Black-billed Cuckoo Conservation Plan - DRAFT for the Sugar Creek Wind Project Logan County, Illinois



Sugar Creek Wind One LLC

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July 2024

TABLE OF CONTENTS

1	INTF	RODUCTION AND BACKGROUND	1
	1.1	Project Description	1
2	BIOL	_OGICAL DATA OF AFFECTED SPECIES	2
	2.1	Black-billed Cuckoo	2
	2.1.1	Migration	2
	2.1.2	2 Breeding	2
	2.1.3	B Post-Breeding Dispersal and Lifespan	4
	2.1.4	Population Status	4
	2.1.5	5 Habitat Requirements	8
	2.1.6	S Species Status in the Project Area	8
3	DES	CRIPTION OF PROJECT ACTIVITIES	10
	3.1	Activities with Potential for Incidental Take	10
	3.2	Timeline	10
	3.3	Other Permitting Review	11
4	POT	ENTIAL EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES	11
	4.1	Spatial Patterns	11
	4.2	Temporal Patterns	12
	4.3	Amount of Habitat Affected	12
	4.4	Incidental Take of Individuals	12
	4.5	Management of the Affected Area	15
	4.6	Measures to Minimize and Mitigate Effects	15
	4.6.1	Avoidance and Minimization – Project Design and Operation	15
	4.6.2	2 Mitigation	16
	4.7	Monitoring	16
	4.7.1	Intensive Carcass Monitoring	16
	4.7.2	2 Incidental Monitoring	17
	4.8	Adaptive Management	17
	4.8.1	Adaptive Management Goals	17
	4.8.2	2 Adaptive Management Plan	17
	4.9	Verification of Adequate Funding	20
5	ALTI	ERNATIVES CONSIDERED	20
	5.1	No Action Alternative	20

ł	5.2	Construction and Operation Alternatives	20
6	EFF	ECTS DETERMINATION	20
7	IMPI	LEMENTING AGREEMENT	21
8	REF	ERENCES	21

LIST OF TABLES

Table 1.	Black-billed cuckoo observations by breeding bird survey route for Illinois 1992 – 2022 from. Years listed in table include only the years where black-billed cuckoos were observed on the referenced route during the analysis period*. Does not include years when the target species was not observed or routes where the target species were never observed
Table 2.	Land cover types, coverage, and percent composition within the Sugar Creek Wind Project, Logan County, Illinois
Table 3.	Post-construction monitoring surveys and black-billed cuckoo carcass at the Sugar Creek Wind Project, Logan County, Illinois10
Table 4.	Illinois wind facilities with publicly available bird carcass count and bird fatality estimates used in percent composition analysis
Table 5.	Estimated take of black-billed cuckoo at the Sugar Creek Wind Project, Logan County, Illinois
Table 6.	Post-construction monitoring (PCM), Incidental Take Permit (ITP), and Incidental Take Authorization (ITA) compliance monitoring for black-billed cuckoo at Sugar Creek Wind Project, Logan County, Illinois

LIST OF FIGURES

Figure 1.	Location of the Sugar Creek Wind Project in Logan County, Illinois
Figure 2.	Breeding bird survey route locations in Illinois, designated as either available (not
	currently surveyed) or currently assigned for survey7

LIST OF APPENDICES

Appendix A. Implementing Agreement for the Sugar Creek Wind Project Black-Billed Cuckoo Conservation Plan

