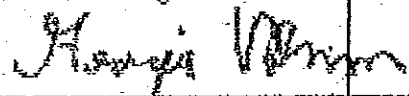
Grantor warrants this is not homestead property.

This deed of conveyance is subject to interests of tenants in possession and of all persons claiming thereunder existing easements, existing rights-of-ways, existing tiles, existing drains, public roads and highways, covenants, restrictions and encumbrances of record.

General Property Taxes for the year 2005 due and payable in 2006 are the obligation of the Grantor. Suitable adjustment having been made concerning said taxes at the delivery of this instrument, the aforesaid taxes shall be paid by the Grantee. All subsequent general property taxes are the obligation of the Grantee.

Dated this 24th day of JANUARY, 2006.

Chad M. Markert (SEAL)  
**CHAD M. MARKERT**

No. 200600779 Book 706 Page 779  
 Adams County, State of Illinois  
**RECORDED**  
 Jan 25, 2006 3:50 PM Fees \$246.00  
 Rental Housing Support Program  
 \$10.00 State Surcharge Paid Date: 01/25/2006  
  
 Georgia Volm, Adams County Clerk/Recorder  
 Adams County Abstract  
 (The Above Space For Recorder's Use Only)

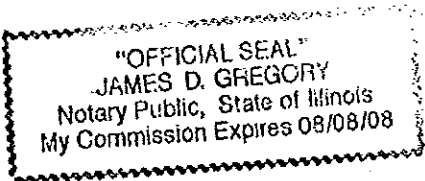
**WARRANTY DEED - Page 2**

STATE OF ILLINOIS        )  
                                      )  
COUNTY OF Adams        ) SS.

I, JAMES D GREGORY a Notary Public in and for said County and State aforesaid do hereby certify that **CHAD M. MARKERT**, personally known to me to be the same person whose name is subscribed to the foregoing instrument appeared before me this day in person and acknowledged that he signed, sealed, and delivered the said instrument as his free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and official seal this 24th day of JANUARY, 2006.

James D Gregory  
NOTARY PUBLIC



Permanent Index Number: PIN#10-0-0322-000-00

Mail tax statements to: Mr. Gerald E. Lierly, Jr.  
2466 Hwy 24, Camp Point, Ill. 62320

**THIS INSTRUMENT PREPARED BY:**

**JOHN B. LEONARD**  
Attorney at Law  
132 East Main Street  
Mt. Sterling, IL 62353  
PH: (217)773-3814 or (217)773-2932  
FAX: (217)773-2119



# PTAX-203

## Illinois Real Estate Transfer Declaration

Please read the instructions before completing this form. This form can be completed electronically at [www.revenue.state.il.us/retd](http://www.revenue.state.il.us/retd).

### Step 1: Identify the property and sale information.

1 N. 1200th Ave.  
Street address of property (or 911 address, if available)  
Clayton Concord  
City or village Township

2 Write the total number of parcels to be transferred. 1

3 Write the parcel identifying numbers and lot sizes or acreage.\*  
Parcel identifying number Lot size or acreage  
a 10-0-0322-000-00 138.80 acres  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

Write additional parcel identifiers and lot sizes or acreage in Step 3.

4 Date of deed/trust document: 0 1 / 2 0 0 6  
Month Year

5 Type of deed/trust document\* (Mark with an "X"): X Warranty deed  
\_\_\_\_ Quit claim deed \_\_\_\_ Executor deed \_\_\_\_ Trustee deed  
\_\_\_\_ Other (specify): \_\_\_\_\_

6 \_\_\_\_ Yes \_\_\_\_ No Will the property be the buyer's principal residence?\*

7 \_\_\_\_ Yes X \_\_\_\_ No Was the property advertised for sale or sold using a real estate agent?\*

8 Identify the property's current and intended primary use.  
Current Intended (Mark only one item per column with an "X.")

- a \_\_\_\_ Vacant land/lot
- b \_\_\_\_ Residence (single-family, condominium, townhome, or duplex)
- c \_\_\_\_ Mobile home residence
- d \_\_\_\_ Apartment building (6 units or less) No. of units: \_\_\_\_\_
- e \_\_\_\_ Apartment building (over 6 units) No. of units: \_\_\_\_\_
- f \_\_\_\_ Office
- g \_\_\_\_ Retail establishment
- h \_\_\_\_ Commercial building (specify)\*: \_\_\_\_\_
- i \_\_\_\_ Industrial building
- j X X Farm
- k \_\_\_\_ Other (specify)\*: \_\_\_\_\_

### Step 2: Calculate the amount of transfer tax due.

Note: Round Lines 11 through 17 to the next highest whole dollar. If the amount on Line 11 is over \$1 million and the property's current use on Line 8 above is marked "e," "f," "g," "h," "i," or "k," complete Form PTAX-203-A, Illinois Real Estate Transfer Declaration Supplemental Form A.

11 Full actual consideration*	11 \$ <u>139,930.50</u>
12a Amount of personal property included in the purchase*	12a \$ <u>0.00</u>
12b Was the value of a mobile home included on Lines 11 and 12a?	12b ____ Yes <u>X</u> ____ No
13 Subtract Line 12a from Line 11. This is the net consideration for real property.	13 \$ <u>139,930.50</u>
14 Amount for other real property transferred to the seller (in a simultaneous exchange) as part of the full actual consideration on Line 11*	14 \$ <u>0.00</u>
15 Outstanding mortgage amount to which the transferred real property remains subject *	15 \$ <u>0.00</u>
16 If this transfer is exempt, use an "X" to identify the provision.*	16 ____ b ____ k ____ m
17 Subtract Lines 14 and 15 from Line 13. This is the net consideration subject to transfer tax.	17 \$ <u>139,930.50</u>
18 Divide Line 17 by 500. Round the result to the next highest whole number (e.g., 61.002 rounds to 62).	18 <u>280</u>
19 Illinois tax stamps — multiply Line 18 by 0.50.	19 \$ <u>140.00</u>
20 County tax stamps — multiply Line 18 by 0.25.	20 \$ <u>70.00</u>
21 Add Lines 19 and 20. This is the total amount of transfer tax due.	21 \$ <u>210.00</u>

\*See instructions.  
PTAX-203 (R-7/00)

This form is authorized in accordance with 35 ILCS 200/31-1 et seq. Disclosure of this information is REQUIRED. This form has been approved by the Forms Management Center. IL-492-0227

Do not write in this area.  
This space is reserved for the County Recorder's Office use.

County: No. 200600779 Book 706 Page 779  
Adams County, State of Illinois  
Date: RECORDED  
Jan 25, 2006 3:50 PM Fees \$245.00  
Doc. No.: Rental Housing Support Program  
\$10.00 State Surcharge Paid Date: 01/25/2006  
Vol.: Georgia Volm  
Page: Georgia Volm, Adams County Clerk/Recorder  
Received by:





8 0 1 1 2 6 2

IX:4008174

**WARRANTY DEED**

THIS INDENTURE WITNESSETH that the Grantors, **CHAD M. MARKERT** and **GERALD E. LIERLY, JR.**, for and in consideration of the sum of TEN DOLLARS (\$10.00) and OTHER GOOD AND VALUABLE CONSIDERATION IN HAND PAID, CONVEY and WARRANT to **JEFFREY M. HUGHES** and **DIANE M. HUGHES**, husband and wife, not as tenants in common, but as joint tenants with the right of survivorship, the following described real estate, to-wit:

**2010R-12477**  
GEORGIA VOLM  
ADAMS COUNTY CLERK/RECORDER  
ADAMS COUNTY, ILLINOIS  
RECORDED ON  
12/02/2010 12:08 PM  
REC FEE: 15.00  
GIS RECORDER FEE: 1.00  
GIS COUNTY FEE: 19.00  
STATE REV STAMP: 319.50  
CO REV STAMP: 159.75  
RHSP HOUSING FEE: 10.00

(The Above Space For Recorder's Use Only)

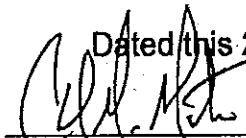
**The Southeast Quarter (SE1/4) of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, EXCEPT that part lying South and East of the centerline of the public highway running in a Northeasterly-Southwesterly direction through said Southeast Quarter (SE1/4), situated in the County of Adams, in the State of Illinois.**

Grantors warrant this is not homestead property.

This deed of conveyance is subject to existing fence lines, existing easements, existing rights-of-ways, existing tiles, existing drains, public roads and highways, covenants, restrictions, encumbrances of record, Right of Way Easement to Adams Electrical Co-Operative recorded in Book 12 of Right of Ways at page 2343 and Book 14 of Right of Ways at page 2697, and Right of Way Easement to ABS Water Co-Operative dated December 30, 2008 and filed April 24, 2009 in Book 709 at page 5292 in the Office of the Adams County Recorder of Deeds.

General Property Taxes for the year 2009 due and payable in 2010 and 2010 payable in 2011 (prorated to the date of this instrument) are the obligation of the Grantors. Suitable adjustment having been made concerning said taxes at the delivery of this instrument, the aforesaid taxes shall be paid by the Grantees. All subsequent general property taxes are the obligation of the Grantees.

Dated this 29<sup>th</sup> day of November, 2010.

  
\_\_\_\_\_  
CHAD M. MARKERT (SEAL)

  
\_\_\_\_\_  
GERALD E. LIERLY, JR. (SEAL)

STATE OF ILLINOIS )  
                          *Adams* ) SS.  
COUNTY OF ~~BROWN~~ )

I, *Christopher D. Schuering*  
**JOHN B. LEONARD**, a Notary Public in and for said County and State  
aforesaid do hereby certify that **CHAD M. MARKERT** and **GERALD E. LIERLY, JR.**,  
personally known to me to be the same persons whose names are subscribed to the  
foregoing instrument appeared before me this day in person and acknowledged that  
they signed, sealed, and delivered the said instrument as their free and voluntary  
act, for the uses and purposes therein set forth, for the uses and purposes therein  
set forth.

Given under my hand and official seal this 29<sup>th</sup> day of November, 2010.

*Christopher D. Schuering*  
\_\_\_\_\_  
NOTARY PUBLIC



THIS INSTRUMENT PREPARED BY:

**JOHN B. LEONARD**  
Attorney at Law  
132 East Main Street  
Mt. Sterling, IL 62353  
PH: (217) 773-3814 or 773-2932  
FAX: (217) 773-2119

**PERMANENT INDEX #10-0-0322-000-00**

Tax statements for the year 2010 and  
all years thereafter should be sent to:

Mr. and Mrs. Jeffrey M. Hughes  
6612 N. Stone Ridge  
Quincy, IL 62305



# PTAX-203

## Illinois Real Estate Transfer Declaration

Please read the instructions before completing this form. This form can be completed electronically at [www.revenue.state.il.us/retd](http://www.revenue.state.il.us/retd).

### Step 1: Identify the property and sale information.

- 1 N 1333rd Ln.  
Street address of property (or 911 address, if available)  
Clayton Concord 155W  
City or village Township
- 2 Write the total number of parcels to be transferred. 1
- 3 Write the parcel identifying numbers and lot sizes or acreage.\*  
Parcel identifying number Lot size or acreage  
a 10-0-0322-000-00 138.8 acres  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_
- Write additional parcel identifiers and lot sizes or acreage in Step 3.
- 4 Date of deed/trust document: 11 / 2010  
Month Year
- 5 Type of deed/trust document\* (Mark with an "X"): X Warranty deed  
 Quit claim deed  Executor deed  Trustee deed  
Other (specify): \_\_\_\_\_
- 6  Yes  No Will the property be the buyer's principal residence?\*
- 7  Yes  No Was the property advertised for sale or sold using a real estate agent?\*
- 8 Identify the property's current and intended primary use.  
Current Intended (Mark only one item per column with an "X.")
- a  Vacant land/lot  
b  Residence (single-family, condominium, townhome, or duplex)  
c  Mobile home residence  
d  Apartment building (6 units or less) No. of units: \_\_\_\_\_  
e  Apartment building (over 6 units) No. of units: \_\_\_\_\_  
f  Office  
g  Retail establishment  
h  Commercial building (specify)\*: \_\_\_\_\_  
i  Industrial building  
j   Farm  
k  Other (specify)\*: \_\_\_\_\_

County: **2010R-12477**  
GEORGIA VOLM  
ADAMS COUNTY CLERK/RECORDER  
Date: **ADAMS COUNTY, ILLINOIS**  
RECORDED ON  
12/02/2010 12:08 PM  
Doc. No.: REC FEE: 15.00  
GIS RECORDER FEE: 1.00  
GIS COUNTY FEE: 19.00  
STATE REV STAMP: 319.50  
CO REV STAMP: 159.75  
Page: RHSP HOUSING FEE: 10.00

Received by:

- 9 Identify any significant physical changes in the property since January 1 of the previous year and write the date of the change. (Mark with an "X")  
 Demolition/damage  Additions  Major remodeling  
 New construction  Other (specify): \_\_\_\_\_  
Date of significant change\*: \_\_\_\_\_ / \_\_\_\_\_  
Month Year
- 10 Identify only the items that apply to this sale. (Mark with an "X")
- a  Fulfillment of installment contract — year contract Initiated\*: \_\_\_\_\_
- b  Sale between related individuals or corporate affiliates
- c  Transfer of less than 100 percent interest\*
- d  Court-ordered sale\*
- e  Sale in lieu of foreclosure
- f  Condemnation
- g  Auction sale
- h  Seller/buyer is a relocation company
- i  Seller/buyer is a financial institution\* or government agency
- j  Buyer is a real estate investment trust
- k  Buyer is a pension fund
- l  Buyer is an adjacent property owner
- m  Buyer is exercising an option to purchase\*
- n  Trade of property (simultaneous)\*
- o  Sale-leaseback
- p  Other (specify)\*: \_\_\_\_\_

### Step 2: Calculate the amount of transfer tax due.

Note: Round Lines 11 through 17 to the next highest whole dollar. If the amount on Line 11 is over \$1 million and the property's current use on Line 8 above is marked "e," "f," "g," "h," "i," or "k," complete Form PTAX-203-A, Illinois Real Estate Transfer Declaration Supplemental Form A.

11 Full actual consideration*	11 \$	319,240.00
12a Amount of personal property included in the purchase*	12a \$	0.00
12b Was the value of a mobile home included on Lines 11 and 12a?	12b	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
13 Subtract Line 12a from Line 11. This is the net consideration for real property.	13 \$	319,240.00
14 Amount for other real property transferred to the seller (in a simultaneous exchange) as part of the full actual consideration on Line 11*	14 \$	0.00
15 Outstanding mortgage amount to which the transferred real property remains subject*	15 \$	0.00
16 If this transfer is exempt, use an "X" to identify the provision.*	16	<input type="checkbox"/> b <input type="checkbox"/> k <input type="checkbox"/> m
17 Subtract Lines 14 and 15 from Line 13. This is the net consideration subject to transfer tax.	17 \$	319,240.00
18 Divide Line 17 by 500. Round the result to the next highest whole number (e.g., 61.002 rounds to 62).	18	639
19 Illinois tax stamps — multiply Line 18 by 0.50.	19 \$	319.50
20 County tax stamps — multiply Line 18 by 0.25.	20 \$	159.75
21 Add Lines 19 and 20. This is the total amount of transfer tax due.	21 \$	479.25



8 0 1 1 2 6 3  
Tx:4008174

**2010R-12478**

GEORGIA VOLM  
ADAMS COUNTY CLERK/RECORDER  
ADAMS COUNTY, ILLINOIS  
RECORDED ON  
12/02/2010 12:08 PM  
REC FEE: 16.00  
GIS RECORDER FEE: 1.00  
GIS COUNTY FEE: 19.00  
RHSP HOUSING FEE: 10.00

Return Recorded Document to:  
1st Farm Credit Services, FLCA  
220 N. 48th Street; P.O. Box 3066  
Quincy, IL 62305

Space Above is for Recording Information

**ILLINOIS MORTGAGE**

BGM408 (08/10)

No(s). 7722477300

This Mortgage, dated November 29, 2010, is by:  
JEFFREY M. HUGHES and DIANE M. HUGHES, husband and wife  
(after this called "Mortgagors" whether one or more), whose mailing address is: \_\_\_\_\_  
6612 Stone Ridge Dr, Quincy, IL 62305

to 1st Farm Credit Services, FLCA (after this called "Mortgagee"), a federally chartered corporation whose address is:  
2000 Jacobssen Drive, Normal, IL 61761.

For valuable consideration, Mortgagors grant, sell, mortgage and warrant to Mortgagee, its successors and assigns, forever, the real estate in the county or counties of Adams, Illinois, described in Exhibit A to this Mortgage, which is by this reference made a part of this Mortgage, together with all the fixtures, tenements, hereditaments and appurtenances belonging or in any way appertaining to this real estate. All of the preceding property and property rights, including the real estate described in Exhibit A, are after this collectively called "the premises."

**THIS MORTGAGE SECURES:** (a) the repayment of indebtedness in the principal sum of \$141,000.00 evidenced by 1 promissory note(s), as follows:

<u>Date of Note(s)</u>	<u>Face Amount(s)</u>	<u>Maturity Date(s)</u>
November 29, 2010	\$141,000.00	December 01, 2035

and any other indebtedness payable to Mortgagee evidenced by promissory notes secured by prior liens on the real estate described in Exhibit A, together with interest as provided in the promissory note(s), which may be variable or fixed and which may be converted from one to the other from time to time at the option of Mortgagors with the consent of Mortgagee, and all extensions, renewals and modifications thereof; (b) the repayment of all other amounts with interest to which Mortgagee may become entitled under this Mortgage; and (c) the performance and observance by Mortgagors of all the warranties, agreements and terms contained in this Mortgage.

By execution of this Mortgage, Mortgagors hereby acknowledge receipt of all of the proceeds of the loan evidenced by the above promissory note or notes.

All principal, interest and other sums or charges payable to Mortgagee and secured by this Mortgage are after this called the "Indebtedness."

If the Indebtedness is paid to Mortgagee when due and Mortgagors keep and perform all the warranties, agreements and terms contained in this Mortgage, then this Mortgage shall be void.

**MORTGAGORS WARRANT THAT:** (a) Mortgagors have fee simple title to the premises and good right to convey them, (b) Mortgagee shall quietly enjoy and possess the premises, and (c) except as expressly set forth in this Mortgage, the premises are free from all encumbrances and Mortgagors will warrant and defend title to the premises against all lawful claims.

**MORTGAGORS AGREE AS FOLLOWS:**

- 1. Discharge Liens.** To pay and discharge when due all present and future taxes, assessments, judgments, mortgages and liens on the premises and to perform every obligation imposed upon Mortgagors by the instruments creating these liens.
- 2. Insurance.** To keep insured all buildings and improvements now or later located on the premises against loss or damage by fire, wind, flood (if Mortgagee requires), and extended coverage perils, in companies and amounts satisfactory to Mortgagee and to provide on request satisfactory proof of insurance. The insurance policy shall contain a loss payable clause in favor of Mortgagee providing all rights customarily granted under the standard mortgage clause. At Mortgagee's

option, insurance proceeds may be applied to the indebtedness, or be used for reconstruction of the damaged property or be released to Mortgagors for reconstruction. If this Mortgage is foreclosed, Mortgagors' interest in policies shall pass to Mortgagee.

**3. Protective Advances.** If Mortgagors fail to pay taxes, assessments, judgments, mortgages or other liens on the premises or to maintain insurance as required by this Mortgage, Mortgagee may do so.

**4. Pro Rata Payments.** Mortgagee may, at its option, require Mortgagors to pay to Mortgagee, at the same time as each regular installment of principal and interest, an amount equal to a pro rata portion of the taxes, assessments and insurance premiums next to become due, as estimated by Mortgagee.

**5. Protective Actions.** In any collection or foreclosure activities or proceedings, or if Mortgagors fail to perform any agreement or term contained in this Mortgage, or if any proceeding is commenced which affects Mortgagee's interest in the premises (including but not limited to eminent domain, insolvency, bankruptcy code enforcement or probate), Mortgagee may (but is not obligated to) make such appearances, disburse such sums and take such actions as Mortgagee believes are necessary to protect its interest and preserve the value of the premises. This includes, but is not limited to, disbursement of reasonable attorneys' fees, court costs, costs of environmental audits and compliance, costs of appraisals and title evidence, and making repairs and maintenance. Mortgagee may inspect the premises at reasonable times including investigating the environmental condition of the premises and taking soil and water samples.

**6. Additions to Indebtedness.** All amounts incurred or advanced by Mortgagee under paragraph 3 or 5 of this Mortgage shall be due immediately, shall bear interest as provided in the promissory note described in this Mortgage or the promissory note with the latest maturity date if more than one is described, and shall be secured by this Mortgage.