1 INTRODUCTION AND BACKGROUND

Sugar Creek Wind One LLC (the Applicant), a wholly owned subsidiary of Algonquin Power Company, which is operated by Liberty Power, owns and operates the Sugar Creek Wind Project (Project) in Logan County, Illinois (Figure 1). The Project is located on private land and commercial operation of the Project began in November 2020. The Applicant developed a Bird and Bat Conservation Strategy (BBCS) to minimize and avoid potential impacts to birds and bats at the Project (version dated September 30, 2017; Sugar Creek Wind, LLC 2017) in 2017 and received a Technical Assistance Letter from the USFWS on January 30, 2018. During Project development, the Applicant determined that Project operation may result in incidental mortality of the federally listed endangered Indiana (Myotis sodalis) and northern long-eared bats (M. septentrionalis). The Applicant began coordinating with the US Fish and Wildlife Service (USFWS) on options for compliance with the Endangered Species Act (ESA) and developed a Habitat Conservation Plan (HCP; version dated April 29, 2022) to support a request for an Incidental Take Permit (ITP) for federally listed bat species. The Applicant obtained a USFWS ITP (ESPER0047644) for the federally listed endangered Indiana and northern long-eared bats dated July 15, 2022. The Applicant also obtained Incidental Take Authorization (ITA) from the Illinois Department of Natural Resources (IDNR) for Indiana and northern long-eared bats on December 22, 2022. Both the USFWS ITP and IDNR ITA require the Project to minimize impacts to federally listed bat species and conduct post-construction monitoring (PCM). Additionally, the Applicant developed an Eagle Conservation Plan (ECP; version dated February 24, 2020; Stantec Consulting Services Inc. 2020) to avoid or minimize incidental take of bald eagles (Haliaeetus leucocephalus) at the Project and applied for an Eagle Take Permit (ETP) on July 14, 2020. At the time of this Conservation Plan, the USFWS had not issued the ETP.

On May 11, 2022, during the second year of PCM at the Project, a black-billed cuckoo (*Coccyzus erythropthalmus*) carcass was found. The black-billed cuckoo is state-listed as threatened in Illinois by the IDNR (2020). Therefore, the Applicant is applying for an amended ITA from the state to cover incidental take of the black-billed cuckoo that could occur due to Project operation for the remainder of the ITA term. This Black-billed Cuckoo Conservation Plan for the Project has been developed to assess the potential for this species to occur in or near the Project, estimate the potential impacts to the black-billed cuckoo from Project operation, and outline the avoidance and minimization measures developed for the Project.

1.1 Project Description

The Project is a renewable energy generation facility that consists of 57 wind turbine generators (turbine) and associated infrastructure (underground power collection system, access roads, a collector substation, an operation and maintenance facility, and two permanent meteorological towers) with a total generating capacity of 202 megawatts (MW). The Project consists of 17 Vestas V110s 2.0-MW turbines that have a 95-meter (m; 312-foot [ft]) hub height and 54-m (177-ft) blade length, and 40 Vestas V150s 4.2-MW turbines that have a 110-m (361-ft) hub height and 75-m (246-ft) blade length.

The Project is largely cultivated cropland, with corn and soybean production as the dominant crops. Trees are sparsely distributed and typically restricted to small clusters along stream corridors. Project turbines were placed in cultivated fields thus avoiding and minimizing impacts to wooded habitats potentially used by black-billed cuckoos.

2 BIOLOGICAL DATA OF AFFECTED SPECIES

2.1 Black-billed Cuckoo

2.1.1 Migration

The black-billed cuckoo is a long-distance nocturnal migrant assumed to migrate over vast areas without stopping (Hughes 2020). The species engages in a short nomadic period after spring migration during which food resources are evaluated (Nolan and Thompson 1975). Individuals are commonly observed outside this species' breeding range during this period (Hughes 2020). During fall migration, individuals are inconspicuous and do not typically migrate in large groups (Robbins 1991).

Generally, black-billed cuckoos begin to arrive on breeding grounds in the central US from late April to early May, and the number of arrivals peaks during mid-May. The timing of migration can be highly irregular, and spring migrants can arrive as late as early June in the Midwestern US (Hughes 2020). Much less is known about the timing of fall migration. Generally, migrants begin to depart breeding sites in the Midwest in late August, and peak departure occurs in late September or early October (Hughes 2020). Individuals are known to linger as late as October 31 in Illinois (Bohlen 1989) and November 13 in Ohio (Peterjohn 1989).

2.1.2 Breeding

Although no specific data are available for black-billed cuckoo, female yellow-billed cuckoo (*Coccyzus americanus*) appear to breed in their first year (Laymon 1998), and given that the species are closely related, it is likely that female black-billed cuckoo follow the same pattern. The onset of black-billed cuckoo nesting has been correlated with the emergence of invertebrates, and timing of first clutch is variable as it is associated with food availability. Peak breeding activity has been related to peak numbers of annual cicadas and caterpillar emergence, and the delayed onset of nesting may result from the delayed emergence of caterpillars (Hughes 2020). Generally, nesting occurs in the Midwestern US from late May to late June, but active nests have been recorded as late as mid-September (Eastman 1991). Eggs have been recorded in Illinois as early as May 7 and as late as July 20 (Bent 1940). Black-billed cuckoos are generally assumed to raise one brood per year. Records of eggs in late summer are suspected to be late first broods associated with late-season emergence of prey populations (Pistorius 1985).



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

Clutch size for black-billed cuckoo is most often two to three eggs, rarely four or five (Hughes 2020). Nests with six or more eggs likely include multiple females laying in a single nest (Bent 1940). Cuckoos are brood parasites that may lay eggs in other black-billed cuckoo nests, and occasionally in other species nests. (e.g., yellow-billed cuckoo; Hughes 2020). Eggs are usually laid every second day, but intervals of one to four days have been reported. Because incubation begins after the first egg is laid, estimates of length of incubation are variable, and range from 10 to 11 days (Hughes 2020). Incubation that begins with the first egg also results in nestlings at different phases of development within the same nest. Most young depart the nest at six to seven days but are unable to fly until approximately three weeks of age (Hughes 2020). During this stage, young climb through branches and run along the ground, and individuals have been found up to 2.1 kilometers (km; 1.3 miles [mi]) from the nest site before they were capable of flight (Sealy 1985). Because young are accompanied and fed by adults during this stage, fledging is estimated to occur at 21 to 24 days when young can fly (Jauvin and Bombardier 1996), although the age at which juveniles are able to feed on their own is not known (Hughes 2020).

2.1.3 Post-Breeding Dispersal and Lifespan

After departure from the nest, but before independence, the adults may divide the brood to reduce competition from larger siblings (Sealy 1985), likely resulting in a relatively large area required for post-breeding dispersal of a given brood. After fledging, both adults and juveniles disperse widely in search of food (Jauvin and Bombardier 1996). The average lifespan of the black-billed cuckoo is not well documented; however, based on the small amount of data available from banded cuckoos, it is thought they have relatively short lives, up to four or five years (Human Ageing Genomic Resources 2023, Hughes 2020).

2.1.4 Population Status

The black-billed cuckoo experienced population declines throughout North America during the twentieth century, particularly during the 1980s and 1990s (Hughes 2020). From 1966 – 2021, populations in the US, as reported in the North American Breeding Bird Survey declined by 1.4%/year (95.0% confidence interval [CI] = 0.7-2.0%/year; n = 1,328 routes; Sauer et al. 2022), while trends for Illinois declined by 3.3%/year (95.0% CI = 1.1-5.7%/year; n = 61 routes; Sauer et al. 2020).

Local abundance may be highly variable from year to year. Since cuckoo populations have been correlated with irruptions of cicadas (Nolan and Thompson 1975) and caterpillars (Jauvin and Bombardier 1996), there can be large increases in local populations from immigration during insect irruptions. Thus, black-billed cuckoo may become locally common in areas where, in most years, it is rare. The nomadic nature of the black-billed cuckoo, even during the breeding season, can result in population estimates that fluctuate annually (Hughes 2020). Thus, long-term trends provide the best insight into population dynamics for this species.

Black-billed cuckoos were considered a common summer resident in northern Illinois in the early 1900s, but the population has declined since then, due to loss of nesting habitat, such as orchards and hedgerows (Kleen et al. 2004). Breeding bird survey data indicate the species has always been more common in northern Illinois, with decreasing abundance observed in southern Illinois.

The species is currently considered a common migrant and an uncommon summer resident in Illinois, with lower abundance occurring in southern Illinois (Kleen et al. 2004; IDNR 2021). As of 2020, there are estimated to be approximately 880,000 black-billed cuckoos breeding in North America, with approximately 380,000 breeding in the US, and approximately 3,300 breeding in Illinois (Partners in Flight 2020).

Raw breeding bird survey (BBS) data from 1966 – 2022 (Sauer et al. 2022) were reviewed to determine if there were areas of concentrated black-billed cuckoo records during the breeding season and if BBS routes near the Project contained black-billed cuckoo observations. The BBS uses established routes on public roads, resulting in a long-term bird survey throughout the U.S., Canada, and Mexico.