**7. Maintain Premises.** (a) To not remove or permit to be removed any buildings, improvements or fixtures from the premises, (b) to maintain the premises in good repair and condition, (c) to cultivate the premises in a good, husbandlike manner, (d) to use the premises for farm purposes (if used for farm purposes on the date of this Mortgage), (e) to not cut or remove wood or timber from the premises except for domestic use, and (f) to neither commit nor permit waste of the premises. If the premises are abandoned or left unoccupied Mortgagee may (but is not obligated to) go upon the premises to protect them against waste, vandalism or other damage without liability for trespass.

**8. Complete Improvements.** To complete in a reasonable time any improvements now or later under construction on the premises.

**9. Use of Loan Proceeds.** The proceeds of the Indebtedness shall be used solely for (a) the purposes specified in the loan application or, (b) other purposes Mortgagee may require or agree to in writing.

**10. Assignment of Rents.** Mortgagors by this Mortgage assign to Mortgagee to further secure the payment of the Indebtedness the rents, issues and profits of the premises now due or which may later become due. Upon Default under this Mortgage by Mortgagors, Mortgagee: (a) shall immediately and without any further action to enforce its interest have an enforceable and perfected right to receive such rents, issues and profits and (b) may in its sole discretion notify any or all tenants to pay directly to Mortgagee all such rents, issues and profits. This assignment shall be enforceable with or without appointment of a receiver and regardless of Mortgagee's lack of possession of the premises.

**11. Minerals and Eminent Domain.** In this paragraph 11 "minerals" includes but is not limited to oil, gas, coal, lignite, rock, stone, gravel, sand, clay, peat and earth. Mortgagee shall, at its option, receive all sums which may accrue to Mortgagors from eminent domain proceedings or from the sale, lease, development or removal of minerals in and under the premises. These sums shall be applied to the Indebtedness as Mortgagee elects. Nothing in this Mortgage, however, obligates Mortgagee to accept these sums or constitutes consent to the sale, lease, development or removal of minerals, or obligates Mortgagee to receive any payment during foreclosure or a redemption period. If a lawful claimant enters or asserts a right of entry on the premises for the purpose of exploration, development or removal of minerals under reservation or conveyance paramount to this Mortgage, to the exclusion of and without compensation to Mortgagors, then, at the option of Mortgagee, the entire Indebtedness shall become due and payable.

**12. Actions Not Affecting Lien or Liability.** Without affecting the priority of the lien of this Mortgage or the liability of Mortgagors or of any other party for the payment of the Indebtedness, Mortgagee may from time to time without notice to Mortgagors: (a) release all or part of the premises from the lien of this Mortgage, (b) extend and defer the maturity of and renew and reamortize all or any part of the Indebtedness, (c) adjust interest rates as provided in the promissory note(s) and (d) release from liability for payment of the Indebtedness one or more parties who are or become liable for its payment.

**13. Hazardous Substances.** To comply with all federal, state and local laws and the recommendations of all courts and government agencies concerning the generation, use, discharge, release, storage and disposal of hazardous substances, petroleum products, farm chemicals and general waste on the premises. Mortgagors warrant that no hazardous substances have previously been discharged, released, stored or disposed of on the premises and will take all remedial action necessary to remove any hazardous substance found on the premises during the term of this Mortgage or after default by Mortgagors. Mortgagors will indemnify Mortgagee, its directors, officers, employees and agents against all claims and losses, including court costs and attorneys' fees, arising directly or indirectly out of Mortgagors' failure to comply with this paragraph. This warranty and indemnity shall survive termination of this Mortgage.

**14. Events of Default.** Each of the following constitutes a default of this Mortgage by Mortgagors (Default): (a) failure to pay when due any part of the Indebtedness; (b) failure to perform or observe any warranty, agreement or term contained in this Mortgage or in any promissory note(s) evidencing the Indebtedness or in any related loan agreement(s); (c) the appointment of a receiver, receiver pendente lite or liquidator, whether voluntary or involuntary, for any of the Mortgagors or for any of the property of any of the Mortgagors; (d) the commencement of any proceeding by or against any of the Mortgagors under the provisions of any bankruptcy or insolvency laws; (e) the making by any of the Mortgagors of an

assignment for the benefit of creditors; (f) the sale or transfer without Mortgagee's prior written consent of all, any part of, or any interest in, the premises or any beneficial interest in a land trust holding title to the premises by Mortgagors or any party having a beneficial interest in the land trust; (g) the transfer without Mortgagee's prior written consent of stock in a corporation holding title to all or any part of the premises by any stockholder of such corporation, if the result is that a majority of shares of the stock is owned by any parties who are not stockholders at the date of this Mortgage.

**15. Remedies on Default.** Mortgagee may do any one or more of the following if a Default occurs under paragraph 14: (a) The entire Indebtedness may become immediately due without notice and bear interest as provided in the promissory note(s) evidencing the Indebtedness and Mortgagee may collect this amount in a suit at law or by foreclosure of this Mortgage; (b) Take possession of the premises upon filing a foreclosure action and have full authority to operate, manage, lease and conserve the premises, to collect the rents, issues and profits from the premises, to obtain hazard insurance, to pay taxes and assessments when due, to employ counsel, custodians and other assistants, to make necessary repairs, to exercise all the usual powers of receivers in like cases and to continue in possession of the premises until expiration of the statutory period of redemption. All rents, issues and profits collected as Mortgagee in possession may, without prior approval of the court, be applied first to payment of the costs of management of the premises and then to the Indebtedness, and Mortgagee shall be accountable only for those proceeds actually received; (c) At any sale held pursuant to a court decree all of the premises may be sold as one parcel and any law to the contrary is waived by Mortgagors; (d) Mortgagee may retain out of the sale proceeds amounts due Mortgagee under this Mortgage, the costs of the sale, and attorneys' fees as provided by statute or court practice or in a reasonable amount; (e) In any foreclosure action or other proceeding the court may appoint a receiver and receiver pendente lite for the premises with the usual powers provided by statute, and Mortgagors hereby consent to the appointment; (f) If there is any security other than this Mortgage for the Indebtedness, then Mortgagee may proceed upon this and the other security either concurrently or separately in any order it chooses; (g) If this Mortgage secures multiple promissory notes, Mortgagee may apply foreclosure sale proceeds to the notes in the order and amounts it elects.

**16. Cumulative Rights.** All rights and remedies of Mortgagee in this Mortgage are cumulative and are in addition to other rights and remedies given in this Mortgage or provided by law.

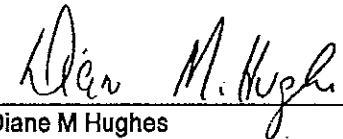
**17. Waiver.** The failure or delay of Mortgagee to exercise any right is not a waiver of that right.

**18. Successors.** This Mortgage shall bind and benefit the parties to this Mortgage and their respective heirs, executors, administrators, successors and assigns.

**19. Waiver of State Rights.** Mortgagors waive and relinquish all rights given by the homestead and exemption laws of the State of Illinois.

*An electronic reproduction of this fully-executed document shall be as valid as the original.*

  
\_\_\_\_\_  
Jeffrey M Hughes

  
\_\_\_\_\_  
Diane M Hughes

**ACKNOWLEDGMENTS**

STATE OF ILLINOIS )  
 ) ss. (Individual)  
 COUNTY OF ADAMS )

On November 29, 2010, before me personally appeared: \_\_\_\_\_  
JEFFREY M. HUGHES and DIANE M. HUGHES, husband and wife  
 to me known to be the person(s) described in and who executed the foregoing instrument, and acknowledged the same  
 as their free act and deed.



*Christopher D. Schuering*  
 \_\_\_\_\_

Name: Mark Wernowsky Christopher D. Schuering  
 Notary Public, State of Illinois  
 Commissioned in Adams County

My Commission Expires 4/17/14

This instrument was prepared under the supervision of Legal Counsel for the Mortgagee herein by:

\_\_\_\_\_ Pamela S. Skeen \_\_\_\_\_ 2000 Jacobssen Drive, \_\_\_\_\_ Normal, IL 61761  
 (Name) (Address) (City/State/ZIP)

**EXHIBIT A**  
**LEGAL DESCRIPTION ATTACHMENT**

The Southeast Quarter (SE 1/4) of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, EXCEPT that part lying South and East of the centerline of the public highway running in a Northeasterly-Southwesterly direction through said Southeast Quarter (SE 1/4), situated in the County of Adams, in the State of Illinois.

PIN No. 10-0-0322-000-00





**2015R-00948**  
 CHUCK R. VENVERTLOH  
 ADAMS COUNTY CLERK/RECORDER  
 ADAMS COUNTY, ILLINOIS  
 RECORDED ON  
 02/10/2015 1:47 PM  
 REC FEE: 16.00  
 GIS RECORDER FEE: 1.00  
 GIS COUNTY FEE: 19.00  
 RHSP HOUSING FEE: 9.00

Space Above is for Recording Information

**ILLINOIS MORTGAGE**  
 BGM408 (08/13)

Drafted By: Greg J. Davis, Esq.  
 2000 Jacobssen Drive  
 Normal, IL 61761

Return To: 1st Farm Credit Services  
 Attn: Kristi Fessler  
 436 South 54th Street  
 Quincy, IL 62305

No(s): 7771287500

This Mortgage, dated February 04, 2015, is by: JEFFREY M. HUGHES and DIANE M. HUGHES, husband and wife (after this called "Mortgagor" whether one or more), whose mailing address is: 2595 N 1353rd Ln, Clayton, IL 62324 to 1st Farm Credit Services, FLCA (after this called "Mortgagee"), a federally chartered corporation whose address is: 2000 Jacobssen Drive, Normal, IL 61761.

For valuable consideration, Mortgagor grants, sells, mortgages and warrants to Mortgagee, its successors and assigns, forever, the real estate in the county or counties of Adams, Illinois, described in Exhibit A to this Mortgage, which is by this reference made a part of this Mortgage, together with all the fixtures, tenements, hereditaments and appurtenances belonging or in any way appertaining to this real estate. All of the preceding property and property rights, including the real estate described in Exhibit A, are after this collectively called "the premises."

**THIS MORTGAGE SECURES:** (a) the repayment of indebtedness in the principal sum of \$60,000.00 evidenced by 1 promissory note(s), as follows:

<u>Date of Note(s)</u>	<u>Face Amount(s)</u>	<u>Maturity Date(s)</u>
February 04, 2015	\$60,000.00	February 01, 2030

and any other indebtedness payable to Mortgagee evidenced by promissory notes secured by prior liens on the real estate described in Exhibit A, together with interest as provided in the promissory note(s), which may be variable or fixed and which may be converted from one to the other from time to time at the option of Mortgagor with the consent of Mortgagee, and all extensions, renewals and modifications thereof; (b) the repayment of all other amounts with interest to which Mortgagee may become entitled under this Mortgage; and (c) the performance and observance by Mortgagor of all the warranties, agreements and terms contained in this Mortgage.

By execution of this Mortgage, Mortgagor hereby acknowledges receipt of all of the proceeds of the loan evidenced by the above promissory note or notes.

All principal, interest and other sums or charges payable to Mortgagee and secured by this Mortgage are after this called the "Indebtedness."

If the Indebtedness is paid to Mortgagee when due and Mortgagor keeps and performs all the warranties, agreements and terms contained in this Mortgage, then this Mortgage shall be void.

**MORTGAGOR WARRANTS THAT:** (a) Mortgagor has fee simple title to the premises and good right to convey them, (b) Mortgagee shall quietly enjoy and possess the premises, and (c) except as expressly set forth in this Mortgage, the premises are free from all encumbrances and Mortgagor will warrant and defend title to the premises against all lawful claims.

**MORTGAGOR AGREES AS FOLLOWS:**

- 1. Discharge Liens.** To pay and discharge when due all present and future taxes, assessments, judgments, mortgages and liens on the premises and to perform every obligation imposed upon Mortgagor by the instruments creating these liens.
- 2. Insurance.** To keep insured all buildings and improvements now or later located on the premises against loss or damage by fire, wind, flood (if Mortgagee requires), and extended coverage perils, in companies and amounts satisfactory to Mortgagee and to provide on request satisfactory proof of insurance. The insurance policy shall contain a loss payable clause in favor of Mortgagee providing all rights customarily granted under the standard mortgage clause. At Mortgagee's option, insurance proceeds may be applied to the Indebtedness, or be used for reconstruction of the damaged property or be released to Mortgagor for reconstruction. If this Mortgage is foreclosed, Mortgagor's interest in policies shall pass to Mortgagee.
- 3. Protective Advances.** If Mortgagor fails to pay taxes, assessments, judgments, mortgages or other liens on the premises or to maintain insurance as required by this Mortgage, Mortgagee may do so.
- 4. Pro Rata Payments.** Mortgagee may, at its option, require Mortgagor to pay to Mortgagee, at the same time as each regular installment of principal and interest, an amount equal to a pro rata portion of the taxes, assessments and insurance premiums next to

become due, as estimated by Mortgagee.

**5. Protective Actions.** In any collection or foreclosure activities or proceedings, or if Mortgagor fails to perform any agreement or term contained in this Mortgage, or if any proceeding is commenced which affects Mortgagee's interest in the premises (including but not limited to eminent domain, insolvency, bankruptcy code enforcement or probate), Mortgagee may (but is not obligated to) make such appearances, disburse such sums and take such actions as Mortgagee believes are necessary to protect its interest and preserve the value of the premises. This includes, but is not limited to, disbursement of reasonable attorneys' fees, court costs, costs of environmental audits and compliance, costs of appraisals and title evidence, and making repairs and maintenance. Mortgagee may inspect the premises at reasonable times including investigating the environmental condition of the premises and taking soil and water samples.

**6. Additions to Indebtedness.** All amounts incurred or advanced by Mortgagee under paragraph 3 or 5 of this Mortgage shall be due immediately, shall bear interest as provided in the promissory note described in this Mortgage or the promissory note with the latest maturity date if more than one is described, and shall be secured by this Mortgage.

**7. Maintain Premises.** (a) To not remove or permit to be removed any buildings, improvements or fixtures from the premises, (b) to maintain the premises in good repair and condition, (c) to cultivate the premises in a good, husbandlike manner, (d) to use the premises for farm purposes (if used for farm purposes on the date of this Mortgage), (e) to not cut or remove wood or timber from the premises except for domestic use, and (f) to neither commit nor permit waste of the premises. If the premises are abandoned or left unoccupied Mortgagee may (but is not obligated to) go upon the premises to protect them against waste, vandalism or other damage without liability for trespass.

**8. Complete Improvements.** To complete in a reasonable time any improvements now or later under construction on the premises.

**9. Use of Loan Proceeds.** The proceeds of the Indebtedness shall be used solely for (a) the purposes specified in the loan application or, (b) other purposes Mortgagee may require or agree to in writing.

**10. Assignment of Rents.** Mortgagor by this Mortgage assign to Mortgagee to further secure the payment of the Indebtedness the rents, issues and profits of the premises now due or which may later become due. Upon Default under this Mortgage by Mortgagor, Mortgagee: (a) shall immediately and without any further action to enforce its interest have an enforceable and perfected right to receive such rents, issues and profits and (b) may in its sole discretion notify any or all tenants to pay directly to Mortgagee all such rents, issues and profits. This assignment shall be enforceable with or without appointment of a receiver and regardless of Mortgagee's lack of possession of the premises.

**11. Minerals and Eminent Domain.** In this paragraph 11 "minerals" includes but is not limited to oil, gas, coal, lignite, rock, stone, gravel, sand, clay, peat and earth. Mortgagee shall, at its option, receive all sums which may accrue to Mortgagor from eminent domain proceedings or from the sale, lease, development or removal of minerals in and under the premises. These sums shall be applied to the Indebtedness as Mortgagee elects. Nothing in this Mortgage, however, obligates Mortgagee to accept these sums or constitutes consent to the sale, lease, development or removal of minerals, or obligates Mortgagee to receive any payment during foreclosure or a redemption period. If a lawful claimant enters or asserts a right of entry on the premises for the purpose of exploration, development or removal of minerals under reservation or conveyance paramount to this Mortgage, to the exclusion of and without compensation to Mortgagor, then, at the option of Mortgagee, the entire Indebtedness shall become due and payable.

**12. Actions Not Affecting Lien or Liability.** Without affecting the priority of the lien of this Mortgage or the liability of Mortgagor or of any other party for the payment of the Indebtedness, Mortgagee may from time to time without notice to Mortgagor: (a) release all or part of the premises from the lien of this Mortgage, (b) extend and defer the maturity of and renew and reamortize all or any part of the Indebtedness, (c) adjust interest rates as provided in the promissory note(s) and (d) release from liability for payment of the Indebtedness one or more parties who are or become liable for its payment.

**13. Hazardous Substances.** To comply with all federal, state and local laws and the recommendations of all courts and government agencies concerning the generation, use, discharge, release, storage and disposal of hazardous substances, petroleum products, farm chemicals and general waste on the premises. Mortgagor warrants that no hazardous substances have previously been discharged, released, stored or disposed of on the premises and will take all remedial action necessary to remove any hazardous substance found on the premises during the term of this Mortgage or after default by Mortgagor. Mortgagor will indemnify Mortgagee, its directors, officers, employees and agents against all claims and losses, including court costs and attorneys' fees, arising directly or indirectly out of Mortgagor's failure to comply with this paragraph. This warranty and indemnity shall survive termination of this Mortgage.

**14. Events of Default.** Each of the following constitutes a default of this Mortgage by Mortgagor (Default): (a) failure to pay when due any part of the Indebtedness; (b) failure to perform or observe any warranty, agreement or term contained in this Mortgage or in any promissory note(s) evidencing the Indebtedness or in any related loan agreement(s); (c) the appointment of a receiver, receiver pendente lite or liquidator, whether voluntary or involuntary, for any Mortgagor or for any of the property of any Mortgagor; (d) the commencement of any proceeding by or against any Mortgagor under the provisions of any bankruptcy or insolvency laws; (e) the making by any Mortgagor of an assignment for the benefit of creditors; (f) the sale or transfer without Mortgagee's prior written consent of all, any part of, or any interest in, the premises or any beneficial interest in a land trust holding title to the premises by Mortgagor or any party having a beneficial interest in the land trust; (g) the transfer without Mortgagee's prior written consent of stock in a corporation holding title to all or any part of the premises by any stockholder of such corporation, if the result is that a majority of shares of the stock is owned by any parties who are not stockholders at the date of this Mortgage.

**15. Remedies on Default.** Mortgagee may do any one or more of the following if a Default occurs under paragraph 14: (a) The entire Indebtedness may become immediately due without notice and bear interest as provided in the promissory note(s) evidencing the Indebtedness and Mortgagee may collect this amount in a suit at law or by foreclosure of this Mortgage; (b) Take possession of the premises upon filing a foreclosure action and have full authority to operate, manage, lease and conserve the premises, to collect the rents, issues and profits from the premises, to obtain hazard insurance, to pay taxes and assessments when due, to employ counsel, custodians and other assistants, to make necessary repairs, to exercise all the usual powers of receivers in like cases and to continue in possession of the premises until expiration of the statutory period of redemption. All rents, issues and profits collected as Mortgagee in possession may, without prior approval of the court, be applied first to payment of the costs of management of the premises and then to the Indebtedness, and Mortgagee shall be accountable only for those proceeds actually received; (c) At any sale held pursuant to a court decree all of the premises may be sold as one parcel and any law to the contrary is waived by Mortgagor; (d) Mortgagee may retain out of the sale proceeds amounts due Mortgagee under this Mortgage, the costs of the sale, and attorneys' fees as provided by statute or court practice or in a reasonable amount; (e) In any foreclosure action or other proceeding the court may

appoint a receiver and receiver pendente lite for the premises with the usual powers provided by statute, and Mortgagor hereby consents to the appointment; (f) If there is any security other than this Mortgage for the indebtedness, then Mortgagee may proceed upon this and the other security either concurrently or separately in any order it chooses; (g) If this Mortgage secures multiple promissory notes, Mortgagee may apply foreclosure sale proceeds to the notes in the order and amounts it elects.

16. Cumulative Rights. All rights and remedies of Mortgagee in this Mortgage are cumulative and are in addition to other rights and remedies given in this Mortgage or provided by law.

17. Waiver. The failure or delay of Mortgagee to exercise any right is not a waiver of that right.

18. Successors. This Mortgage shall bind and benefit the parties to this Mortgage and their respective heirs, executors, administrators, successors and assigns.

19. Waiver of State Rights. Mortgagor waives and relinquishes all rights given by the homestead and exemption laws of the State of Illinois.

An electronic reproduction of this fully-executed document shall be as valid as the original.

Jeffrey M. Hughes  
Jeffrey M Hughes

Diane M. Hughes  
Diane M Hughes

STATE OF ILLINOIS )  
 ) ss. (Individual)  
COUNTY OF ADAMS )

On Feb 5, 2015, before me personally appeared: JEFFREY M. HUGHES and DIANE M. HUGHES, husband and wife to me known to be the person(s) described in and who executed the foregoing instrument, and acknowledged the same as their free act and deed.



Kristina Fessler  
Kristina Fessler, Notary Public  
Adams County, Illinois  
My Commission Expires June 17, 2017

Loan No. 7771287500

**EXHIBIT A  
LEGAL DESCRIPTION ATTACHMENT**

The Southeast Quarter of Section 30, in Township 1 South of the Base Line, Range 5 West of the Fourth Principal Meridian, EXCEPT that part lying South and East of the centerline of the public highway running in a Northeasterly-Southwesterly direction through said Southeast Quarter, situated in the County of Adams, in the State of Illinois

Tax ID No. 10-0-0322-000-00,

(This Mortgage is subject to a mortgage in favor of 1st Farm Credit Services, FLCA dated November 29, 2010 and recorded December 2, 2010 as Document No. 2010R-12478 of the records of Adams County, Illinois.)

5 042 649

OIL & GAS LEASE  
Producers 88 Rev. A (1974) Ill. Ind. Mich.

This AGREEMENT made this 16th day of February, 19 83, between  
ROBERT E. CROOKS, A Divorced Man (in Adams Co., IL) and not having remarried  
519 Northwest Cross Street,

of Mt. Sterling, Illinois 62353, herein called lessor (whether one or more), and

HENRY ENERGY CORPORATION, 1201 North Watson Road, Arlington, TX 76011 - - - - - , as Lessee

1. Lessor, in consideration of ----- Ten and More ----- Dollars (\$10. and More -----) in hand paid, receipt of which is here acknowledged, and of the royalties herein provided and of the agreements of the lessee herein contained, hereby grants, leases and lets exclusively unto lessee for the purpose of investigating, exploring, prospecting, drilling, mining and operating for and producing oil, liquid hydrocarbons, all gases, and their respective constituent products, injecting gas, waters, other fluids, and air into subsurface strata, laying pipe lines, storing oil, building and maintaining tanks, power stations, telephone lines, and other structures and things thereon to produce, save, take care of, treat, manufacture, process, store and transport said oil, liquid hydrocarbons, gases, and their respective constituent products and other products manufactured therefrom, the following described land, together with any reversionary rights therein, situated in Adams County, State of Illinois, to-wit:

Section 30: SE 1/4 except 1/2 acre described as: Beginning at a point on East line said SE 1/4 where Public Hwy. crosses and in center of said Hwy., thence South 10 rods, th. West 23 rods to said Pub. Hwy., thence along South side said Pub. Hwy. Northeastly to Point of Beginning.  
In Section 30, Township 1 South, Range 5 West, and containing 159.50 acres, more or less, and all accretions thereto.

2. Subject to the other provisions herein contained, this lease shall remain in force for a term of 90 days from this date (called "primary term"), and as long thereafter as oil, liquid hydrocarbons, gas or their respective constituent products, or any of them, is produced from said land or land with which said land is pooled, or so long as "drilling operations" are "diligently prosecuted" on said land or land with which said land is pooled, as provided by paragraph 6 herein.

3. The royalties to be paid by lessee are: (a) on oil, and on other liquid hydrocarbons saved at the well, - - - 3/16ths - - - of that produced and saved from said land, same to be delivered free of cost at the wells or to the credit of lessor in the pipe line to which the wells may be connected; (b) on gas, including casing head gas and all gaseous substances, produced from said land and sold or used off the premises or in the manufacture of gasoline or other products therefrom, the market value at the mouth of the well of - - 3/16ths - - of the gas so sold or used, provided that on gas sold from the premises the royalty shall be - - 3/16ths - - of the amount realized from such sale; and (c) at any time, either before or after the expiration of the primary term of this lease, if there is a gas well or wells on the above land (and for the purposes of this clause (c) the term "gas well" shall include wells capable of producing natural gas, condensate, distillate or any gaseous substance and wells classified as gas wells by any governmental authority) and such well or wells are shut in before or after production therefrom, lessee may pay or tender an advance annual royalty of \$100, and if such payment or tender is made within 90 days of the date the gas well is shut in, it shall be considered under all provisions of this lease that gas is being produced from the leased premises in paying quantities for one (1) year from the date such payment or tender is made, and in like manner subsequent advance annual royalty payments may be made or tendered and it will be considered under all provisions of this lease that gas is being produced from the leased premises in paying quantities during any annual period for which such royalty is paid or tendered. It is the intent of this provision to allow lessee 90 days from the time a gas well is shut in to tender shut-in gas royalty and to establish an annual shut-in gas royalty payment date based on the anniversary of the first payment or tender of such royalty.

4. This is a paid up lease for the primary term set out above, and it shall not be terminated during said term.  
5. Lessee is hereby granted the right to pool or utilize this lease, the land covered by it or any part thereof with any other land, lease, leases, mineral estates or parts thereof for the production of oil, liquid hydrocarbons and all gases and their respective constituent products, or any of them. Units pooled for oil hereunder shall not exceed forty (40) acres plus a tolerance of ten percent (10%) thereof, and units pooled for gas hereunder shall not exceed six hundred forty (640) acres plus a tolerance of ten percent (10%) thereof, provided that if any federal or state law, executive order, rule or regulation shall prescribe a spacing pattern for the development of the field or allocate a producing allowable on acreage per well, then any such units may embrace as much additional acreage as may be so prescribed or as may be used in such allocation or allowable. Lessee shall file written unit designations in the county in which the premises are located. Such units may be designated either before or after the completion of wells, and lessee may reduce, enlarge, modify or dissolve such units at any time prior to the discovery of oil or gas on the pooled acreage, or after discovery of oil or gas at any time subsequent to the cessation of production thereof by filing a written declaration to such effect in the same county. Drilling operations and production on any part of the pooled acreage shall be treated as if such drilling operations were upon or such production was from the land described in this lease whether the well or wells be located on the land covered by this lease or not. The entire acreage pooled into a unit shall be treated for all purposes, except the payment of royalties on production from the pooled unit, as if it were included in this lease. In lieu of the royalties herein provided, lessor shall receive on production from a unit so pooled only such portion of the royalty stipulated herein as the amount of his acreage placed in the unit or his royalty interest therein on an acreage basis bears to the total acreage so pooled in the particular unit involved.

6. "Drilling operations" include operations, whether during the primary term or thereafter, for the drilling of a new well, the reworking, deepening or plugging back of a well, or other operations conducted in an effort to obtain or re-establish production of oil or gas; and "drilling operations" are "diligently prosecuted" if not more than 90 days elapse between the termination of one "drilling operation" and the commencement of another "drilling operation".

7. Lessee shall have free use of oil, gas, and water from said land, except water from lessor's wells and tanks, for all operations hereunder, including repressuring, pressure maintenance, cycling, and secondary recovery operations, and the royalty shall be computed after deducting any such substance so used. Lessee shall have the right at any time during or after the expiration of this lease to remove all property and fixtures placed by lessee on said land, including the right to draw and remove all casing. When required by lessor, lessee will bury all pipelines below ordinary plow depth. Lessee shall pay for damages caused by its operations to growing crops on said land. No well shall be drilled within one hundred feet (100 ft.) of any residence or barn now on said land without lessor's consent.

8. The rights of either party hereunder may be assigned in whole or in part and the provisions hereof shall extend to the heirs, executors, administrators, successors and assigns, but no change or division in ownership of the land or royalties, however accomplished, shall operate to enlarge the obligations or diminish the rights of lessee. No such change or division in the ownership of the land or royalties shall be binding upon lessee for any purpose until forty-five (45) days after such person acquiring any interest has furnished lessee with the instrument or instruments, or certified copies thereof, constituting his chain of title from the original lessor. In the event of an assignment of this lease as to the segregated portion of said land, the shut-in gas royalty payments payable hereunder shall be apportioned as between the several leasehold owners ratably according to the surface area of each, and default in payment by one shall not affect the rights of other leasehold owners hereunder. An assignment of this lease, in whole or in part, shall, to the extent of such assignment, relieve and discharge lessee of any obligations hereunder, and, if lessee or assignee of part or parts hereof shall fail to make default in the payment of the proportionate part of the shut-in gas royalty payments due from such lessee or assignee or fail to comply with any other provision of the lease, such default shall not affect this lease insofar as it covers a part of said lands upon which lessee or any assignee thereof shall make payment of said shut-in gas royalty payments.

9. Lessee shall not be liable for delays or defaults in its performance of any agreement or covenant hereunder due to force majeure. The term "force majeure" as employed herein shall mean: any act of God including but not limited to storms, floods, washouts, blockades, insurrections or riots; strikes or lockouts; epidemics or quarantine regulations; laws, acts, orders or requests of federal, state, municipal or other governments or governmental officers or agents under color of authority; freight embargoes or failures; exhaustion or unavailability or delays in delivery of any product, labor, service, or material. If lessee is required, ordered or directed by any federal, state or municipal law, executive order, rule, regulation or request enacted or promulgated under color of authority to cease drilling operations, reworking operations or producing operations on the land covered by this lease or if lessee by force majeure is prevented from conducting drilling operations, reworking operations or producing operations, then until such time as such law, order, rule, regulation, request or force majeure is terminated and for a period of ninety (90) days after such termination each and every provision of this lease that might operate to terminate it or the estate conveyed by it shall be suspended and inoperative and this lease shall continue in full force. If any period of suspension occurs during the primary term, the time thereof shall be added to such term.

10. Lessor hereby warrants and agrees to defend the title to said land, and agrees that lessee, at its option, may discharge any tax, mortgage or other lien upon said land, and in the event lessee does so, it shall be subrogated to such lien with the right to enforce same and apply royalties accruing hereunder toward satisfying same. In case said lessor owns a less interest in the land covered by this lease than the entire and undivided fee simple estate therein, then whether or not such less interest is referred to or described herein, the royalties herein provided for shall be paid the said lessor only in the proportion that his interest bears to the whole and undivided fee. Should any one or more of the parties named above as lessors fail to execute this lease, it shall nevertheless be binding upon the party or parties executing the same.

11. Lessor and lessee's successors and assigns shall have the right at any time to surrender this lease, in whole or in part, to lessor or his heirs and assigns by delivering or making a release thereof to the lessor, or by placing a release thereof of record in the county in which said land is situated; thereupon lessee shall be relieved from all obligations, expressed or implied, of this agreement as to the acreage so surrendered.

12. The undersigned lessors, for themselves and their heirs, successors, and assigns, hereby surrender, release and waive all right of dower and homestead in the premises herein described, in so far as said right of dower and homestead may in any way affect the purpose for which this lease is made as recited herein.

13. This lease or any part thereof shall not terminate for failure to comply with any covenant or condition, express or implied falling within the usual range of coverage of the implied covenants, and including in addition the obligation to deliver royalty proceeds on actual production, but lessor's remedy shall be by suit for damages or proceeds.

14. All notices hereunder may be given in writing mailed to the respective parties at the addresses above stated or as subsequently furnished to and confirmed in writing by the other party.

IN WITNESS WHEREOF, we sign the day and year first above written.

Witnesses:

Lessor's signatures:

Witness lines and signature of Robert E. Crooks, S.S.# 338-20-8082 (SEAL)

ACKNOWLEDGMENT

STATE OF ILLINOIS ss. I, the undersigned a Notary Public in and for the County of Brown and residing therein in the State aforesaid, Do Hereby Certify, That ROBERT E. CROOKS, A Divorced Man (in Adams Co., IL) and not having remarried

personally known to me to be the same person whose name subscribed to the foregoing instrument, appeared before me this day in person, and acknowledged that he signed, sealed and delivered the said instrument, including the release and waiver of the right of homestead, as his free and voluntary act and deed, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this 16th day of February, A.D. 19 83

My Commission Expires Mar 9, 1986 Notary Public Kathy J. Lapdon

ACKNOWLEDGMENT

STATE OF ss. I, the undersigned a Notary Public in and for the County of and residing therein in the State aforesaid, Do Hereby Certify, That

personally known to me to be the same person whose name subscribed to the foregoing instrument, appeared before me this day in person, and acknowledged that signed, sealed and delivered the said instrument, including the release and waiver of the right of homestead, as free and voluntary act and deed, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this day of A.D. 19

My Commission expires Notary Public

STATE OF COUNTY OF ss. CORPORATION ACKNOWLEDGMENT

On this day of 19 before me the undersigned, a Notary Public in and for said county, personally came President of the to me personally known to be the President and the identical person whose name is affixed to the above instrument, and acknowledged the execution thereof to be his voluntary act and deed as such officer and the voluntary act and deed of the said and that the Corporate seal of the said was thereto affixed by its authority.

Witness my hand and Notarial Seal at in said county the day and year last above written. My commission expires Notary Public

This lease was prepared by Jack M. Greer, 2540 First Nat'l Bank Bldg., Denver, CO 80293 #11 River Hills Apts., Mt. Sterling, IL 62353

13466 FEB 22 1983

OIL AND GAS LEASE

Form with fields for No., FROM, TO, Date, Section, No. of Acres, Term, County, STATE OF ILLINOIS, Adams, This instrument was filed for record on the 22nd day of February, 19 83 at 4:20 o'clock P.M. and duly recorded in Book 5 086 Page 649 of the Illinois State Register of Deeds.

Handwritten notes and signatures at the bottom right of the page.

OIL AND GAS LEASE

Producers 88 Rev. B (1974) Ill. Ind. Mich. (PAID-UP)

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THIS AGREEMENT made this 29th day of June, 1983, between

ROBERT E. CROOKS, a divorced person not remarried, whose mailing address is Route # 1, Clayton, Illinois 62324

herein called lessor (whether one or more), and Abundant Energy Corporation, Oklahoma City, OK. 73112 lessee.

WITNESSETH: I, Lessor, for and in consideration of Ten and 0/10 Dollars (\$10 & 0/10), in hand paid, the receipt of which is hereby acknowledged, and of the covenants and agreements hereinafter contained on the part of Lessee, has granted, demised, leased and let and by these presents does grant, demise, lease and let, exclusively unto Lessee for the purpose of exploring by geophysical and other methods, drilling and operating for and producing oil, liquid hydrocarbons, all gases, and their constituent products, injecting gas, water, other fluids and air into subsurface strata, laying pipelines, storing oil, building tanks, electric transmission lines, ponds, powers, roads and structures thereon to produce, save, take care of, treat, process, store and transport said oil, liquid hydrocarbons, gases, and their constituent products, together with the right of ingress and egress thereto or to other

land under lease to Lessee, the following described land in Adams County, State of Illinois, to-wit:

See "EXHIBIT "A", attached hereto and made a part hereof for a detailed description of the leased lands and the amendments to this lease. Royalties to be paid by the Lessee are 3/16th, in lieu of 1/8th, as hereinbelow stated.

and containing 159.50 acres, more or less. It is intended hereby to include herein all lands and interest therein contiguous to or pertinent to the above described land and owned or claimed by Lessor. For the purpose of making any payment based on acreage, said land and its constituent parcels shall be deemed to contain the acreage above stated whether they actually contain more or less. This lease shall cover all the interest in said land now owned by or hereafter vested in Lessor, even though greater than the undivided interest (if any) described above.

2. Subject to the other provisions herein contained, this lease shall remain in force for a term of Six (6) months from this date (called "primary term"), and as long thereafter as oil, liquid hydrocarbons, gas or their respective constituent products, or any of them is produced from said land or land with which said land is pooled, provided, however, that for injection purposes this lease shall continue in full force and effect only as the subsurface strata or strata into which such injections are being made together with such surface privileges as may be necessary or desirable to continue such injections.

3. The royalties to be paid by lessee are: (a) on oil, and on other liquid hydrocarbons saved at the well, one-eighth of that produced and saved from said land, same to be delivered at the wells or to the credit of lessor in the pipeline to which the wells may be connected, (b) on gas, including casinghead gas and all gaseous substances, produced from said land and sold or used off the premises or in the manufacture of gasoline or other products therefrom, the market value at the mouth of the well of one-eighth of the gas so sold or used, provided that on gas sold at the well the royalty shall be one-eighth of the amount realized from such sale; and (c) if at any time while there is a gas well or wells on the above land (and for the purposes of this clause (c) the term "gas well" shall include wells capable of producing natural gas, condensate, distillate or any gaseous substance, and wells classified as gas wells by any governmental authority) such well or wells are shut in, and if this lease is not continued in force by some other provision hereof, then it shall nevertheless continue in force for a period of ninety (90) days from the date such well or wells are shut in, and before the expiration of any such ninety day (90-day) period, lessee or any assignee hereunder may pay or tender an advance annual royalty payment of One dollar (\$1.00) per acre, and if such payment or tender is made, this lease shall continue in force and it shall be considered that gas is being produced from the leased premises in paying quantities within the meaning of paragraph 2 hereof for one (1) year from the date such payment is made, and in like manner subsequent advance annual royalty payments may be made or tendered and this lease shall continue in force and it will be considered that gas is being produced from the leased premises in paying quantities within the meaning of said paragraph 2 during any annual period for which such royalty payment is so paid or tendered; royalty accruing to the owners thereof on any production from the leased premises during any annual period for which advance royalty is paid may be credited against such advance payment.

4. Lessee is hereby granted the right to pool or unitize this lease, the land covered by it, or any part thereof, with any other land, lease or leases or parts thereof, for the production of oil, liquid hydrocarbons and all gases and their respective constituent products, or any of them. No unit for the production of oil shall embrace more than eighty (80) contiguous acres plus a tolerance of ten per cent (10%) thereof; and units pooled for gas or condensate shall not exceed six hundred forty (640) contiguous acres plus a tolerance of ten per cent (10%) thereof, provided, however, that if any Federal or State law, Executive order, rule or regulation shall prescribe a spacing pattern for the development of the field or allocate a producing allowable on acreage per well, then any such units may embrace as much additional acreage as may be so prescribed or as may be used in such allocation or allowable. Lessee shall execute in writing an instrument identifying and describing the pooled acreage. Such units may be designated either before or after the completion of wells. Drilling operations and production on any part of the pooled acreage shall be treated as if such drilling operations were upon or such production was from the land described in this lease, whether the well or wells be located on the land covered by this lease or not. The entire acreage pooled into a unit shall be treated for all purposes, except the payment of royalties on production from the pooled unit, as if it were included in this lease. In lieu of the royalties herein provided, lessor shall receive on production from a unit so pooled only such portion of the royalty stipulated herein as the amount of his acreage placed in the unit or his royalty interest therein on an acreage basis bears to the total acreage so pooled in the particular unit involved.

5. If, prior to discovery of oil, liquid hydrocarbons, gas or their respective constituent products, or any of them, on said land or on land pooled therewith, lessee should drill and abandon a dry hole or holes thereon, or if, after discovery of oil, liquid hydrocarbons, gas or their respective constituent products, or any of them, the production thereof should cease from any cause, this lease shall not terminate if lessee commences additional drilling or reworking operations within sixty (60) days thereafter. If, at the expiration of the primary term, oil, liquid hydrocarbons, gas or their respective constituent products, or any of them is not being produced on said land or land pooled therewith but lessee is then engaged in operations for drilling, or reworking of any well or wells thereon, this lease shall remain in force so long as such operations or said additional operations are commenced and prosecuted (whether on the same or successive wells) with no cessation of more than sixty (60) consecutive days, and, if they result in production, so long thereafter as oil, liquid hydrocarbons, gas or their respective constituent products, or any of them, is produced from said land or land pooled therewith. In the event a well or wells producing oil or gas in paying quantities should be brought in on adjacent land and within two hundred feet (200 ft.) of and draining the leased premises, lessee agrees to drill such offset wells as a reasonably prudent operator would drill under the same or similar circumstances. The judgment of the lessee, when not fraudulently exercised, in carrying out the purposes of this lease shall be conclusive.

6. Lessee shall have free use of oil, gas and water from said land, except water from lessor's wells and ponds, for all operations hereunder, including repressuring, pressure maintenance, cycling, and secondary recovery operations, and the royalty shall be computed after deducting any so used. Lessee shall have the right at any time during or after the expiration of this lease to remove all property and fixtures placed by lessee on said land, including the right to draw and remove all casing. When required by lessor, lessee will bury all pipelines below ordinary plow depth. Lessee shall pay for damages caused by its operations to growing crops, marketable timber and fences on said land. No well shall be drilled within two hundred feet (200 ft.) of any residence or barn now on said land without lessor's consent. Lessor shall have the privilege, at his risk and expense, of using gas from any well producing gas only on said land for heating and inside lights in the principal dwelling house thereon, out of any surplus gas not needed for operations hereunder.

7. The rights of either party hereunder may be assigned to whole or in part and the provisions hereof shall extend to the heirs, executors, administrators, successors, and assigns, but no change or division in ownership of the land or royalties, however accomplished, shall operate to enlarge the obligations or diminish the rights of lessee or require the installation of separate measuring tanks. No such change or division in the ownership of the land or royalties shall be binding upon lessee for any purpose until such person acquiring any interest has furnished lessee with the instrument or instruments, or certified copies thereof, constituting his chain of title from the original lessor. An assignment of this lease, in whole or in part, shall, to the extent of such assignment, relieve and discharge lessee of any obligations hereunder, and, if assignee of part or parts hereof shall fail to comply with any provision of the lease, such default shall not affect this lease insofar as it covers the part of said lands retained by lessee or another assignee.