Statewide, 153 black-billed cuckoo detections were recorded over 2,495 survey routes during the most recent 30-year period (1992 – 2022) for an average of 0.06 black-billed cuckoo/route (Table 1). Surveys were not conducted in 2020 due to travel restrictions related to the pandemic. Over the most recent 5 years of data (2017 - 2022), 19 black-billed cuckoos were recorded over 428 survey routes for an average of 0.04 black-billed cuckoo/route.

During the most recent five years, black-billed cuckoos were detected on 12 survey routes, and black-billed cuckoos were detected on the same survey route twice in the 5-year period (Route 25; Figure 2).

The closest BBS route to the Project is the Greenview Route (number 72), which is located approximately 21.5 km (13.3 mi) southwest of the Project area. No black-billed cuckoos have been observed on the Greenview Route since surveys started in 1993. The closest BBS route with the most recent black-billed cuckoo record is the Bartonville Route (number 25), which is located approximately 47.1 km (29.3 mi) north of the Project. Black-billed cuckoos were first observed on the Bartonville Route in 1973 and have been repeatedly observed along the route, with the most recent black-billed cuckoo record in 2019. The route was recently surveyed in 2022 and has been consistently surveyed over the last 50 years.

In summary, breeding black-billed cuckoos are uncommon in Illinois. Based on the route-level analysis for the Project, black-billed cuckoos are infrequent breeders on BBS routes in Illinois, including those routes in the vicinity of the Project.

Table 1.	Black-billed cuckoo observations by breeding bird survey route for Illinois 1992 – 2022 from. Years listed in table include
	only the years where black-billed cuckoos were observed on the referenced route during the analysis period*. Does not
	include years when the target species was not observed or routes where the target species were never observed.

Route			Route			Route			Route		
Number	Year	Count									
1	1992	1		1993	2		1992	3	60	1996	1
	1993	1		1994	1		1995	1		1993	2
2	2002	2		1995	1		1996	2		2005	2
2	2006	1		1999	1		1997	1	66	2008	2
	2007	2		2003	2		1998	3		2015	1
2	1998	1	25	2004	1	20	1999	1		2016	2
3	2008	3	25	2005	1	30	2001	3	69	2021	2
4	1993	1		2007	1		2002	1	74	2007	1
	1992	1		2014	2		2003	5		1998	1
0	1993	1		2016	2		2004	1		2002	2
0	1994	1		2018	2		2008	1	75	2004	2
	2013	3		2019	1		2011	2	75	2007	1
	1994	1	26	2016	1	39	2016	1		2011	1
10	1995	4	27	1994	2	40	1993	1		2015	1
10	1997	1		1997	2		2003	3		2000	1
	2004	1	34	2007	2	44	2004	2	77	2001	1
13	1992	1		1992	2	41	2011	1		2003	1
14	1997	1	35	1994	5		2021	1		2004	1
17	2019	1		1998	1	43	2018	1	301	2008	1
22	1997	1		1992	1	44	1999	1		2019	1
22	2003	1	37	1994	1	45	2001	1		2002	1
24	1992	1		1996	1	46	2004	1		2003	2
24	2010	1				47	2006	1	202	2006	2
						47	2007	1	302	2007	3
						48	2022	1		2008	1
						49	2022	1		2009	1
						51	2003	1	304	2010	1
						51	2007	1	305	2015	1
						52	1993	1	310	2019	2
				·		58	1992	1			
	-						-				4.5.0

Total 153

*Surveys were not conducted in 2020. Source: Sauer et al. (2022).



Figure 2. Breeding bird survey route locations in Illinois, designated as either available (not currently surveyed) or currently assigned for survey.

2.1.5 Habitat Requirements

Black-billed cuckoos use a wide range of habitats but are most commonly associated with groves of trees, woodland edges, and thickets and are less likely to use suburban areas (Kleen et al. 2004; Hughes 2020; IDNR 2021). Nests are generally well concealed and have been observed in both coniferous and deciduous trees, as well as shrubs (Spencer 1943). Trends in habitat use across the Breeding Bird Atlas records suggest that black-billed cuckoos will nest in habitats associated with water or marshy areas and use trees that typically form thickets such as willow, alder, birch, and beech (Spencer 1943; Hughes 2020). Nests are usually placed 1–2 m (3.3–6.6 ft) above ground (Hughes 2020), but have been documented among weeds as low as 0.6 m (2.0 ft) and as high as 13.5 m (44.0 ft) in trees (Hughes 2020).