8. When drilling or other operations are delayed or interrupted as a result of any cause whatsoever beyond the control of lessee, the time of such delay or interruption shall not be counted against lessee. Lessee shall not be held liable in damages for failure to comply with any express or implied covenant of this lease if compliance is prevented by, or if such failure is the result of any State, Federal, or Municipal law, ordinance, Executive order, rule or regulation.

9. Lessee, by warrants and agrees to defend the title to said land, and agrees that lessee, at its option, may discharge any tax, mortgage, or other lien upon said land, and in the event lessee does so, it shall be subrogated to such lien with the right to enforce same and apply royalties accruing hereunder toward satisfying same. Without impairment of lessee's rights under the warranty in the event of failure of title, it is agreed that, if lessor owns an interest in the oil and gas and like minerals underlying said land less than the entire fee simple estate, then the royalties to be paid lessor shall be reduced proportionately. This lease shall be binding upon all who execute it, and they shall be considered Lessors, whether or not they are named in the granting clause hereof and whether or not all parties named in the granting clause execute this lease.

Lease prepared by Harold A. Talbert

JUL 12 1983

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OIL AND GAS LEASE

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This form was

10. The undersigned lessors, for themselves and their heirs, successors, and assigns, hereby surrender, release and waive all right of dower and homestead in the premises herein described, insofar as said right of dower and homestead may in any way affect the purpose for which this lease is made as recited herein.

Lessor directs that any shut-in royalty payments which become payable under the terms of this lease be made to his account in the Clayton State Bank of Clayton, Illinois 62324.

83 , between

Route # 1,

73112 Lessee. OVC), in hand paid, the J. devised, leased and let ter methods, drilling and air into subsurface strata, save, take care of, treat, egress thereto or to other

(to-wit: Description of below stated.

or pertinent to the above parcels shall be deemed as owned by or hereafter

from this date (called induced from said land or only as the subsurface such...jections. used and saved from said ing casinghead gas and all efreom, the market value of the amount realized on "Gas well" shall include (mental authority) such ve in force for a period of or any assignee hereunder ve shall continue in force h' 2 hereof for one (1) year this lease shall continue in al paragraph 2 during any the leased premises during

nd, lease or leases or parts ut for the production of oil denseate shall not exceed six w, Executive order, rule or h, then any such units may te in writing an instrument operations and production cribed in this lease, whether uses, except the payment of ceive on production from a (therein on an acreage basis

of on land pooled therewith, constituent products, or any ing or reworking operations th products, or any of them yking of any well or wells ed (whether on the same or oil, liquid hydrocarbons, gas wells producing oil or gas in e, Lessee agrees to drill such n not fraudulently exercised,

ations hereunder, including ing any so used. Lessee shall d land, including the right to y for damages caused by its of any residence or barn now ing gas only on said land for

ny, executors, administrators, to enlarge the obligations of the land or royalties shall be nts, or certified copies thereof, such assignment, relieve and he lease, such default shall not

cease, the time of such delay or or implied covenant of this de, rule or regulation.

ny tax, mortgage, or other lien this accruing hereunder toward owns an interest in the oil and ed proportionately. This lease huse hereof and whether or not

IN WITNESS WHEREOF, we sign the day and year first above written.

Witnesses:

Lessors' signatures:

Witness lines with (SEAL) and SS# markers.

Signature of Robert E. Crooks, SS# 338 20 8082, with (SEAL) and SS# markers.

STATE OF ILLINOIS } COUNTY OF BROWN }

ACKNOWLEDGMENT

I, Rosemary Husted, a Notary Public in and for the County of Brown and residing therein in the State aforesaid, Do Hereby Certify, That ROBERT E. GROOKS

personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person, and acknowledged that he signed, sealed and delivered the said instrument, including the release and waiver of the right of homestead, as free and voluntary act and deed, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this 29th day of June, A. D. 19 83

My Commission expires April 25, 1986

Rosemary Husted, Notary Public

STATE OF } COUNTY OF }

ACKNOWLEDGMENT

I, a Notary Public in and for the County of and residing therein in the State aforesaid, Do Hereby Certify, That

personally known to me to be the same person whose name subscribed to the foregoing instrument, appeared before me this day in person, and acknowledged that signed, sealed and delivered the said instrument, including the release and waiver of the right of homestead, as free and voluntary act and deed, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this day of, A. U. 19

My Commission expires

Notary Public

This form was prepared by Address

JUL 12 1983

17035 No. OIL AND GAS LEASE

FROM TO

Section

Range

Date 19

Section Township Range

Number of Acres

County

State

STATE OF ILLINOIS 17035

County of ADAMS COUNTY, ILLINOIS.

I hereby certify that this instrument was filed

for record in my office at 8:40 o'clock

A.M. July 12 19 83.

and is duly recorded in book 5 of page 950

By Rosemary Husted, Notary Public

Deputy

Fees \$

When recorded return to:



homestead  
ed herein.  
terms  
62324.

EXHIBIT "A"

Attached to and made a part of that certain Oil and Gas Lease  
executed by ROBERT E. CROOKS, lessor, in favor of ABUNDANT ENERGY CORPORATION,  
Oklahoma City, OK. , lessee, dated June 29, 1983.

The leased premises include the following described lands in the County of Adams, State  
of Illinois, to wit:

(SEAL)  
(SEAL)  
(SEAL)  
(SEAL)

The Southeast Quarter of Section Thirty (30) in Township One (1) South of the  
Base Line, Range Five (5) West of the Fourth Principal Meridian, except the  
following described tract: Beginning at a point on the Section line on the East  
side of the Southeast Quarter of the Southeast Quarter of said Section Thirty (30)  
where the public highway crosses said Section line, at the center of said highway,  
running thence South Ten (10) rods, thence West Twenty-three (23) rods to the public  
highway, thence along the South side of the public highway, thence along the South  
side of the public highway Northeasterly to the place of beginning, being one-half  
acre, more or less, situated in the County of Adams and State of Illinois.

AMMENDMENT:

Crop Damage of \$500.00 to be paid prior to drilling on each location and drill site  
to be returned to original condition in the event of a dry hole.

County of  
ity, That

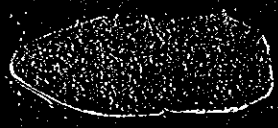
SIGNED FOR IDENTIFICATION:

is day in  
right of  
9 83  
public

Robert E. Crooks  
LESSOR

County of  
ity, That

is day in  
right of  
9  
public



No. 64454 Filed on the 31st day of January 1989 at 1:13 P.M.

ROBERT CROOKS

12 RW 7343

ADAMS ELECTRICAL CO-OPERATIVE  
RIGHT-OF-WAY EASEMENT

Map Number \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that the undersigned ROBERT CROOKS

(~~unmarried~~) (husband and wife) for a good and valuable consideration, the receipt whereof is hereby acknowledged, does hereby grant, sell and convey unto Adams Electrical Co-Operative, an Illinois Corporation, whose post office address is Camp Point, Illinois 62320, and to its successors or assigns, the right to enter upon the lands of the undersigned, situated in the County of ADAMS State of Illinois, and more particularly described as follows:

SOUTHEAST 1/4 OF SECTION 30

situated in Township 1 SOUTH of the Base Line, Range 5 WEST of the Fourth Principal Meridian.

And to place, construct, operate, repair, maintain, relocate and replace on the above described lands and/or in or upon all streets, roads or highways abutting said lands an electric transmission or distribution line or system, and to cut and trim trees and shrubbery, or control by chemical means, to the extent necessary to keep them clear of said electric lines or system and to cut down from time to time all dead, weak, leaning or dangerous trees that are tall enough to strike the wires in falling.

And in addition thereto the right to place underground conduit, cable or wires under, through and upon the above described lands, and to go on, across and upon the easement for the purpose of maintaining said conduit, cable or wire and make necessary excavations and fills upon the premises in furtherance of this purpose.

The undersigned covenants that he is the owner of the above described lands and that the said lands are free and clear of encumbrances and liens of whatsoever character except those held by the following persons: \_\_\_\_\_

It is further understood that whenever necessary, words used in this instrument in the singular shall be construed to read in the plural and that words used in the masculine gender shall be construed to read in the feminine.

IN WITNESS WHEREOF, the undersigned has set his hand and seal this 5 day of SEPTEMBER, 1986

Signed, sealed and delivered in the presence of: x Robert Crooks (L. S.)  
x Robert Crooks (L. S.)

STATE OF ILLINOIS )  
COUNTY OF ADAMS ) SS.  
I, JAMES G HALL Notary Public

In and for said County, in the State aforesaid, do hereby certify that ROBERT CROOKS

personally known to me to be the same person whose name subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that He signed, sealed and delivered the said instrument as His free and voluntary act for the uses and purposes therein set forth, including the release and waiver of the right of homestead

Witness my hand and NOTARIAL seal this 5 day of SEPTEMBER, A.D. 1986

James G Hall  
Notary Public



ADAMS ELECTRICAL CO-OPERATIVE

Right-of-Way Easement

Property Owner(s) \_\_\_\_\_

Permanent Index Number(s) \_\_\_\_\_

10-0-0322-000

Map Number 45-30-002

W.O. 20.07.44

105572

VOLUME 14

OF R-W

PAGE 2697

FILED  
ADAMS COUNTY  
STATE OF ILLINOIS  
2000 SEP 15 A 9:30

*[Signature]*  
COUNTY RECORDER

*Adams Electrical*  
This space for Recorder's use only

KNOW ALL MEN BY THESE PRESENTS, that the undersigned Susan Fresch

(Grantors) for a good and valuable consideration, the receipt whereof is hereby acknowledged, does hereby grant, sell and convey unto Adams Electrical Co-Operative, an Illinois Corporation (Grantee), whose post office address is Camp Point, Illinois 62320, and to its successors or assigns, the right to enter upon the lands of the undersigned, situated in the County of Adams, State of Illinois, and more particularly described as follows:

158 acres more or less in the S.E. 1/4 of Sect. 30...

situated in Township 1S. of the Base Line, Range 5W of the Fourth Principal Meridian.

And to place, construct, operate, repair, maintain, relocate and replace on the above described lands and/or is or upon all streets, roads or highways abutting said lands an electric transmission or distribution line or system, and to cut and trim trees and shrubbery, or control by chemical means, to the extent necessary to keep them clear of said electric lines or system and to cut down from time to time all dead, weak, leaning or dangerous trees that are tall enough to strike the wires in falling.

And in addition thereto the right to place underground conduit, cable or wires under, through and upon the above described lands, and to go on, across and upon the easement for the purpose of maintaining said conduit, cable or wires and make necessary excavations and fills upon the premises in furtherance of this purpose.

Together with an easement for ingress and egress across the adjoining lands of the grantor for purposes of this easement.

The receipt of this easement shall constitute an agreement by the Grantee to pay to the Grantors damages to include, but not to be limited to, all crop damages or other damages that may be caused by the installation of said electrical system, or the maintenance or repairs of said electrical system, or any and all other actions of the Grantee under this easement. In the event of crop damages, the value shall be the fair market value at maturity of said crop.

The undersigned covenants that he is the owner of the above described lands and that the said lands are free and clear of encumbrances and liens of whatsoever character except those held by the following persons: \_\_\_\_\_

It is further understood that whenever necessary, words used in this instrument in the singular shall be construed to read in the plural and that words used in the masculine gender shall be construed to read in the feminine.

IN WITNESS WHEREOF, the undersigned has set his hand and seal this 14<sup>th</sup> day of Sept., 2000  
Signed, sealed and delivered in the presence of:

Susan N. Fresch (L.S.)

(Witness)

(Please Notarize on Other Side of Page)

STATE OF ILLINOIS )  
 ) SS.  
COUNTY OF Adams )

I, A. L. Lashbrook  
In and for said County, in the State aforesaid, do hereby certify that Susan Tresch

personally known to me to be the same person whose name subscribed to the following instrument, appeared before me this day in person and acknowledged that she signed, sealed and delivered the said instrument as her free and voluntary act for the uses and purposes therein set forth, including the release and waiver of the right of homestead.

Given under my hand and notarial seal this 14<sup>th</sup> day of Sept A.D. 2000



A. L. Lashbrook  
Notary Public

Prepared by and Return Recorded Document to:

ATTENTION: A. L. Lashbrook  
ADAMS ELECTRICAL CO-OPERATIVE  
P O BOX 247  
CAMP POINT, IL 62320-0247

Form FmHA-IL 442-20  
(11-01-94)

U. S. Department of Agriculture  
Farmers Home Administration

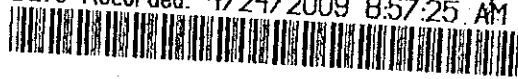


Adams County Clerk/Recorder  
Book: 709 Page: 5292

Receipt #: 200232460  
Pages Recorded: 2

Recording Fee: \$25.00  
Authorized By: *M. Soya*

Date Recorded: 4/24/2009 8:57:25 AM



**RIGHT-OF-WAY EASEMENT**

KNOW ALL MEN BY THESE  
PRESENTS:

**ABS Water  
Co-operative**

That in consideration of One Dollar (\$1.00) or other good and valuable consideration paid to Gerald E. Lierly, Jr., hereinafter referred to as GRANTOR, by ABS Water Co-Operative, hereinafter referred to as GRANTEE, the receipt of which is hereby acknowledged, the GRANTOR does hereby grant, bargain, sell, transfer, and convey unto the GRANTEE, its successors and assigns, a perpetual easement with the right to erect, construct, install, and lay, and thereafter use, operate, inspect, repair, maintain, replace, and remove potable water mains and appurtenances over, across, and through the land of the GRANTOR situated in Adams County, State of Illinois, said land being described as follows:

The Southeast Quarter (SE ¼) of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the fourth Principal Meridian, EXCEPT that part lying South and East of the centerline of the public highway running in a Northeasterly-Southwesterly direction through said Southeast Quarter (SE ¼), situated in the County of Adams, in the State of Illinois.

PIN: 10-0-0322-000-00

together with the right of ingress and egress over the adjacent lands of the GRANTOR, its successors and assigns, for the purpose of this easement.

The construction easement shall be no more than twenty (20) feet on either side of the water main to be installed for a total of forty (40) feet in width across said land. The permanent easement shall be twenty (20) feet in width, ten (10) feet on either side of the water main as installed across said land.

The receipt and recordation of this easement shall constitute an agreement by GRANTEE to pay GRANTOR for crop damages, if any, resulting from GRANTEE'S actions under this easement at the fair market value at maturity of said crops. The consideration hereinabove recited shall constitute payment in full for any damages to the land of the GRANTOR, its successors and assigns, by reason of the installation, operation, and maintenance of the structures or improvements referred to herein. The GRANTEE covenants to maintain the easement in good repair so that no unreasonable damage will result from its use to the adjacent land of the GRANTOR, its successors and assigns.

*430-7020*

*Map 8114 (Tritsch)*

*A-10, SA 31*

The grant and other provisions of this easement shall constitute a covenant running with the land for the benefit of the GRANTEE, its successors and assigns.

IN WITNESS WHEREOF, the GRANTOR has executed this instrument this 30 day of December, 2008.

Gerald E. Lierly, Jr. (SEAL)  
Gerald E. Lierly, Jr.

Address: 2158 N 120th  
~~2466 HWY 24~~, Camp Point, IL 62320

Contact Phone #: 217 430 7020

STATE OF Illinois )

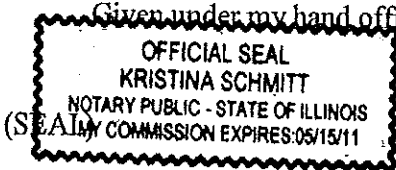
) SS:

ACKNOWLEDGMENT

COUNTY OF Adams )

I, Kristina Schmitt, a Notary Public, do hereby certify that Gerald E. Lierly, Jr., personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he/she signed, sealed, and delivered the said instrument as his/her free and voluntary act, for the uses and purposes therein set forth.

Given under my hand official seal this 30<sup>th</sup> day of December, 2008.



Kristina Schmitt  
Notary Public

My commission expires: 5-15-2011

Document prepared by: Adrian & Dunn, P.C., 806 WCU Building, 510 Maine Street, Quincy, IL

## **EXHIBIT C-2**

### **APPROVED-AS-TO-FORM CONSERVATION EASEMENT DEED**



**RECORDING REQUESTED BY AND  
WHEN RECORDED MAIL TO:**

Jeff Hughes  
2595 N. 1353rd Lane  
Clayton, IL 62324  
Attn: Jeff Hughes

---

Space Above Line for Recorder's Use Only

**CONSERVATION EASEMENT DEED  
Sugar Creek Mitigation Area**

THIS CONSERVATION EASEMENT DEED ("Conservation Easement") is made as of \_\_\_\_\_, 20\_\_\_\_, by Jeff Hughes ("Grantor"), in favor of Great Rivers Land Trust ("Grantee"), with reference to the following facts:

**RECITALS**

A. Grantor is the sole owner in fee simple of certain real property containing approximately 138.8 acres, located in the town of Clayton, County of Adams, State of Illinois, and designated Assessor's Parcel Number 100032200000 (the "Property"). The Property is legally described and depicted in **Exhibit A**.

B. The Conservation Area is a significant natural area which possesses wildlife and habitat values of great importance to Grantee, the people of the State of Illinois, and the people of the United States. The Conservation Area provides, or will provide high quality natural, established, restored and/or enhanced habitat for the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*), and contains native deciduous hardwood forested habitat. Individually and collectively, these wildlife and habitat values comprise the "Conservation Values" of the Conservation Area.

C. The Conservation Area consists of 102.3 acres of deciduous hardwood forested habitat. The Conservation Area is described and depicted in **Exhibit B**.

D. The United States Fish and Wildlife Service (the "USFWS"), an agency within the United States Department of the Interior, has jurisdiction over the conservation, protection, restoration and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of these species within the United States pursuant to the federal Endangered Species Act, 16 U.S.C. Section 1531, *et seq.*, the Fish and Wildlife Coordination Act, 16 U.S.C. Sections 661-666c, the Fish and Wildlife Act of 1956, 16 U.S.C. Section 742(f), *et seq.*, and other provisions of federal law.

E. Grantee is a not-for-profit corporation incorporated under the laws of the State of Illinois, and is a charitable organization under Section 501(c)(3) and a "qualified organization" under Section 170(h) of the Internal Revenue Code, whose purpose is to preserve scenic and



ecologically valuable land, assuring its availability for agricultural, forest, and open-space uses as defined in Section 442.014 R.S.Mo.

Final, approved copies of the HCP and the Mitigation Plan, and any amendments thereto approved by the Signatory Agencies, shall be kept on file at the respective offices of the Signatory Agencies. If Grantor, or any successor or assign, requires an official copy of the HCP or the Mitigation Plan, or any amendment, it should request a copy from one of the Signatory Agencies at its address for notices listed in Section 22 of this Conservation Easement.

The HCP and Mitigation Plan are incorporated by this reference into this Conservation Easement as if fully set forth herein.

F. All section numbers referred to in this Conservation Easement are references to sections within this Conservation Easement, unless otherwise indicated.

### **COVENANTS, TERMS, CONDITIONS AND RESTRICTIONS**

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and pursuant to the laws of the State of Illinois, Grantor hereby voluntarily grants and conveys to Grantee a conservation easement in perpetuity over the Conservation Area.

#### **1. Purposes.**

The Purposes of this Conservation Easement are to ensure that the Conservation Area will be retained forever in its natural condition as contemplated by the HCP and the Mitigation Plan, and to prevent any use of the Conservation Area that will impair or interfere with the Conservation Values of the Conservation Area. Grantor intends that this Conservation Easement will confine the use of the Conservation Area to activities that are consistent with such Purposes, including, without limitation, those involving the preservation, restoration and enhancement of native species and their habitats implemented in accordance with the HCP, the Mitigation Plan, and the following (“Purposes of the Conservation Easement”):

- (a) To contribute to and further the policies of the State of Illinois designed to foster the preservation of natural, scenic, and open-space values of land, assuring its availability for forest and open-space uses, as defined in Section 442.014 R.S.Mo.
- (b) To preserve and protect in perpetuity the significant Conservation Values of the Property as described in this Conservation Easement, the HCP, and the Mitigation Plan, by confining the development, management, and use of the Property to activities that are consistent with the preservation of these Conservation Values, by prohibiting activities that significantly impair or interfere with these Conservation Values, and by providing for remedies in the event of any violation of this Conservation Easement.