It is unknown if black-billed cuckoos are territorial, but during the breeding season cuckoos are observed alone or in breeding pairs (Hughes 2020). Freemark and Merriam (1986) hypothesized that home range size is 2–5 hectares (ha; 5–12 acres [ac]).

Little is known about habitat use during migration; it is assumed to be similar to breeding habitat (Hughes 2020). Fall migrants usually begin arriving in Illinois from the north in August (IDNR 2021), with departures peaking between late September and early October (Eastman 1991).

2.1.6 Species Status in the Project Area

2.1.6.1 <u>Pre-construction Surveys</u>

Black-billed cuckoos were not detected at the Project area during pre-construction avian use surveys.

2009 – 2015 Avian Use Surveys

Pre-construction driving surveys were conducted in April 2009, June 2009, May 2012, and November 2015 to document seasonal use of the Project area by birds (Thomas 2009, 2012, 2015). Each survey was one day in length and consisted of frequent stops made within and adjacent to the Project.

Species diversity was highest in the spring (86 species), followed by summer (74 species) and winter (67 species). The most common species observed during surveys were red-winged blackbird (*Agelaius phoeniceus*), American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), and American crow (*Corvus brachyrhynchos*). No federally or state-listed threatened or endangered bird species were detected (Thomas 2009; Thomas 2012; Thomas 2015).

2016 – 2019 Avian and Eagle Use Surveys

Avian use surveys were conducted within the Project area by Western EcoSystems Technology, Inc. from May 25, 2016, through April 12, 2017 (Brown and Matteson 2019). Thirteen randomly located point count locations were surveyed 12 times for 5-minute (min) periods within a 100 m (328 ft) radius for small birds, followed by 60-min counts within an 800 m (2,635 ft) radius for raptors and large birds. Avian use survey results included 950 individual small birds encompassing 16 species and 4,273 individual large birds encompassing 11 species. Four small bird species (25.0% of all small bird species) comprised 86.0% of the observations: red-winged blackbird, barn swallow (*Hirundo rustica*), horned lark (*Eremophila alpestris*), and dickcissel. Two large bird species (17.0% of all large bird species) comprised 95.0% of the observations: Canada goose (*Branta canadensis*) and snow goose (*Anser caerulescens*).

Eagle uses surveys were also conducted once monthly at the same 13 points used for avian use surveys from May 25, 2016 through April 12, 2017, and at 12 different points in the Project area from March 28, 2018 through February 4, 2019. Eagle use surveys consisted of 60-min counts and nine bald eagles were recorded during surveys.

No federally listed threatened or endangered bird species were detected during the avian or eagle use surveys. One Illinois state-listed endangered species, the northern harrier (*Circus cyaneus*), was observed on multiple occasions during the surveys (Brown and Matteson 2019).

2.1.6.2 Black-billed Cuckoo Habitat Evaluation

The Project is within the Illinois/Indiana Prairies Level IV Ecoregion, within the Central Corn Belt Plains Level III Ecoregion (US Environmental Protection Agency 2013). The Illinois/Indiana Prairies are a flat to rolling plain that was historically covered by tall-grass prairies with marshes and wet prairies in poorly drained areas. Currently, most of the region has been cleared for farming, producing corn, soybeans, wheat, and livestock (Woods et al. 2006).

The Project is located within the known range of the black-billed cuckoo. Approximately 64 ha (159 ac) of forest are found scattered along stream corridors accounting for approximately 0.9% of the Project area (Table 2). These isolated woodland areas may provide habitat for black-billed cuckoos.

Land Cover Type	Coverage (Hectares)	Coverage (Acres)	Percent Composition
Cultivated Crops	6,643	16,414	92.5
Developed	284	701	3.9
Hay/Pasture	104	257	1.5
Woody Wetlands	66	164	0.9
Forest	64	159	0.9
Barren Land	10	25	0.1
Open Water	6	16	<0.1
Emergent Herbaceous Wetlands	2	4	<0.1
Herbaceous	1	3	<0.1
Total ¹	7,180	17,743	100

Table 2.Land cover types, coverage, and percent composition within the Sugar Creek Wind
Project, Logan County, Illinois.

Source: National Land Cover Database 2019.