#### **2. Grantee's Rights.**

To accomplish the purposes of this Conservation Easement, Grantor hereby grants and conveys

the following rights to Grantee:

- (a) To preserve and protect the Conservation Values of the Conservation Area.
- (b) To enter the Conservation Area at reasonable times, in order to monitor compliance with and otherwise enforce the terms of this Conservation Easement, the HCP and Mitigation Plan and to implement at Grantee's sole discretion Mitigation Plan activities that have not been implemented, provided that Grantee shall not unreasonably interfere with Grantor's authorized use and quiet enjoyment of the Conservation Area. Except in cases where the Signatory Agency determine that immediate entry is required to prevent, terminate, or mitigate a violation of the HCP, Mitigation Plan, or the Conservation Easement, 48 hours' notice will normally be given.
- (c) To prevent any activity on or use of the Conservation Area that is inconsistent with the purposes of this Conservation Easement and to require the restoration of such areas or features of the Conservation Area that may be damaged by any act, failure to act, or any use or activity that is inconsistent with the Purposes of this Conservation Easement.
- (d) To require that all mineral, air and water rights as Grantee deems necessary to preserve, protect and sustain the biological resources and Conservation Values of the Conservation Area shall remain a part of and be put to beneficial use upon the Conservation Area, consistent with the purposes of this Conservation Easement.
- (e) All present and future development rights appurtenant to, allocated, implied, reserved or inherent in the Conservation Area; such rights are hereby terminated and extinguished and may not be used on or transferred to any portion of the Conservation Area, nor any other property adjacent or otherwise.

3. Third-Party Beneficiary.

Grantor and Grantee acknowledge that the USFWS (the "Third-Party Beneficiary") is the third party beneficiary of this Conservation Easement with the right of access to the Conservation Area and the right to enforce all of the obligations of Grantor including, but not limited to, Grantor's obligations under Section 14, and all other rights and remedies of the Grantee under this Conservation Easement.

4. Prohibited Uses.

- (a) Conveyance. Grantor may sell, give, mortgage, lease or otherwise convey the Property, provided that such conveyance is consistent with and subject to the terms of this Conservation Easement.
- (b) Subdivision. The Property shall not be physically, legally, or in any other way subdivided or conveyed in separate parcels, regardless of whether it now

consists of separate parcels, was acquired as separate parcels, or is treated as separate parcels for tax or other purposes.

(c) Land Use.

(i) Permitted Land Use. It is the dominant purpose of this Conservation Easement to preserve and protect in perpetuity the ecological resources of the Property, subject only to changes appropriate to provide opportunities for low-impact outdoor recreation, nature observation and study, and forestry uses consistent with the preservation of the health of the woodlands, grasslands and streams ecosystems.

(ii) Prohibited Land Use. No industrial, residential, agricultural, or commercial activities are permitted on the Property except as specifically permitted in this Conservation Easement, the HCP, or Mitigation Plan. Disturbance of the existing landscape or land surface, including, but not limited to, filling, excavation, earth moving, dredging, damming, and any other change of the topography of the land is prohibited, except as may be reasonably necessary to carry out the uses permitted by this Conservation Easement, the HCP, or Mitigation Plan. Mining, drilling, exploring for, or removing any minerals, sand, gravel, rock, soil, or fossil fuels on, under or from the Property is prohibited as is the sale or lease of any mineral rights associated with the Property.

(d) Recreational Use. Recreational uses that involve soils disturbance, such as, but not limited to, ball fields, golf courses, tennis courts, race tracks, are prohibited. The Property may be used for hiking, camping, hunting, fishing, trapping, nut-picking, berry-picking, nature observation or study, and other non-intensive outdoor recreational and outdoor educational programs or activities that are consistent with the Purposes of this Easement. The activities provided in the preceding sentence are permitted even if commercial in nature, as long as the activity results in no measurable impact on the conservation values of the Property as determined by GRANTEE. Grantor may clear, construct, and maintain trails for walking and other passive, non-motorized recreational activities on the Property, provided that such trail building will not result in soil erosion, and are consistent with the HCP or Mitigation Plan. Trails may not be covered with any impervious surface material and must be natural 'earth' surfaces no wider than eight (8) feet, unless GRANTEE, in its sole discretion, approves alternative trail building standards.

(e) Structures and Roads. No building, structure, facility, or other improvement shall be constructed, created, installed, erected, expanded, or moved onto the Property, except as specifically permitted by this Conservation Easement. Existing structures and roads will be identified in the Baseline Documentation. Rights-of-way, easements of ingress or egress, driveways, roads, utility lines, water wells, open-pit latrines, sewage lagoons or easements shall not be constructed, created, developed, expanded, or

improved into, on, over, under, or across the Property, except as specifically permitted by this Conservation Easement, the HCP or Mitigation Plan or as approved in advance by Grantee. Grantee may grant such approval if it determines, at its sole discretion, that any such activities would be consistent with the Purposes of this Easement.

Roads and driveways that exist at the time this Conservation Easement is executed (“existing roads”) may be maintained in their current dimensions and location. Roads or driveways subsequently constructed in accordance with this Conservation Easement may be maintained in their approved dimensions and location. All existing roads and driveways and their characteristics are documented in the HCP or Mitigation Plan. No paths, trails, or other features on the Property shall be considered existing roads if not specifically identified in the HCP, the Baseline Documentation, or Mitigation Plan as such. Temporary, or permanent, unpaved access roads are permitted to be constructed upon the Property in order to implement management activities as described in the HCP or Mitigation Plan. Permanent, or temporary, stream crossings associated with access roads, paths, or trails are permitted to be constructed upon the Property in order to implement management activities and their construction will follow best management practices that avoid and minimize impacts, such as those found in USDA General Technical Report NC-202, Temporary Stream and Wetland Crossing Options for Forest Management and subsequent revisions thereto.

Minor structures that have no permanent foundations and are not served by utilities, such as tents, trail barriers, benches, deer stands, and portable wildlife blinds, may be placed on the Property in conjunction with allowable activities.

- (f) Signs. Signs, billboards, and outdoor advertising of any kind are prohibited, except that the Grantor may erect and maintain signs indicating the name of the Property, boundary markers, directional signs, signs restricting hunting or trespassing, memorial plaques, temporary signs indicating that the Property is for sale or lease, signs with information about the Property’s natural resources and any limits on public use of the Property, and signs indicating the land is protected by a conservation easement. Signs larger than twelve (12) square feet in area must be approved in advance by Grantee.
- (g) Motorized Vehicles. Motorized vehicles are prohibited on the Property except for their use 1) on permitted roads; and 2) in a reasonable manner off of roads in conjunction with wildlife, forestry, and non-intensive outdoor recreational uses permitted by this Conservation Easement and as specifically provided in the HCP or Mitigation Plan. The Property shall not be used for motor vehicle racing or as an off-road vehicle riding park. Except for the access roads for purposes described in 4.(e) above, in no event shall the unauthorized use of motorized vehicles result in the establishment of new roads as evidenced by the denuding of vegetation or by soil erosion.

- (h) Natural Resource and Forest Management. Grantor may manage the Property for the purposes of enhancing natural resources and ecosystem functions as consistent with the Purposes of this Conservation Easement and as specifically provided in the HCP or Mitigation Plan. The uses permitted by this paragraph may include, but are not limited, stream or erosion control, riparian buffer areas, prescribed burning, invasive species control, and timber stand improvement, and shall be in accordance with generally accepted ecosystem and wildlife management practices as established by a state or federal natural resource agency such as, but not limited to, the Illinois Department of Conservation or the U.S. Department of Agriculture.

Indiscriminate removal of trees, living or dead, is prohibited, except as follows: 1) as permitted by the HCP or Mitigation Plan, described above; or 2) as reasonably required to prevent injury or property damage, or to maintain roads, trails and other improvements specifically permitted by this Conservation Easement.

Grantor may harvest timber from the Property only in accordance with provisions consistent with the Purposes of this Conservation Easement and as specifically provided in the HCP or Mitigation Plan. Temporary, unpaved access roads and associated stream crossings are permitted to be constructed upon the Property in order to implement the HCP or Mitigation Plan, but they must be closed and allowed to re-vegetate after the conclusion of the harvest of timber or other forest management activity for which they were temporarily created. Any significant damage to the land or water resource must be remediated as part of the road closure in accordance to provisions described in Section 3(e) above. Native or non-invasive herbaceous annual plants may be used for erosion control purposes.

- (i) Water Resources. Existing ponds may be maintained at their current size and location, as long as the maintenance of these ponds does not impair the purposes of this Conservation Easement. Grantor may construct new ponds only after a determination of whether additional ponds are consistent with the Purposes of this Conservation Easement, the HCP, and Mitigation Plan. Grantor shall not alter the natural course of any streams or waterways located on the Property as of the date of this Conservation Easement, except when needed to prevent or minimize soil erosion, or to implement actions identified in the HCP and Mitigation Plan. The changing of any natural water courses shall be permitted only through consultation with federal and state agencies with jurisdictional authority over the waterways and technical expertise on current best management practices.
- (j) Trash. Dumping, placement, and storage of soil, trash, ashes, garbage, waste, abandoned vehicles or machinery, appliances, or other materials on the Property is prohibited, except that soil, rocks and other earth materials, vegetative matter, or compost may be placed 1) as reasonably necessary for permitted agricultural, wildlife, or forestry uses on the Property, or 2) as

reasonably necessary for limited access as described in Section 3(e) in this Conservation Easement. The temporary storage of trash in receptacles for periodic off-site disposal shall be permitted provided such activities are normal and expected pursuant to the permitted uses of the Property and do not create or threaten degradation of water resources.

- (k) Use of Chemicals. The use, storage, or disposal of chemicals on the Property is prohibited, except that chemicals may be used as reasonably necessary to carry out the uses permitted by this Conservation Easement, the HCP, or Mitigation Plan. The storage and spreading of manure, lime, or other fertilizer shall be permitted provided such activities are normal and expected pursuant to the permitted uses of the Property and do not create or threaten degradation of water resources.
- (l) Domesticated hooved livestock, including but not limited to pigs, cows, horses, goats, sheep, llamas, and alpacas, are only permitted on the Property for activities consistent with the Purposes of this Conservation Easement, the HCP, or Mitigation Plan. Agriculture, including, but not limited to, row crops, groves, orchards, or tree farms, may be permitted on the Property as documented in the Baseline Report, or when consistent with the Purposes of this Conservation Easement, the HCP, or Mitigation Plan.
- (m) Fencing. Fencing that significantly restricts the natural movement of wildlife is prohibited.
- (n) Consistency with Purposes of the Easement. No use shall be made of the Property, and no activity thereon shall be permitted, which, in the reasonable determination of Grantee, is or may become inconsistent with the Purposes of this Easement, the HCP, or the Mitigation Plan.

5. Grantee's Duties.

- (a) To ensure that the Purposes of this Conservation Easement as described in Section 1 are being accomplished, Grantee and its successors and assigns shall:
  - (i) Perform, at a minimum on an annual basis, compliance monitoring inspections of the Conservation Area; and
  - (ii) Prepare reports on the results of the compliance monitoring inspections and provide these reports to the Grantor and Signatory Agency following each annual inspection, or more frequently if necessary.

6. Grantor's Duties

Grantor shall undertake all reasonable actions to prevent the unlawful entry and trespass by persons whose activities may degrade or harm the Conservation Values of the Conservation Area or that are otherwise inconsistent with this Conservation Easement. In addition, Grantor shall

undertake all necessary actions to perfect and defend Grantee's rights under Section 2 of this Conservation Easement, and to observe and carry out the obligations of Grantor under the HCP or Mitigation Plan.

7. Reserved Rights.

Grantor reserves to itself, and to its personal representatives, heirs, successors, and assigns, all rights accruing from Grantor's ownership of the Conservation Area, including the right to engage in or permit or invite others to engage in all uses of the Conservation Area that are not prohibited or limited by, and are consistent with the Purposes of, this Conservation Easement.

8. Grantee's Remedies.

If (i) a violation continues for more than thirty (30) days after notice specifying such violation is given (or in the case of a violation which cannot with reasonable diligence be remedied within a period of 30 days but which the party in violation has commenced to remedy with all reasonable diligence within such 30-day period, then for such longer period as may be necessary to remedy the same with all reasonable diligence), or (ii) at any time if the violation or a threatened violation threatens immediate and irreparable harm to the Conservation Values, Grantee may seek immediate injunctive relief and shall have the right, but not the obligation, to correct it by pursuing all its available legal remedies. The Grantor shall reimburse Grantee for all reasonable expenses, including reasonable attorneys' fees, incurred in enforcing this Conservation Easement and curing the violation. Furthermore, Grantee is entitled to bring an action in a court of competent jurisdiction to recover any damages (including, but not limited to, damages for the loss of scenic, aesthetic, or environmental values) arising from such non-compliance. Such damages, when recovered may, if necessary, be applied by Grantee to corrective action on the Property to restore it to its former condition before the violation.

The parties specifically acknowledge that events and circumstances of non-compliance with the Conservation Easement constitute immediate and irreparable injury, loss, and damage to the Property and accordingly entitle Grantee to such equitable relief, including but not limited to enjoining the violation, ex parte if necessary, as the Court deems just, and to require the restoration of the Property to the condition that existed prior to any such injury, if appropriate. The remedies described herein are in addition to, and not in limitation of, any other remedies available to Grantee at law, in equity, or through administrative proceedings.

9. Costs of Enforcement.

All costs incurred by Grantee, where Grantee is the prevailing party, in enforcing the terms of this Conservation Easement against Grantor, including, but not limited to, costs of suit and attorneys' and experts' fees, and any costs of restoration necessitated by negligence or breach of this Conservation Easement, shall be borne by Grantor.

10. Grantee's Discretion

Enforcement of the terms of this Conservation Easement by Grantee shall be at the discretion of Grantee, and any forbearance by Grantee to exercise its rights under this Conservation Easement

in the event of any breach of any term of this Conservation Easement shall not be deemed or construed to be a waiver of such term or of any subsequent breach of the same or any other term of this Conservation Easement or of any rights of Grantee under this Conservation Easement. No delay or omission by Grantee in the exercise of any right or remedy shall impair such right or remedy or be construed as a waiver.

11. Acts Beyond Grantor's Control

Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury to or change in the Conservation Area resulting from (i) any natural cause beyond Grantor's control, including, without limitation, fire not caused by Grantor, flood, storm, and earth movement, or any prudent action taken by Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Conservation Area resulting from such causes; or (ii) acts by Grantee or its employees.

12. Enforcement; Standing.

All rights and remedies conveyed to Grantee under this Conservation Easement shall extend to and are enforceable by the Third-Party Beneficiaries (as defined in Section 19(m)). These enforcement rights are in addition to, and do not limit, the rights of enforcement under the HCP or Mitigation Plan. If at any time in the future Grantor uses, allows the use, or threatens to use or allow use of, the Conservation Area for any purpose that is inconsistent with or in violation of this Conservation Easement then the Third-Party Beneficiaries each has standing as an interested party in any proceeding affecting this Conservation Easement.

13. Notice of Conflict.

If Grantor receives a Notice of Violation from Grantee or a Third-Party Beneficiary with which it is impossible for Grantor to comply consistent with any prior uncured Notice(s) of Violation, Grantor shall give written notice of the conflict (hereinafter "Notice of Conflict") to the Grantee and Third-Party Beneficiaries. In order to be valid, a Notice of Conflict shall be given within fifteen (15) days of the date Grantor receives a conflicting Notice of Violation, shall include copies of the conflicting Notices of Violation, and shall describe the conflict with specificity, including how the conflict makes compliance with the uncured Notice(s) of Violation impossible. Upon issuing a valid Notice of Conflict, Grantor shall not be required to comply with the conflicting Notices of Violation until such time as the entity or entities issuing said conflicting Notices of Violation issue(s) revised Notice(s) of Violation that resolve the conflict. Upon receipt of a revised Notice of Violation, Grantor shall comply with such notice within the time period(s) described in the first grammatical paragraph of this Section. The failure of Grantor to issue a valid Notice of Conflict within fifteen (15) days of receipt of a conflicting Notice of Violation shall constitute a waiver of Grantor's ability to claim a conflict.

14. Access.

This Conservation Easement does not convey a general right of access to the public.

15. Costs and Liabilities.



Grantor retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Conservation Area. Grantor agrees that neither Grantee nor Third-Party Beneficiaries shall have any duty or responsibility for the operation, upkeep or maintenance of the Conservation Area, the monitoring of hazardous conditions on it, or the protection of Grantor, the public or any third parties from risks relating to conditions on the Conservation Area. Grantor remains solely responsible for obtaining any applicable governmental permits and approvals required for any activity or use permitted by this Conservation Easement, and any activity or use shall be undertaken in accordance with all applicable federal, state, local and administrative agency laws, statutes, ordinances, rules, regulations, orders and requirements.

(a) Taxes; No Liens. Grantor shall pay before delinquency all taxes, assessments (general and special), fees, and charges of whatever description levied on or assessed against the Property by competent authority (collectively "Taxes"), including any Taxes imposed upon, or incurred as a result of, this Conservation Easement, and shall furnish Grantee with satisfactory evidence of payment upon request. Grantor shall keep the Property free from any liens (other than a security interest that is expressly subordinated to this Conservation Easement, as provided in Section 14(k)), including those arising out of any obligations incurred by Grantor for any labor or materials furnished or alleged to have been furnished to or for Grantor at or for use on the Conservation Area.

(b) Hold Harmless

(i) Grantor shall hold harmless, protect and indemnify Grantee and its directors, officers, employees, agents, contractors, and representatives and the heirs, personal representatives, successors and assigns of each of them (each a "Grantee Indemnified Party" and collectively, "Grantee's Indemnified Parties") from and against any and all liabilities, penalties, costs, losses, damages, expenses (including, without limitation reasonable attorneys' fees and experts' fees), causes of action, claims, demands, orders, liens or judgments (each a "Claim" and, collectively, "Claims"), arising from or in any way connected with: (i) injury to or the death of any person, or physical damage to any property, resulting from any act, omission, condition, or other matter related to or occurring on or about the Conservation Area, regardless of cause, except that this indemnification shall be inapplicable to any Claim due solely to the negligence of Grantee or any of its employees; (ii) the obligations specified in Sections 5, 9 and 9(a); and (iii) the existence or administration of this Conservation Easement. If any action or proceeding is brought against any of the Grantee's Indemnified Parties by reason of any such Claim, Grantor shall, at the election of and upon written notice from Grantee, defend such action or proceeding by counsel reasonably acceptable to the Grantee's Indemnified Party.

(ii) Grantor shall hold harmless, protect and indemnify Third-Party

Beneficiaries and their respective directors, officers, employees, agents, contractors, and representatives and the heirs, personal representatives, successors and assigns of each of them (each a "Third-Party Beneficiary Indemnified Party" and collectively, "Third-Party Beneficiary Indemnified Parties") from and against any and all Claims arising from or in any way connected with: (i) injury to or the death of any person, or physical damage to any property, resulting from any act, omission, condition, or other matter related to or occurring on or about the Conservation Area, regardless of cause and (ii) the existence or administration of this Conservation Easement. Provided, however, that the indemnification in this Section 9 (b) (2) shall be inapplicable to a Third-Party Beneficiary Indemnified Party with respect to any Claim due solely to the negligence of that Third-Party Beneficiary Indemnified Party or any of its employees. If any action or proceeding is brought against any of the Third-Party Beneficiary Indemnified Parties by reason of any Claim to which the indemnification in this Section 9 (b) (2) applies, then at the election of and upon written notice from the Third-Party Beneficiary Indemnified Party, Grantor shall defend such action or proceeding by counsel reasonably acceptable to the applicable Third-Party Beneficiary Indemnified Party or reimburse the Third-Party Beneficiary Indemnified Party for all charges incurred for services of the California Attorney General or the U.S. Department of Justice in defending the action or proceeding.

- (c) Extinguishment. If circumstances arise in the future that render the preservation of Conservation Values, or other Purposes of this Conservation Easement impossible to accomplish, this Conservation Easement can only be terminated or extinguished, in whole or in part, by judicial proceedings in a court of competent jurisdiction.

16. Transfer of Conservation Easement or Property.

- (a) Conservation Easement. This Conservation Easement may be assigned or transferred by Grantee upon written approval of the Signatory Agency, which approval shall not be unreasonably withheld or delayed, but Grantee shall give Grantor and the Signatory Agency at least sixty (60) days prior written notice of the proposed assignment or transfer. Grantee may assign or transfer its rights under this Conservation Easement only to an entity or organization: (i) authorized to acquire and hold conservation easements pursuant to the laws of the State of Illinois, or the laws of the United States; and (ii) otherwise reasonably acceptable to the Signatory Agency. Grantee shall require the assignee to record the assignment in the county where the Property is located. The failure of Grantee to perform any act provided in this section shall not impair the validity of this Conservation Easement or limit its enforcement in any way. Any transfer under this section is subject to the requirements of Section 17.
- (b) Property. Grantor agrees to incorporate the terms of this Conservation Easement by reference in any deed or other legal instrument by which

Grantor divests itself of any interest in all or any portion of the Property, including, without limitation, a leasehold interest. Grantor agrees that the deed or other legal instrument shall also incorporate by reference the HCP or Mitigation Plan, and any amendment(s) to those documents. Grantor further agrees to give written notice to Grantee and the Signatory Agency of the intent to transfer any interest at least sixty (60) days prior to the date of such transfer. Grantee or the Signatory Agency shall have the right to prevent any transfers in which prospective subsequent claimants or transferees are not given notice of the terms, covenants, conditions and restrictions of this Conservation Easement (including the exhibits and documents incorporated by reference in it). The failure of Grantor to perform any act provided in this section shall not impair the validity of this Conservation Easement or limit its enforceability in any way. Any transfer under this section is subject to the requirements of Section 17.

17. Merger.

The doctrine of merger shall not operate to extinguish this Conservation Easement if the Conservation Easement and the Conservation Area become vested in the same party. If, despite this intent, the doctrine of merger applies to extinguish the Conservation Easement then, unless Grantor, Grantee, and the Signatory Agency otherwise agree in writing, a replacement conservation easement or restrictive covenant containing the same protections embodied in this Conservation Easement shall be recorded against the Conservation Area.

18. Notices.

Any notice, demand, request, consent, approval, or other communication that Grantor or Grantee desires or is required to give to the other shall be in writing, with a copy to each of the Signatory Agency, and served personally or sent by recognized overnight courier that guarantees next-day delivery or by first class United States mail, postage fully prepaid, addressed as follows:

To Grantor: Jeff Hughes  
2595 1353<sup>rd</sup> Lane  
Clayton, IL 62324

To Grantee: Great Rivers Land Trust  
PO Box 821  
Alton, IL 62002

To USFWS: USFWS Illinois Field Office  
1511 47<sup>th</sup> Avenue  
Moline, IL 61265  
Attn: Kraig McPeek, Field Supervisor

or to such other address a party or a Signatory Agency shall designate by written notice to

Grantor, Grantee and the Signatory Agency. Notice shall be deemed effective upon delivery in the case of personal delivery or delivery by overnight courier or, in the case of delivery by first class mail, three (3) days after deposit into the United States mail.

19. Amendment.

This Conservation Easement may be amended only by mutual written agreement of Grantor and Grantee and written approval of the Signatory Agency, which approval shall not be unreasonably withheld or delayed. Any such amendment shall be consistent with the Purposes of this Conservation Easement and shall not affect its perpetual duration. Any such amendment shall be recorded in the official records of the county in which the Property is located, and Grantee shall promptly provide a conformed copy of the recorded amendment to the Grantor and the Signatory Agency.

20. Additional Provisions.

- (a) Controlling Law. The interpretation and performance of this Conservation Easement shall be governed by the Laws of the United States and the State of Illinois, disregarding the conflicts of law principles of such state.
- (b) Liberal Construction. Any general rule of construction to the contrary notwithstanding, this Conservation Easement shall be liberally construed in favor of affecting the Purposes of this Conservation Easement. If any provision in this Conservation Easement is found to be ambiguous, an interpretation consistent with the Purposes of this Conservation Easement that would render the provision valid shall be favored over any interpretation that would render it invalid.
- (c) Entire Agreement and Severability. This Conservation Easement sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings, or agreements relating to the Conservation Easement, all of which are merged herein, unless another written agreement between the parties expressly states that it shall not be merged herein. If any term is found to be invalid, the remainder of the terms of this Conservation Easement, and the application of such term to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.
- (d) No Forfeiture. Nothing contained in this Conservation Easement will result in a forfeiture or reversion of Grantor's title in any respect.
- (e) Successors. The covenants, terms, conditions, and restrictions of this Conservation Easement shall be binding upon, and inure to the benefit of, the parties and their respective personal representatives, heirs, successors, and assigns, and shall constitute a servitude running in perpetuity with the Conservation Area.

- (f) Termination of Rights and Obligations. A party's rights and obligations under this Conservation Easement terminate upon transfer of the party's interest in the Conservation Easement or Conservation Area, except that liability for acts, omissions or breaches occurring prior to transfer shall survive transfer.
- (g) Captions. The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon its construction or interpretation.
- (h) Representation and Warranties Regarding Hazardous Materials.
  - (i) Grantor represents and warrants that it has no actual knowledge of any use or release of hazardous waste or toxic substances on the Property that is in violation of a federal, state, or local law.
  - (ii) Nothing in this Easement shall be construed as giving rise, in the absence of a judicial decree, to any right or ability in Grantee to exercise physical or managerial control over the day-to-day operations of the Property, or any of Grantor's activities on the Property, or otherwise to become an operator with respect to the Property within the meaning of The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA").
  - (iii) Grantor hereby releases and agrees to hold harmless, indemnify, and defend 1 Grantee and its members, directors, officers, employees, agents, and contractors and the heirs, personal representatives, successors, and assigns of each of them (collectively "Indemnified Parties") from and against any and all liabilities, penalties, fines, charges, costs, losses, damages, expenses, causes of action, claims, demands, orders, judgments, or administrative actions, including, without limitation, reasonable attorneys' fees, arising from or in any way connected with: (1) the violation or alleged violation of, or other failure to comply with, any state, federal, or local law, regulation, or requirement, including, without limitation, CERCLA, by any person other than the Indemnified Parties, in any way affecting, involving, or relating to the Property, or (2) the presence or release in, on, from, or about the Property, at any time, of any substance now or hereafter defined, listed or otherwise classified pursuant to any federal, state, or local law, regulation, or requirement as hazardous, toxic, polluting, or otherwise contaminating to the air, water, or soil, or in any way harmful or threatening to human health or the environment, unless caused solely by any of the Indemnified Parties.

- (i) Representation and Warranty.

Grantor represents and warrants that to the best of its knowledge:

- (i) There is no pending or threatened litigation in any way affecting,

involving, or relating to the Property; and

(ii) No civil or criminal proceedings or investigations have been instigated at any time or are now pending, and no notices, claims, demands, or orders have been received, arising out of any violation or alleged violation of, or failure to comply with, any federal, state, or local law, regulation, or requirement applicable to the Property or its use, nor do there exist any facts or circumstances that Grantor might reasonably expect to form the basis for any such proceedings, investigations, notices, claims, demands, or orders; and

(iii) Grantor and the Property are in compliance with all federal, state, and local laws, regulations, and requirements applicable to the Property and its use.

(j) Indemnity. Grantor hereby releases and agrees to hold harmless, indemnify, and defend Grantee and its members, directors, officers, employees, agents, and contractors and the heirs, personal representatives, successors, and assigns of each of them (collectively "Indemnified Parties") from and against any and all liabilities, penalties, fines, charges, costs, losses, damages, expenses, causes of action, claims, demands, orders, judgments, or administrative actions, including, without limitation, reasonable attorneys' fees, arising from or in any way connected with: (1) injury to or the death of any person, or physical damage to any property, resulting from any act, omission, condition, or other matter related to or occurring on or about the Property, regardless of cause, unless due solely to the negligence of any of the Indemnified Parties; or (2) the breach by Grantor of any of its obligations, covenants, representations, and warranties contained in this Easement.

Grantee shall hold harmless, indemnify, and defend Grantor and its employees, agents, and contractors and the heirs, personal representative, successors, and assigns of each of them from and against all liabilities, penalties, costs, losses, damages, expenses, causes of action, claims, demands, or judgments, including, without limitation, reasonable attorneys' fees, arising from or in any way connected with injury to or the death of any person, or physical damage to any property, resulting from an act, omission, condition, or other matter related to or occurring in, on, or about the Property caused solely by the gross negligence of Grantee, its employees, agents or contractors.

(k) Additional Interests. Grantor shall not grant any additional easements, rights of way or other interests in the Conservation Area (other than a security interest that is expressly subordinated to this Conservation Easement), nor shall Grantor grant, transfer, abandon or relinquish (each a "Transfer") any mineral, air, or water right or any water associated with the Conservation Area, without first obtaining the written consent of Grantee and the Signatory Agency. Such consent may be withheld if Grantee or the Signatory Agency

determine(s) that the proposed interest or Transfer is inconsistent with the Purposes of this Conservation Easement or will impair or interfere with the Conservation Values of the Conservation Area. This Section 19(k) shall not limit the provisions of Section 2(d) or 3(n), nor prohibit transfer of a fee or leasehold interest in the Conservation Area that is subject to this Conservation Easement and complies with Section 10. Grantor shall provide a copy of any recorded or unrecorded grant or Transfer document to the Grantee and Signatory Agency.

- (1) Recording. Grantee shall record this Conservation Easement in the Official Records of the County in which the Conservation Area is located and may re-record it at any time as Grantee deems necessary to preserve its rights in this Conservation Easement.

IN WITNESS WHEREOF Grantor has executed this Conservation Easement Deed as of the day and year first above written.

**GRANTOR:** [*Notarization Required*]

Approved as to form:

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_



**CERTIFICATE OF ACCEPTANCE**

This is to certify that the interest in real property conveyed by the Conservation Easement Deed by \_\_\_\_\_, dated \_\_\_\_\_, 20\_\_\_\_, to the **Grantee**, an Illinois non-profit corporation, acting by and through its authorized representative, is hereby accepted by the undersigned on behalf of Grantee.

**GRANTEE:** *[Notarization Required]*

Great Rivers Land Trust

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_  
Authorized Representative

DATE: \_\_\_\_\_

**EXHIBIT A**  
PROPERTY LEGAL DESCRIPTION AND MAP

### **Property Legal Description**

The Southeast Quarter (SE  $\frac{1}{4}$ ) of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, EXCEPT that part lying South and East of the north right-of-way line of the public highway running in a Northeasterly-Southwesterly direction through said Southeast Quarter (SE  $\frac{1}{4}$ ), situated in the County of Adams, in the State of Illinois.

**EXHIBIT B**  
CONSERVATION AREA DESCRIPTION AND MAP

### Conservation Area Legal Description

The Southeast Quarter (SE ¼) of Section Thirty (30) in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Meridian, EXCEPT that part lying South and East of the north right-of-way line of the public highway running in a Northeasterly-Southwesterly direction through said Southeast Quarter (SE ¼), situated in the County of Adams, in the State of Illinois.

#### ALSO EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PARCELS

Beginning at the southwest corner of said SE ¼; thence South 88° 53' 56" West along the south line of said SE ¼ (as measured), 493.12 feet to the Point of Beginning; thence North 0° East, 152.1 feet; thence North 90° East, 144.43 feet; thence South 0° 28' 39" East, 156.53 feet; thence North 42° 54' 17" West, 2.25 feet; thence North 88° 53' 56" West, 144.23 feet to the Point of Beginning.

Beginning at the southwest corner of said SE ¼; thence North 1° 42' 56" East along the west line of said SE ¼ (as measured), 840.71 feet; thence South 90° East, 176.82 feet to the Point of Beginning; thence North 61° 23' 22" East, 87.01 feet; thence South 86° 31' 54" East, 229.59 feet; South 79° 22' 49" East, 113.05 feet; thence North 78° 1' 26" East, 234.27 feet; thence North 41° 25' 25" East, 314.88 feet; thence North 50° 42' 38" East, 197.4 feet; thence South 32° 45' 49" East, 63.47 feet; thence South 4° 53' 39" East, 85.84 feet; thence South 14° 37' 15" West, 330.14 feet; thence South 40° 54' 52" West, 137.84 feet; thence South 55° 18' 17" West, 109.8 feet; thence South 76° 15' 49" West, 321.7 feet; thence South 88° 15' 51" West, 229.27 feet; thence North 80° 32' 16" West, 126.72 feet; thence North 40° 21' 52" West, 182.28 feet; thence North 0° West, 131.94 feet to the Point of Beginning.

Beginning at the northwest corner of said SE ¼; thence South 88° 44' 54" East along the north line of said SE ¼ (as measured), 673.48 feet to the Point of Beginning; thence continuing South 88° 44' 54" East, 292.99 feet; thence South 0° West, 129.46 feet; thence North 87° 8' 15" West, 86.26 feet; thence South 2° 17' 26" East, 107.78 feet; thence South 58° 23' 33" East, 65.75 feet; thence South 27° 45' 31" East, 92.49 feet; thence South 4° 11' 6" East, 177.09 feet; thence South 10° 0' 29" West, 148.73 feet; thence South 45° East, 67.01 feet; thence North 23° 57' 45" East, 42.43 feet; thence North 6° 6' 56" West, 121.31 feet; thence North 81° 52' 12" East, 60.92 feet; thence South 3° 30' 13" East, 211.47 feet; thence South 8° 44' 46" West, 56.66 feet; thence North 78° 41' 24" West, 87.86 feet; thence South 80° 32' 16" West, 52.41 feet; thence South 24° 26' 38" West, 52.05 feet; thence South 71° 33' 54" West, 54.49 feet; thence South 52° 25' 53" West, 70.65 feet; thence South 9° 43' 39" East, 152.97 feet; thence South 33° 56' 37" West, 270.01 feet; thence South 17° 44' 41" West, 113.07 feet; thence South 36° 52' 12" West, 21.54 feet; thence North 50° 2' 33" West, 207.93 feet; thence North 0° East, 12.92 feet; thence North 45° 31' 32" East, 332.03 feet; thence North 0° East, 116.31 feet; thence North 34° 49' 28" East, 241.39 feet; thence North 33° 41' 24" West, 46.6 feet; thence South 50° 11' 40" West, 67.29 feet; thence North 61° 41' 57" West, 63.6 feet; thence North 0° East, 77.54 feet; thence North 61° 41' 57" East, 63.6 feet;

thence North 36° 52' 12" West, 43.08 feet; thence South 69° 26' 38" West, 36.81 feet; thence North 56° 18' 36" West, 62.13 feet; thence North 0° East, 540.79 feet to the Point of Beginning.

Beginning at the northeast corner of said SE ¼; thence South 1° 13' 19" West along the east line of said SE ¼ (as measured), 120.48 feet to the Point of Beginning; thence continuing South 1° 13' 19" West, 420.07 feet; thence South 73° 36' 38" West, 49.12 feet; thence North 60° 56' 43" West, 44.35 feet; thence North 36° 1' 39" West, 58.59 feet; thence North 0° East, 64.62 feet; thence North 29° 3' 17" West, 44.35 feet; thence South 90° West, 43.08 feet; thence South 45° West, 30.56 feet; thence South 11° 18' 36" West, 43.93 feet; thence South 48° 10' 47" West, 109.83 feet; thence South 57° 59' 41" West, 40.64 feet; thence South 6° 42' 35" West, 147.47 feet; thence South 90° West, 56.0 feet; thence North 5° 42' 38" East, 259.75 feet; thence North 56° 18' 36" West, 31.06 feet; thence South 85° 36' 5" West, 56.17 feet; thence South 63° 26' 6" West, 28.90 feet; thence North 79° 22' 49" West, 70.12 feet; thence North 26° 33' 54" West, 38.53 feet; thence North 48° 48' 51" West, 45.79 feet; thence South 45° West, 12.18 feet; thence South 26° 33' 54" West, 57.79 feet; thence South 4° 5' 8" West, 60.46 feet; thence South 0° West, 60.31 feet; thence South 18° 26' 6" East, 68.11 feet; thence South 0° West, 172.31 feet; thence South 56° 18' 36" West, 31.06 feet; thence South 83° 39' 35" West, 39.01 feet; thence North 36° 52' 12" West, 43.08 feet; thence North 8° 31' 51" West, 87.12 feet; thence North 10° 39' 11" West, 70.12 feet; thence North 38° 39' 35" West, 27.58 feet; thence South 90° West, 38.77 feet; thence South 12° 59' 41" East, 57.47 feet; thence South 0° West, 86.15 feet; thence South 36° 52' 12" West, 43.08 feet; thence South 14° 2' 10" West, 124.33 feet; thence North 51° 20' 25" West, 27.58 feet; thence North 15° 56' 43" West, 62.72 feet; thence North 74° 3' 17" West, 62.72 feet; thence North 36° 52' 12" West, 21.54 feet; thence North 21° 48' 5" West, 46.40 feet; thence North 21° 22' 14" East, 106.39 feet; thence North 9° 5' 25" East, 109.06 feet; thence North 90° East, 34.46 feet; thence North 51° 50' 34" East, 76.70 feet; thence North 5° 42' 38" West, 43.29 feet; thence North 45° East, 188.85 feet; thence North 75° 57' 50" East, 17.76 feet; thence North 9° 51' 57" East, 100.56 feet; thence North 36° 52' 12" West, 43.08 feet; thence North 77° 28' 16" West, 39.72 feet; thence North 12° 59' 41" West, 75.37 feet; thence South 88° 44' 54" East, along the north line of said SE ¼ (as measured) 469.51 feet; thence South 57° 13' 53" East, 230.47 feet to the Point of Beginning.

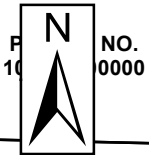
Beginning at the northeast corner of said SE ¼; thence South 1° 13' 19" West along the east line of said SE ¼ (as measured), 914.73 feet to the Point of Beginning; thence South 20° 44' 22" West, 183.67 feet; thence South 59° 2' 10" West, 150.71 feet; thence South 77° 16' 32" West, 273.80 feet; thence North 69° 35' 24" West, 197.64 feet; thence North 61° 33' 25" West, 235.16 feet; thence North 21° 30' 9" West, 131.14 feet; thence North 89° 34' 32" West, 901.44 feet to the Point of Beginning.

Beginning at the intersection of the east line of the Southeast ¼ of said Section 30 with the northly right-of-way line of the public highway running in a Northeasterly-Southwesterly direction through said Southeast ¼; thence South 72° 7' 2" West, along said north right-of-way line, 24.17 feet to the Point of Beginning; thence continuing South 72° 7' 2" West, 185.02 feet; thence North 0° 2' 22" East, 201.81

feet; thence South 77° 44' 7" East, 122.59 feet; thence South 25° 16' 17" East, 131.54 feet to the Point of Beginning.

Beginning at the intersection of the east line of the Southeast ¼ of said Section 30 with the northly right-of-way line of the public highway running in a Northeasterly-Southwesterly direction through said Southeast ¼; thence South 72° 7' 2" West, along said north right-of-way line, 430.10 feet to the Point of Beginning; thence North 22° 2' 10" West, 185.47 feet; thence North 45° West, 127.93 feet; thence South 90° West, 133.54 feet; thence North 87° 47' 51" West, 112.08 feet; thence South 16° 33' 25" West, 166.28 feet; thence South 84° 57' 27" West, 147.03 feet; thence South 20° 57' 21" West, 216.80 feet; thence South 8° 58' 21" West, 248.58 feet; thence South 37° 35' 34" East, 179.59 feet; thence North 2° 40' 42" East, 220.93 feet; thence North 75° 20' 15" East, 221.33 feet; thence North 53° 24' 20" East, 284.90 feet; thence North 72° 7' 2" East, 160.76 feet to the Point of Beginning.

Beginning at the northeast corner of said SE ¼; thence South 1° 13' 19" West along the east line of said SE ¼ (as measured), 1,016.135 feet; thence North 90° West, 1,107.24 feet to the Point of Beginning; thence South 53° 7' 48" East, 142.43 feet; thence South 26° 16' 53" West, 389.15 feet; thence South 82° 24' 19" West, 65.19 feet; thence North 40° 54' 52" West, 85.51 feet; thence North 20° 51' 16" East, 193.61 feet; thence North 29° 8' 3" East, 226.06 feet to the Point of Beginning.



PARCEL NO.  
100031700000

PARCEL NO.  
100031600000

PARCEL NO.  
100032000000

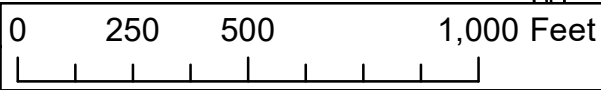
PARCEL NO.  
100032200000

PARCEL NO.  
100032100000





PARCEL NO.  
100031200000

1353rd Ln

2575th St



### Legend

-  Parcel Boundaries
-  Conservation Easement Area - 102.3 Acres
-  CRP Enrolled Land
-  Roads

## Easement Plan

Adams County Mitigation Site  
Adams County, IL



Magnolia

Date: September 2020

Source: USGS, Esri, Adams County



# EXHIBIT D

## RESOURCE EQUIVALANCY ANALYSIS

USFWS has developed Resource Equivalency Analysis (“REA”) models to allow the translation of a given number of protected acres into a reproductive gain for a given species, represented by a gain of a number of reproductive females. The following methodologies were employed to quantify the benefit to the Target Species to be gained from the development of the Mitigation Site:

- Region 3 Indiana Bat Resource Equivalency Analysis Model Version 7; and
- Region 3 Northern Long-Eared Bat Resource Equivalency Analysis Model Version 1.

It was determined that over the 40-year project period, the Mitigation Site has the potential to generate 74 female Indiana bats, and 94 female northern long-eared bats.

### REA Inputs

No modifications were made to the REA spreadsheets beyond the entry of the inputs shown in Table 1. Discussion of each input is provided below.