¹ Sums can differ from total values shown due to rounding.

2.1.6.3 Black-billed Cuckoo Carcass Detections and Correlates of Risk

During the second year of post-construction monitoring, one black-billed cuckoo carcass was detected at the Project (Table 3). To understand if risk could be identified for black-billed cuckoos based on information from carcass detections, the spatial (i.e., location) and temporal (i.e., timing) information associated with carcasses in the context of life history and habitat preferences of black-billed cuckoo was examined. Only one carcass was detected; therefore, limited inference can be drawn regarding spatial and temporal correlates of risk. The carcass detected was located at a turbine within 1.2 km (0.7 mi) of a wooded wetland along Salt Creek. However, there were turbines closer to deciduous forests that were monitored where carcasses were not detected.

Collisions of nocturnal migrants with towers are hypothesized to be influenced by weather conditions, specifically the presence of fog or low clouds (Bevanger 1994, Shire et al. 2000, Gehring et al. 2009), and potentially the type of lighting on the structure. However, Kerlinger et al. (2010) found that the red blinking lights required by the Federal Aviation Administration (FAA) on wind turbines do not create a strong attractant for birds (Kerlinger et al. 2010). The black-billed cuckoo was estimated to have a time of death two to three days prior to being found on May 11, 2022. No rain, thunderstorms, or fog occurred overnight during the estimated dates when the carcass could have occurred (Table 3; Weather Underground 2023). Thus, the carcass discovery was not likely related to an inclement weather event typically associated with bird collision risk at structures.

Table 3.	Post-construction monitoring	surveys a	and bla	ack-bille	d cuck	oo carcas	s at the Sugar
	Creek Wind Project, Logan Co	unty, İllin	ois.				-

Survey Time Period	Date of Black- billed Cuckoo Found	Turbine Number	Age	Habitat at Turbine (≤328 ft)	Weather During Night of Estimated Occurrence
Spring-Fall 2021 ¹	None	NA ²	NA	NA	NA
Spring-Fall 2022 ³	May 11, 2022	B04	Adult	Agriculture	Clear, May 8 – 9
Spring-Fall 2023 ⁴	None	NA	NA	NA	NA

¹ Monitoring conducted by Western EcoSystems Technology, Inc. (Ritzert et al. 2022b)

² NA: not applicable

³ Monitoring conducted by Western EcoSystems Technology, Inc. (Ritzert et al. 2023c)

⁴ Monitoring conducted by Western EcoSystems Technology, Inc. (Ritzert et al. 2023e [in prep])

3 DESCRIPTION OF PROJECT ACTIVITIES

3.1 Activities with Potential for Incidental Take

Authorization is requested to permit take that may occur incidental to the continued commercial operation of the Project turbines.

3.2 Timeline

Commercial operation of the Project began in November 2020. The Applicant proposes to continue to operate the Project for up to 28 years, through 2052. Therefore, the requested permit term is for 28 years, from 2024 – 2052.

3.3 Other Permitting Review

The Project received all necessary permits to construct and operate prior to construction. The wildlife permits received for the Project include:

- Federal Migratory Bird Special Purpose Utility Permit MBPER0001905 (October 22, 2020 to March 31, 2023)
- Federal Migratory Bird Special Purpose Utility Permit MBPER1772639 (April 4, 2021 to March 31, 2026)
- Federal Native Endangered and Threatened Species Habitat Conservation Plan ESPER0047644
- Illinois Department of Natural Resources Authorization for Incidental Take for Indiana bat and Northern Long Eared Bat (November 22, 2022)

The Applicant has been coordinating with the IDNR throughout the siting, permitting, and operation phases of the Project. Coordination started in 2009 with the previous Project owners (American Wind Energy Management) as part of the initial siting process, and has continued through 2023, including communications to provide information on proposed surveys and survey results.

4 POTENTIAL EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

Although there is some potential breeding habitat in the Project area (Table 2), it is scarce, and the Project is located in a portion of the overall black-billed cuckoo range with relatively low abundance during the breeding season (Section 2.1.4). As described in Section 2.1.6.1, no black-billed cuckoos were observed during pre-construction avian use surveys. No effects to breeding habitat will occur due to operation of the Project because no wooded habitat will be cleared or modified. Additional disturbance or displacement impacts of wind turbines are not expected because no additional turbines or infrastructure are proposed.