**Table 1: REA Model Inputs and Outputs**

Target Species	Project Length	Lambda	INBA Habitat Type	Acres Protected	INBA Gain (females)	NLEB Gains (females)
INBA/NLEB	40 Years	Declining	Roosting & Foraging	102.3	74	94

### *Target Species*

The Mitigation Site is located in a HUC 12 with documented use by Indiana and northern long-eared bats.

### *Project Length*

The Mitigation Site will be used to satisfy compensatory mitigation requirements of the Incidental Take Permit for the Sugar Creek Wind Project. This calculation used a permit length of 30 years. Per the REA instructions, the project length was calculated as the permit length plus an additional ten years.

### *Lambda*

The lambda value for both REA models was listed as declining to match the input values used for the Sugar Creek HCP.

### *Habitat Type*

The Mitigation Site is listed as roosting and foraging habitat preservation.

### *Acres Protected*

The “acres protected” value contains the acreage with summer habitat that will be placed under a USFWS-approved conservation easement.



**EXHIBIT E**  
**PHASE I ENVIRONMENTAL SITE ASSESSMENT**



# Phase I Environmental Site Assessment Report

## Hughes Property Adams County, IL



Prepared for Magnolia Land Partners, LLC  
Philadelphia – Chicago  
[info@mitigation.org](mailto:info@mitigation.org)

Report by John Lovseth, Ph.D., Certified Forester  
[john.lovseth@principia.edu](mailto:john.lovseth@principia.edu)

1 Maybeck Place  
Elsah, Illinois 62028  
August 11, 2020



## **1. Executive Summary**

Dr. John Lovseth, Certified Forester performed a Phase I ESA of the Hughes property in Adams County, IL. One REC was identified during the assessment with the discovery of a fuel tank but there was no indication that there was fuel in the tank or nearby. There was no evidence of spills or contamination. One de minimis conditions was identified, but the impact of this conditions was deemed to be insignificant with regards to the proposed conservation project. Based on the assessment performed and the goals of the proposed conservation project, the inspector finds no reason to disqualify the inspected parcel from development as a conservation area.

## **2. Introduction**

### **Purpose for Performing Phase I ESA**

The purposes of this ESA were to:

1. Evaluate historical and adjacent land usage to identify conditions that could potentially impact the environmental status of the identified sites
2. Evaluate the potential for on-site and off-site contamination
3. Conduct “all appropriate inquiry” as defined by ASTM Standard E2247-16
4. Identify Recognized Environmental Concerns (REC) and provide a professional opinion as to the potential for environmental impact

### **Scope of Services**

The ESA was conducted in accordance with ASTM E2247-16 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property and EPA standards for All Appropriate Inquiry. The assessment was performed by an individual that qualifies as an environmental professional, as defined by 40 CFR §312.10.

ASTM E2247-16 states:

4.5.1 Uncertainty Not Eliminated—No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a property, and this practice recognizes reasonable limits of time and cost.

4.5.2 Not Exhaustive—All appropriate inquiries does not mean an exhaustive assessment of a property. There is a point at which the cost of information obtained or the time required to gather it outweighs the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. One of the purposes of this practice is to identify a balance between the competing goals of limiting the costs and time demands inherent in performing an environmental site assessment and the reduction of uncertainty about unknown conditions resulting from additional information.

Dr. John Lovseth, Certified Forester performed an ASTM Standard E2247-16 Phase I Environmental Site Assessment of the Hughes property in Adams County, IL.

### **Limitations**

The ESA involved on-site reconnaissance of the identified parcels of land along with adjacent properties, as well as a review of regulatory and historical information as deemed necessary in accordance with ASTM and EPA standards. No non-scope considerations such as inspection of structures for mold, asbestos, or radon were investigated.

The conclusions presented in this report are based upon a level of investigation deemed to be sufficient by ASTM standards. The intent of this assessment is to identify REC's and other potential conditions that may impact the environmental status of the area; however, no assessment can completely eliminate uncertainty regarding the potential for environmental

conditions in connection with the site or adjacent properties. John Lovseth is not liable for future discovery of hazards that may impact human or environmental health.

Observations and conclusions regarding environmental conditions at the identified site are necessarily limited to conditions observed and/or materials reviewed at the time of the assessment. It is beyond the scope of this assessment to the actual presence, degree, or extent of any contamination. This would require additional exploratory work, including sampling and laboratory analysis.

ASTM E2247-16 defines a recognized environmental condition as “the presence or likely presence of any *hazardous substances* or *petroleum products* in, on, or at a *property*: (1) due to any *release* to the *environment*; (2) under conditions indicative of a *release* to the *environment*; or (3) under conditions that pose a *material threat* of a future *release* to the *environment*.”

A “de minimis condition” is defined in this report as any condition that generally does not represent a threat to human health or the environment, will not affect the success of the parcels as bat mitigation sites, and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

This report is provided for the exclusive use of Magnolia Land Partners. It is not intended to be used or relied upon in connection with other projects or by other unidentified third parties. The use of this report by any undesignated third party will be at that party’s sole risk, and the inspector disclaims liability for any such use or reliance.

### 3. Site Description and Information

#### *Location*

The assessed area consists of approximately 120 acres located N 1353<sup>rd</sup> Lane in Adams County, IL. The parcel's approximate centerpoint is located at 39.950° north, 91.014° west (WGS 84).

#### *Physical Setting*

The Hughes forest is found in the Interior River Valleys and Hills ecoregion (U.S. Environmental Protection Agency) and the Central U.S. Hardwood Forest ecoregion (World Wildlife Fund). The Hughes property is found in Galesburg Plain section of Adams County which is composed of glacial till plains and moraines with a loess soil cap. As with most forest land in the Midwest, the forest exists on steeper slopes, ranging from 10 to 60 percent. The most common soil types at the Hughes property forested area include Lindley loam (18 to 35% slopes), Wirt silt loam (0 to 2% slopes) and Keswick loam (18 to 25% slopes). The total annual precipitation is 39.7 inches with 72% falling during the growing season. Average snowfall is 23.2 inches. The average windspeed is greatest during the winter months at 12 to 14 mph. The prevailing wind direction is from the south (Tegeler 2003).

#### *Current Use*

The parcel contains vacant forested land, corn crops, food plots, old fields, hunting stands, and two structures.

#### *Historical Use*

A review of historical records and aerial photographs (<http://maps.isgs.illinois.edu/ilhap/>) was conducted to determine past uses of the identified parcel. According to the records, the property was primarily agricultural land used to produce crops or as food plots, and forested land used for recreation and timber extraction.

#### *Records Review*

A review of regulatory databases was conducted to determine if the site or any adjacent areas were considered areas of environmental concern. The databases searched include:

**Federal NPL:** The Federal National Priorities List

(<https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=33cebcd1b4c3a8b51d416956c41f1>) is a subset of Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) that identifies “superfund” sites that have documented incidents.

**Federal Delisted NPL:** The Delisted NPL (<https://www.epa.gov/superfund/deleted-national-priorities-list-npl-sites-state#IL>) identifies sites previously listed on the NPL where no further response is appropriate.

**Federal CERCLIS:**

([https://enviro.epa.gov/enviro/efsystemquery.sems?fac\\_search=primary\\_name&fac\\_value=&fac\\_search\\_type=Beginning&postal\\_code=&location\\_address=&add\\_search\\_type=Beginning2&city\\_name=&county\\_name=Adams+&state\\_code=IL+&program\\_search=multi&report=basic&page\\_no=1&output\\_sql\\_switch=TRUE&database\\_type=SEMS](https://enviro.epa.gov/enviro/efsystemquery.sems?fac_search=primary_name&fac_value=&fac_search_type=Beginning&postal_code=&location_address=&add_search_type=Beginning2&city_name=&county_name=Adams+&state_code=IL+&program_search=multi&report=basic&page_no=1&output_sql_switch=TRUE&database_type=SEMS))

CERCLIS contains data on potential hazardous waste sites that have been reported to the United States Environmental Protection Agency (USEPA). CERCLIS contains sites that are either proposed to or on the NPL and sites which are in the screening and assessment phase for possible inclusion on the NPL.

**Federal CERCLIS No Further Remedial Action Planned (NFRAP):** CERCLIS sites designated as NFRAP have been removed from CERCLIS.

(<https://environmental.netonline.com/state/IL/county/adams/nfrap/> )

NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require federal Superfund action or NPL consideration.

**Federal Corrective Action Report (CORRACTS):**

(<https://www.epa.gov/hwcorrectiveactionsites/contact-information-corrective-action-hazardous-waste-clean-ups-illinois>)

CORRACTS identifies hazardous waste handlers that have been subject to corrective action under Resource Conservation and Recovery Act (RCRA).

**Federal Resource Conservation and Recovery Information System (RCRIS) – Treatment, Storage and Disposal (TSD) Facilities:**

([https://enviro.epa.gov/enviro/efsystemquery.rcrainfo?fac\\_search=primary\\_name&fac\\_value=&fac\\_search\\_type=Beginning+With&postal\\_code=&location\\_address=&add\\_search\\_type=Beginning+With&city\\_name=&county\\_name=Adams+&state\\_code=IL&naics\\_type=Equal+to&naics\\_to=&univ\\_search=0&univA=FULL\\_ENFORCEMENT&univB=LQG&LIBS=&proc\\_group=0&procname=&act\\_inact\\_opt=1&program\\_search=2&report=1&page\\_no=1&output\\_sql\\_switch=TRUE&database\\_type=RCRAINFO](https://enviro.epa.gov/enviro/efsystemquery.rcrainfo?fac_search=primary_name&fac_value=&fac_search_type=Beginning+With&postal_code=&location_address=&add_search_type=Beginning+With&city_name=&county_name=Adams+&state_code=IL&naics_type=Equal+to&naics_to=&univ_search=0&univA=FULL_ENFORCEMENT&univB=LQG&LIBS=&proc_group=0&procname=&act_inact_opt=1&program_search=2&report=1&page_no=1&output_sql_switch=TRUE&database_type=RCRAINFO))

RCRIS identifies facilities that treat, store or dispose of hazardous wastes as defined by the RCRA. TSDs treat, store or dispose of hazardous waste.

**Federal RCRIS – Generators:**

([https://enviro.epa.gov/enviro/efsystemquery.multisystem?fac\\_search=primary\\_name&fac\\_value=&fac\\_search\\_type=Beginning+With&postal\\_code=&location\\_address=&add\\_search\\_type=Beginning+With&city\\_name=Clayton&county\\_name=Adams&state\\_code=IL&TribalLand=0&TribeType=selectTribeALL&selectTribe=noselect&tribedistance1=onLand&sic\\_type=Equal+to&sic\\_code\\_to=&naics\\_type=Equal+to&naics\\_to=&chem\\_name=&chem\\_search=Beginning+With&cas\\_num=&page\\_no=1&output\\_sql\\_switch=FALSE&report=1&database\\_type=Multisystem](https://enviro.epa.gov/enviro/efsystemquery.multisystem?fac_search=primary_name&fac_value=&fac_search_type=Beginning+With&postal_code=&location_address=&add_search_type=Beginning+With&city_name=Clayton&county_name=Adams&state_code=IL&TribalLand=0&TribeType=selectTribeALL&selectTribe=noselect&tribedistance1=onLand&sic_type=Equal+to&sic_code_to=&naics_type=Equal+to&naics_to=&chem_name=&chem_search=Beginning+With&cas_num=&page_no=1&output_sql_switch=FALSE&report=1&database_type=Multisystem))

RCRIS identifies facilities that generate hazardous wastes as defined by the RCRA. Conditionally exempt small quantity generators (CESQGs) generate less than 100 kilograms of hazardous waste, or less than 1 kilogram of acutely hazardous waste, per month. Small quantity generators (SQGs) generate between 100 and 1,000 kilograms of hazardous waste per month. Large quantity generators (LQGs) generate more than 1,000 kilograms of hazardous waste or more than 1 kilogram of acutely hazardous waste per month.



### **Leaking Underground Storage Unit (LUST) List:**

(<https://www2.illinois.gov/epa/topics/cleanup-programs/bol-database/Pages/leaking-ust.aspx>) The LUST list is a record of reported leaking underground storage units. It may also identify properties that have had soil and/or groundwater contamination associated with documented releases from aboveground storage tanks, surface spills and other sources.

Neither the identified site nor any properties in the vicinity of the site were identified by the databases searched.

#### *On-Site Inspection*

A walking inspection was performed on 8/11/20. The primary habitat type was oak-hickory broadleaf deciduous forest. Steep slopes were noted in several locations, primarily on the sides of ravines leading down to streams. A number of streams of varying sizes were noted.

No indicators of contamination due to agricultural activities were noted.

Low levels of invasive species such as multiflora rose, bush honeysuckle, tree-of-heaven, and common buckthorn were noted.

No odors, stressed vegetation, or any other indicators of contamination were noted at the time.

Two storage tanks were noted, one near the back of the garage and one on the north side of the pond at the top of the hill. The tank near the garage looked like it was or could be used for fuel, but was inactive. The other tank looked like a water tank.

## **4. Findings and Recommendations**

The inspector identified a potential REC following assessment:

The tank at the rear of the garage appeared empty and out of use, but if found to contain fuel, it would require adjustments to be properly installed and contained. There was no indication that there was fuel in the tank or nearby. There was no evidence of spills or contamination.

The following de minimis condition was identified:

*Invasive plant species growth:* Non-native invasive plant species growth of multiflora rose (*Rosa multiflora*), Common buckthorn (*Rhamnus cathartica*), Tree-of-heaven (*Ailanthus altissima*), and bush honeysuckle (*Lonicera maackii*) was noted in several instances across the site in low concentrations. This condition poses no immediate human health hazard.

Based on the assessment performed and the goals of the proposed conservation project, the inspector finds no reason to disqualify the inspected parcel from development as a conservation area.

# EXHIBIT F

## BIOLOGICAL RESOURCE SURVEYS

### Contents

- F-1. Acoustic Survey Report
- F-2. Forested Habitat Assessment



**EXHIBIT F-1**  
**ACOUSTIC SURVEY REPORT**





**ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.**

3851 S. Jefferson Avenue  
Springfield, MO 65807  
Phone: 513-451-1777 Fax: 513-451-3321

Pesi 1615

24 August 2020

Mr. Mark Bernstein  
Magnolia Land Partners  
166 W. Washington Street, Suite 700  
Chicago, Illinois 60612

**RE: ACOUSTIC ANALYSIS OF A POTENTIAL MITIGATION SITE IN ADAMS COUNTY, ILLINOIS**

Dear Mr. Bernstein:

Environmental Solutions & Innovations, Inc. (ESI) was retained by Magnolia Land Partners (Magnolia) to conduct bat acoustic analysis on a potential mitigation site in Adams County, Illinois. The data was collected by Magnolia, near a pond on site, for nine nights (1-9 July 2020). The data was made available to ESI in full spectrum format. The data was analyzed in Kaleidoscope Pro (v5.9.1) using the 5.1.0 classifiers on neutral setting (0). The output data was compiled for the number of calls present (Table 1), and the maximum likelihood output (MLE), which is a statistical method used to determine the probability of species presence (Table 2). MLE outputs are significant when the value is  $\leq 0.05$  or "0". Calls were then visually vetted for verification by a qualified bat acoustic echolocation specialist. A resume of the acoustic specialist is provided in Appendix A.

Table 1. Kaleidoscope Pro output of the number of call files classified to species.

Date	EPFU	LABO	LACI	LANO	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	No ID
1-Jul	14	11	17	6	0	155	6	182	18	7	496
2-Jul	25	14	37	1	1	300	1	326	8	31	344
3-Jul	34	28	15	3	2	421	0	237	33	32	344
4-Jul	62	33	14	3	7	165	0	162	59	19	278
5-Jul	24	38	16	4	1	354	0	155	62	0	382
6-Jul	27	29	19	3	3	208	0	259	24	9	380
7-Jul	22	32	8	1	22	366	1	177	16	69	465
8-Jul	34	34	21	2	28	297	0	70	15	169	292
9-Jul	2	2	0	0	6	61	0	72	0	10	149



## ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

3851 S. Jefferson Avenue  
 Springfield, MO 65807  
 Phone: 513-451-1777 Fax: 513-451-3321

Date	EPFU	LABO	LACI	LANO	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	No ID
<b>Total/Species</b>	<b>244</b>	<b>221</b>	<b>147</b>	<b>23</b>	<b>70</b>	<b>2,327</b>	<b>8</b>	<b>1,640</b>	<b>235</b>	<b>346</b>	<b>3,130</b>

**EPFU**=*Eptesicus fuscus* (big brown bat); **LABO**=*Lasiurus borealis* (eastern red bat); **LACI**= *Lasiurus cinereus* (hoary bat); **LANO**=*Lasionycteris noctivagans* (silvered-haired bat); **MYGR**=*Myotis grisescens* (gray bat); **MYLU**=*Myotis lucifugus* (little brown bat); **MYSE**=*Myotis septentrionalis* (northern long-eared bat); **MYSO**=*Indiana bat* (Myotis sodalis) **NYHU**=*Nycticeius humeralis* (evening bat); **PESU**=*Perimyotis subflavus* (tri-colored bat)

Table 2. MLE output of the likelihood of nightly species presence.

Date	EPFU	LABO	LACI	LANO	MYGR	MYLU	MYSE	MYSO	NYHU	PESU
1-Jul	6E-07	0.250831	0	0.955626	1	0	0.983392	0	7E-07	0.001252
2-Jul	0	0.584447	0	1	1	0	1	0	0.026957	0
3-Jul	0	0.027328	0	1	0.797005	0	1	0	0	0
4-Jul	0	0	4.05E-05	1	2.3E-06	0	1	0	0	0
5-Jul	0	2.14E-05	0	1	1	0	1	0	0	1
6-Jul	0	5E-07	0	1	0.065959	0	1	0	3.81E-05	0.001329
7-Jul	0	0.000183	0.000166	1	0	0	1	0	0.027992	0
8-Jul	0	5E-07	0	1	0	0	1	0	0.231424	0
9-Jul	0.017886	1	1	1	1E-07	0	1	0	1	0

**EPFU**=*Eptesicus fuscus* (big brown bat); **LABO**=*Lasiurus borealis* (eastern red bat); **LACI**= *Lasiurus cinereus* (hoary bat); **LANO**=*Lasionycteris noctivagans* (silvered-haired bat); **MYGR**=*Myotis grisescens* (gray bat); **MYLU**=*Myotis lucifugus* (little brown bat); **MYSE**=*Myotis septentrionalis* (northern long-eared bat); **MYSO**=*Indiana bat* (Myotis sodalis) **NYHU**=*Nycticeius humeralis* (evening bat); **PESU**=*Perimyotis subflavus* (tri-colored bat)

Kaleidoscope Pro found significant presence of the federally endangered Indiana bat (*Myotis sodalis*) for every night of deployment, and the federally endangered gray bat (*Myotis grisescens*) on five nights of deployment.

Visual vetting confirmed calls consistent with Indiana bat presence on every night of deployment (Table 3). Gray bats were confirmed on five nights. Additionally, calls consistent with little brown bats (*Myotis lucifugus*) were confirmed on every night of deployment, as were tri-colored bats (*Perimyotis subflavus*). While stationary acoustic results cannot infer abundance, a high amount of Indiana bat activity was observed at the site, nightly.

Table 3. Presence (P) and likely absence (A) of federally listed or candidate species.

Date	MYGR	MYLU	MYSE	MYSO	PESU
1-Jul	A	P	A	P	P
2-Jul	P	P	A	P	P
3-Jul	P	A	A	P	P



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**ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.**

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3851 S. Jefferson Avenue  
Springfield, MO 65807  
Phone: 513-451-1777 Fax: 513-451-3321

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Date	MYGR	MYLU	MYSE	MYSO	PESU
4-Jul	P	P	A	P	P
5-Jul	A	P	A	P	P
6-Jul	A	P	A	P	P
7-Jul	A	P	A	P	P
8-Jul	P	P	A	P	P
9-Jul	P	P	A	P	P

Please let us know if there are any questions.  
Sincerely,

Patrick Moore, CWB  
[pmoore@envsi.com](mailto:pmoore@envsi.com)  
Enclosures

**EXHIBIT F-2**  
**FORESTED HABITAT ASSESSMENT**



# Forest Description for the Hughes Property

Address: 2595 N. 1353<sup>RD</sup> Lane, Clayton, IL 62324  
Adams County, Illinois

Surveyed 8/11/2020



Prepared for Magnolia Land Partners, LLC  
Philadelphia – Chicago  
[info@mitigation.org](mailto:info@mitigation.org)

Report by John Lovseth, Ph.D., Certified Forester  
[john.lovseth@principia.edu](mailto:john.lovseth@principia.edu)

1 Maybeck Place  
Elsah, Illinois 62028  
August 12, 2020





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## Methods

The purpose of this forest description is to provide a general overview of forest conditions including stand composition and structure, forest disturbances, invasive species, and potential suitability for bat habitat. Forest inventory data was collected at a light sampling intensity to provide a quantitative perspective alongside a narrative describing the observations.

On February 28, 2020, the Hughes property was surveyed using a 20 BAF prism in 7 plots randomly distributed throughout the forested area. Sampling plot locations were created using SilviaTerra's Canopy online software and uploaded to a mobile device using the Plot Hound application. For the sampling parameters, the estimated variation was set to 0.25, preferred error at 0.1, and preferred confidence at 0.85. While these settings provide a reasonable overview of forest conditions, a more thorough tree inventory would be required before any major management intervention occurred, or if the landowner/interested parties required greater precision in determining forest metrics. In the forest, trees were identified and measured at DBH with a Biltmore stick and recorded using Plot Hound. The forest inventory data was uploaded to NED-3, a Forest Service software used for calculating forest metrics.

The forest was photographed at random intervals to provide a visual account of current stand structure and condition. The survey occurred during the growing season which provides opportunity to see the floristic diversity of the understory more readily.

## Site Description

The Hughes forest is found in the Interior River Valleys and Hills ecoregion (U.S. Environmental Protection Agency) and the Central U.S. Hardwood Forest ecoregion (World Wildlife Fund). The Hughes property is found in Galesburg Plain section of Adams County which is composed of glacial till plains and moraines with a loess soil cap. As with most forest land in the Midwest, the forest exists on steeper slopes, ranging from 10 to 60 percent. The most common soil types at the Hughes property forested area include Lindley loam (18 to 35% slopes), Wirt silt loam (0 to 2% slopes) and Keswick loam (18 to 25% slopes). The total annual precipitation is 39.7 inches with 72% falling during the growing season. Average snowfall is 23.2 inches. The average windspeed is greatest during the winter months at 12 to 14 mph. The prevailing wind direction is from the south (Tegeler 2003).

## Forest Overview

The Hughes forest is a predominantly an oak-hickory forest. White oak, post oak, and northern red oak are the most common oaks and shagbark hickory represented the most hickories. The forest has minor amounts of mesophytic species, such as sugar maple, but has a numerous of small elms and minor amounts of hackberry. The average tree size indicates that this forest is relatively young, but well established and ready to grow.

## Site Measures

Table 1: Forest metrics overview.

Variable	Value
Stand Area (ac.)	91.0
Plot Cluster Count (count)	7
Canopy Closure (%)	41
Trees Per Unit Area (stems/ac.)	193.58
Number of Plot Size Classes (count)	3
Basal Area (sq.ft./ac.)	47.1
Relative Density (%)	41

## Stand Characteristics

Table 2: General stand information.

Variable	Value
Land Cover Type	Broadleaf forest
Forest Type	other hardwoods
Site Index Species	northern red oak
Site Index	60
Size Class	small sawtimber
Year of Origin (year)	1926

Table 3: Basal area and stem density.

Species	Basal Area (sq.ft./ac.)	Relative Dominance (%)	Stems/area (stems/ac.)
northern red oak	8.6	18.18	20.1
post oak	5.7	12.12	4.2
American elm	4.3	9.09	32.2
white oak	4.3	9.09	2.1
American basswood	4.3	9.09	18.2
black walnut	2.9	6.06	2.5
hophornbeam	2.9	6.06	26.8
shagbark hickory	2.9	6.06	29.8
shingle oak	2.9	6.06	17.8

<b>boxelder</b>	1.4	3.03	2.6
<b>black cherry</b>	1.4	3.03	3.2
<b>white ash</b>	1.4	3.03	1.5
<b>sugar maple</b>	1.4	3.03	0.2
<b>common hackberry</b>	1.4	3.03	29.1
<b>honeylocust</b>	1.4	3.03	3.2

### Species Occurrence and Abundance

The importance value (IV) of a species provides a metric for estimating the overall role a forest tree species plays in the ecosystem. IV is calculated by examining the number of individuals, their distribution across the landscape, and their size. For example, trees with low density but high dominance will be the few giants of the forest, like the white oaks. Trees with high density but low dominance are often associated with the next cohort, for example the American elms. The table below is organized from highest to lowest IV.

*Table 4: A table of species' importance value.*

	<b>Density</b>	<b>Rel Density</b>	<b>Frequency</b>	<b>Rel Frequency</b>	<b>Dominance</b>	<b>Rel Dominance</b>	<b>Importance Value</b>
<b>northern red oak</b>	20.1	10.38	57.14	18.18	8.6	18.18	15.58
<b>American elm</b>	32.2	16.63	42.86	13.64	4.3	9.09	13.12
<b>shagbark hickory</b>	29.8	15.37	28.57	9.09	2.9	6.06	10.17
<b>hophornbeam</b>	26.8	13.87	28.57	9.09	2.9	6.06	9.67
<b>American basswood</b>	18.2	9.39	14.29	4.55	4.3	9.09	7.68
<b>common hackberry</b>	29.1	15.03	14.29	4.55	1.4	3.03	7.54
<b>shingle oak</b>	17.8	9.17	14.29	4.55	2.9	6.06	6.59
<b>post oak</b>	4.2	2.17	14.29	4.55	5.7	12.12	6.28
<b>white oak</b>	2.1	1.09	14.29	4.55	4.3	9.09	4.91
<b>black walnut</b>	2.5	1.28	14.29	4.55	2.9	6.06	3.96
<b>honeylocust</b>	3.2	1.67	14.29	4.55	1.4	3.03	3.08
<b>black cherry</b>	3.2	1.67	14.29	4.55	1.4	3.03	3.08
<b>boxelder</b>	2.6	1.35	14.29	4.55	1.4	3.03	2.98
<b>white ash</b>	1.5	0.80	14.29	4.55	1.4	3.03	2.79
<b>sugar maple</b>	0.2	0.12	14.29	4.55	1.4	3.03	2.56

<b>Totals</b>	193.58	100.00	314.29	100.00	47.14	100.00	100.00
---------------	--------	--------	--------	--------	-------	--------	--------

Description of Table Items:

- **Density** = Mean number of stems per acre, based on stems counted in each plot cluster.
- **Relative (Rel) Density** = Mean relative proportion or abundance of stems per acre by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plot clusters where this species was observed, based on the number of plot clusters where species occurred divided by total number of plot clusters.
- **Relative (Rel) Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Dominance** = Mean basal area in square feet. The basal area of all stems or individuals of a given species.
- **Relative (Rel) Dominance** = Relative dominance, based on individual species dominance divided by the total of all species dominances.
- **Importance Value** = A value computed by adding together the relative values and dividing by the number of non-zero relative values.

## Fire History

There was no evidence of fire on the property. However, historical records indicate that fire was a foundational driver that influenced the current forest composition and structure. The reintroduction of low to moderate-intensity surface fires could reduce mesophytic species (such as the elm and hackberry) and reinvigorate the ground flora, herbaceous forbs and grasses. Prescribe fire could also assist with the control of invasive species. These prescribed fires could be conducted during the fall or winter months.

## Logging History

Stumps from the last timber harvest, roughly 10 to 15 years ago, were still visible on the property. These management activities likely reduced the speed of forest transition to mesophytic species (especially maple) but may have released the non-oaks and hickories to advance into the canopy. Nevertheless, the timber harvest created growing space for the second cohort of oaks, particularly white oaks. This forest will likely keep a component of oak-hickory for decades to come.

## Invasive Species

The Hughes site contained trace amounts of bush honeysuckle (*Lonicera maackii*) on the edge of the forest, but was not detected within the forest.

Multiflora rose (*Rosa multiflora*) was found in several locations, particularly near stumps.

Common buckthorn (*Rhamnus cathartica*) trees were observed in minor amounts in the forest.

Tree-of-heaven (*Ailanthus altissima*) was found near the buildings.

Other common invasive species in the Midwest such as garlic mustard, oriental bittersweet, Japanese honeysuckle, Japanese chaff flower, Japanese stiltgrass, were not observed.

## Bat Habitat Analysis

Indiana bat maternity roost habitat preferences in the Midwest are characterized by proximity near a forest edge, large diameter trees with crowns in the upper strata of the forest canopy, dead and alive shagbark hickories, dead standing trees of multiple other species, and proximity to water sources (Schroder, Ekanayake & Romano 2017). In Schroder et al. 2019 study, Indiana bats selected red oak, elm, black walnut, black oak, and black locust. These results suggest the Hughes property has very high bat suitability since there is an average of 29.8 shagbark hickories with a basal area of 9.09 square feet per acre, 20.1 red oaks with a basal area of 8.6 square feet per acre, and 32.2 American elms with a basal area of 4.3 square feet per acre. There were numerous snags (dead standing trees) observed, but not captured in the survey. Other studies have noted the importance of white oaks in Indian bat habitat (Callahan, Drobney, & Clawson 1997, Menzel et al. 2005). The forest has an average of 2.1 white oaks with a basal area of 2.9 square feet per acre. The northern long-eared bat has demonstrated a preference for large cavities in snags, black locust, among other trees with old growth characteristics (Menzel 2002). The Hughes site had numerous water sources including a man-made pond and ephemeral and perennial streams. A large stream bounds the southern border of the property. The combination of snags, known bat preferred tree species, and proximity to water sources suggests that this site would make suitable bat habitat for the Indian bat and the northern long eared bat.

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Photographs of Hughes Property



*Figure 1: Field edge.*



*Figure 2: Fields planted with food plots for deer and turkey.*





*Figure 3: Ephemeral water sources within the forest.*



*Figure 4: Hillside full of Christmas ferns.*



*Figure 5: Common buckthorn found in minor numbers.*



*Figure 6: Harvested trees allow the next cohort to advance.*



*Figure 7: Generally well drained upland sites, but here is a flat bottomland with unique species, such as this river birch.*



*Figure 8: Many of the small diameter trees were elms, but many were also oaks and hickories, thus ensuring a seral stability.*



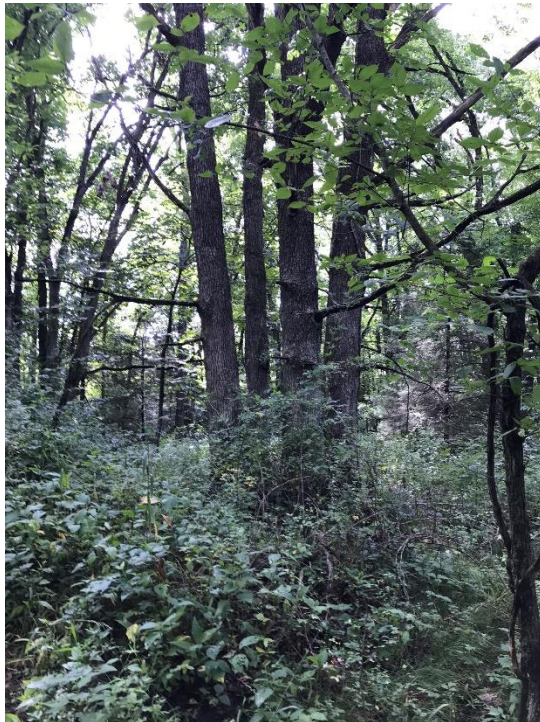
*Figure 9: Numerous shagbark hickories.*



*Figure 10: An access trail.*



*Figure 11: Mature trees with large crowns found on the edge of fields.*



*Figure 12: Mid-sized trees have a long future ahead of them.*



*Figure 13: A mixture of open understory and new growth.*



*Figure 14: Stumps appeared to be 10 to 15 years old.*



*Figure 15: Looking west, at the southern edge of the Hughes property.*



*Figure 16: Looking north, center of the property.*



*Figure 17: Looking south at the developed portion of the property.*



*Figure 18: Looking southeast from the center of the property.*





*Figure 19: Perhaps a coal seam on the southern edge of the property.*



*Figure 20: Creek crossing.*



*Figure 21: Unknown contents in container.*



*Figure 22: Fuel container.*



*Figure 23: Ailanthus on the edges.*



*Figure 24: Maiden hair fern in the closed canopy.*



*Figure 25: Multiflora rose was present in limited numbers.*



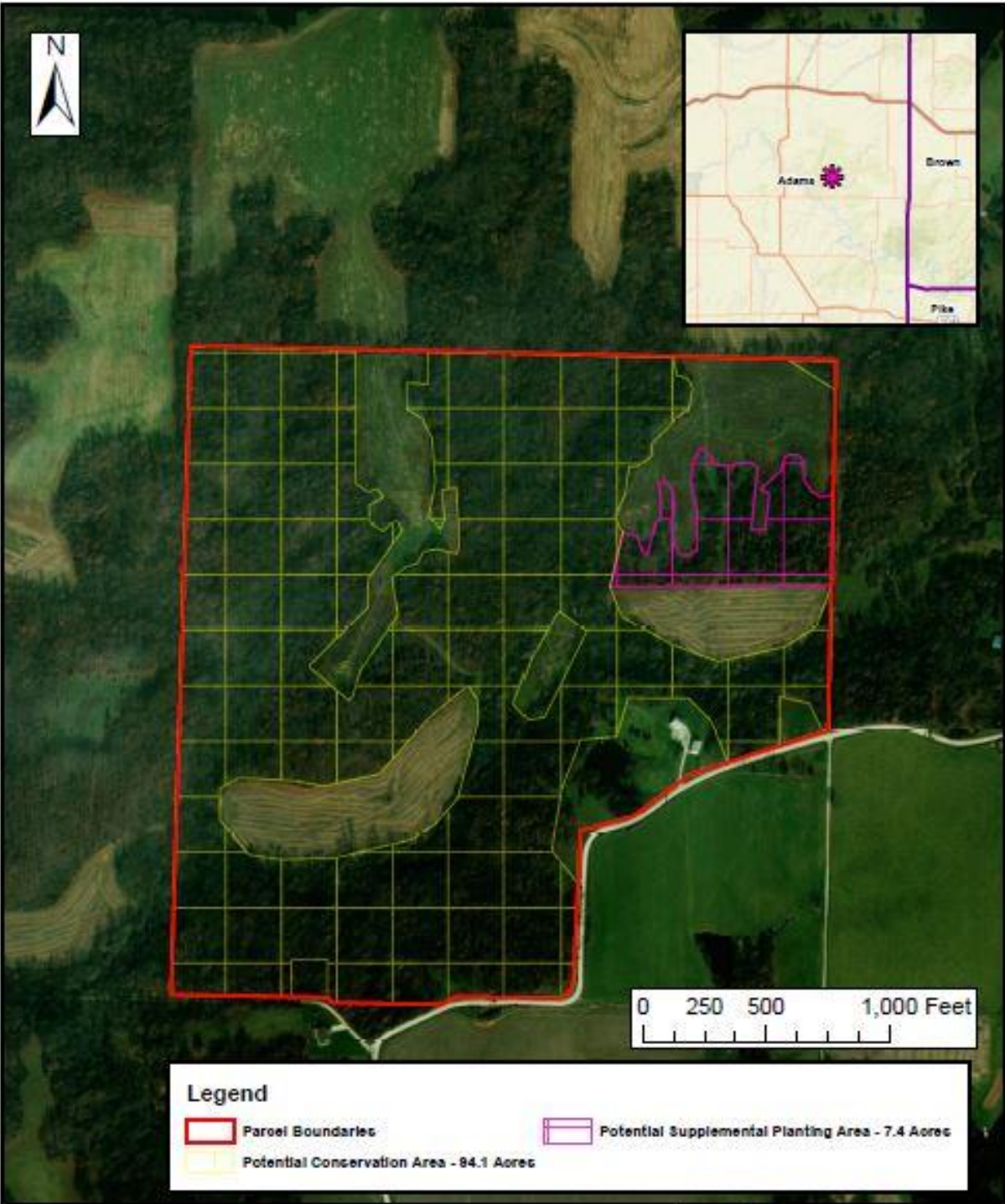
*Figure 26: Bush honeysuckle was rare but found on the edge.*






*Figure 27: Significant vegetation recovery in disturbed sites.*



*Figure 28: Deer blind in field near center of property.*



**Legend**

 Parcel Boundaries	 Potential Supplemental Planting Area - 7.4 Acres
 Potential Conservation Area - 84.1 Acres	

<p><b>Potential Conservation Area</b></p> <p>Hughes Property Adams County, IL</p>	 <b>Magnolia</b>
	<p>Date: May 2020</p> <p>Source: USGS, Esri</p>

## **EXHIBIT G**

### **Other Documentation, Permits, Amendments, or Revisions**



**EXHIBIT G-1**

**Bat Mitigation Parcel Selection Framework for HCPs in Illinois  
Checklist**





A. ALL MITIGATION ACRES	MET	NOT MET	EXPLANATION
Mitigation parcel is located in a HUC-12 watershed that contains a record of covered bat species from a mist net survey, manually-vetted acoustic dataset, or summer fatality event within the last 10 years.	✓		Records provided by USFWS confirm the Mitigation site is within an occupied HUC 12
Mitigation parcel connects with other suitable habitat by a shared border, a forested corridor, or being located within 1,000 feet of other suitable habitat.	✓		There is suitable forested habitat on all sides of the Mitigation Site
Mitigation parcel is unencumbered by existing conservation easement or comparable protective mechanism, and does not involve the use of federal dollars.	✓		While portions of the parcel are encumbered by CRP agreements, all mitigation acreage remains free of encumbrances
B. PRESERVATION ACRES	MET	NOT MET	EXPLANATION
Parcel contains suitable habitat for all covered species.	✓		A habitat assessment confirmed that the Mitigation Site contains suitable habitat for the Target Species
Parcel has a credible threat to the integrity of the habitat from impacts such as logging, mining, development, conversion, or other controllable factor that would result in a loss of value and suitability of the habitat for covered bat species.	✓		Deforestation from logging and clearing for agricultural use as well as residential development have been identified as potential threats to the preserved habitat on the Mitigation Site
C. RESTORATION ACRES	MET	NOT MET	EXPLANATION
Restoration parcel is connected to suitable habitat for all covered species. Connected means that the parcel either shares a border with suitable habitat, is less than 1,000 feet from suitable habitat, or is connected to suitable habitat by a forested corridor.	✓		The restoration acres on the Mitigation Site are contiguous with the preservation acres
Restoration parcel is near a permanent water source. (Add references to suitable habitat descriptions here. )	✓		An unnamed perennial stream flows adjacent to the restoration acres, and small perennial streams were noted within the restoration acres
Restoration parcel contains severely degraded or cultivated habitat that has the potential to be restored to suitable forested habitat through intense management or planting.	✓		The restoration acres contain immature hardwood trees that will be shaded out by undesirable tree species if no management actions are taken
Restoration parcel will not involve the conversion of existing non-forested native or natural habitats, such as prairie or non-forested wetlands.	✓		The restoration acres have been degraded by agricultural use, no native habitats will be altered by the management actions proposed

ALL MITIGATION ACRES	MET	NOT MET	EXPLANATION
Mitigation parcel is in the same Illinois Natural Division as the project and potential take of covered species.		✓	The project is located in the Grand Prairie Division, while the Mitigation Site is located in the Western Forest-Prairie Division
If mitigation parcel is not in the same Illinois Natural Division as the project, it is in an adjacent division.	✓		The Grand Prairie and Western Forest-Prairie Divisions area adjacent to each other
Restoration parcel (or the restoration portion of a parcel) fills in suitable habitat gaps. In other words, the parcel connects two suitable habitat patches thereby reducing forested habitat fragmentation.	✓		The restoration acres of the Mitigation Parcel reduce habitat fragmentation in a highly fragmented area
Parcel fills in protected habitat gaps on the landscape. For example, parcel shares a border with protected lands or other protected lands exist within the watershed.	✓		There is protected land in the same watershed as the Mitigation Site
Parcel is within a conservation focal area designated by a state, federal, or other established conservation entity.	✓		The Mitigation Site is proximate to the Siloam Springs Conservation Opportunity Area
Parcel contains both suitable habitat and opportunities for new restoration.	✓		The Mitigation Site contains both preservation and restoration components
Parcel contains high quality forested habitat. This may include a diverse tree species community, evidence of natural forest regeneration, and very low to no occurrence of invasive species.	✓		Negligible levels of invasive species were noted in the Mitigation Site, and in the preservation acres a high number of mature trees of desired species such as shagbark hickory and white oak were noted
Parcel is within 50 miles of a documented northern long-eared bat hibernacula feature.	✓		The Mitigation Site is within 50 miles of 2 documented NLEB hibernacula features, according to data provided by USFWS
Parcel contains rock outcrops or other potential bat hibernacula feature.		✓	No potential hibernacula features were noted on the Mitigation Site
Parcel is within swarming distance of a documented bat hibernacula feature.	✓		The Mitigation Site is within 15 miles of a documented IBAT and NLEB hibernaculum, within the range typically considered to be swarming distance
Parcel is expected to benefit multiple species of concern or species of greatest conservation need as designated by state, federal, or other conservation entity.	✓		Acoustic monitoring performed in 2020 detected the presence of the federally endangered grey bat and the species of concern little brown bat