Continued operation of the Project may result in the incidental take of black-billed cuckoo through collision with wind turbines. Black-billed cuckoos typically nest and forage at heights below the rotor swept area, and collision risk is likely greatest during migration. Therefore, migrating individuals would be more likely to be potentially affected by turbine operation, with effects to breeding individuals anticipated to be unlikely or minimal.

4.1 Spatial Patterns

As noted in Table 3, one black-billed cuckoo carcass was detected in May 2022 during postconstruction monitoring. The 2022 carcass was an adult bird, and the carcass was estimated to have been on the ground for two to three days before it was discovered, according to the qualified biologists conducting the post-construction monitoring. The carcass was found scavenged and approximately 142 m (466 ft) from turbine B04. Turbine B04 was located in an agricultural area and was within approximately 1.2 km (0.7 mi) of wooded wetlands along Salt Creek. Other turbines at the Project that were monitored for carcasses were located in similar areas (agriculture with limited woodlands) and black-billed cuckoo carcasses were not detected. Thus, it is unlikely that the turbine where a carcass was detected at the Project is in an area that is attractive to black-billed cuckoos. Inference regarding spatial patterns of collision risk are limited by the small sample of carcasses (n = 1). However, based on the current sample, there is no apparent association of carcass locations to black-billed cuckoo breeding habitat (shelterbelts or woodlands).

4.2 Temporal Patterns

The 2022 carcass discovered at the Project was detected on May 11, which coincides with the latter part of spring migration. Rain, thunderstorms, or fog did not occur overnight during the estimated dates when the carcass occurred, thus carcass discovery did not occur with inclement weather events often associated with bird collision risk at structures (Bevanger 1994; Shire et al. 2000; Gehring et al. 2009). Due to the small sample size it is difficult to identify specific locations or time periods of risk to black-billed cuckoo from the Project, but the timing of the carcass discovered indicates that risk may occur during spring migration at the Project.

4.3 Amount of Habitat Affected

As described in Section 2.1.6.2, there are approximately 64 ha (159 ac) of potential black-billed cuckoo breeding habitat (0.9%) within the approximately 7,180 ha (17,742 ac) Project boundary (Table 2). The Project is already built and operational, and as stated above, impacts to black-billed cuckoo habitat were avoided and minimized during siting and construction. No impacts to black-billed cuckoo habitat will occur during operation of the Project.

4.4 Incidental Take of Individuals

A percent composition approach was used to estimate the incidental take of black-billed cuckoos at the Project. This percent composition approach pools carcass data from the Project and other wind energy projects in Illinois to calculate a take estimate for black-billed cuckoos by determining the anticipated percent of all bird carcasses that will be black-billed cuckoos over the 28-year permit period (2024 – 2052). In Illinois, in addition to the one black-billed cuckoo found at the Project, eleven black-billed cuckoos have been publicly reported (six at the California Ridge project, two at the Bishop Hill project, one at the Cardinal Point project, one at the Pioneer Trail project, and one at the Radford's Run project (IDNR 2023). Adding the 145 bird carcasses found over the three years of monitoring at the Project to the 1,158 bird carcasses documented other PCM studies in Illinois with publicly available data (see Table 4) results in a total denominator for the species composition calculation of 1,303 birds. Dividing the 12 documented black-billed cuckoos by the total of 1,303 documented bird fatalities results in an Illinois species composition of 0.92%.

Because the Project's post-construction monitoring was designed to focus on bats, no bird fatality estimates were calculated and no searcher efficiency or carcass persistence trials specific to birds (other than eagles) have been conducted. Therefore, bird fatality estimates from other Illinois projects with publicly available data were examined to produce a representative range of estimated bird fatality rates for the Project. There are six PCM studies from wind energy facilities

in Illinois with publicly available estimated bird fatality data, with the all-bird fatality estimates ranging from 0.03 birds/MW/study period to 3.1 birds/MW/study period (Table 4).

Project Name'	Total Birds Found	Birds/MW/Study Period					
Anonymous Illinois (2013 - 2018)	1	NA					
Bishop Hill (2013)	28	NA					
Bishop Hill (2014)	15	NA					
Bishop Hill (2015)	33	NA					
California Ridge (2013)	43	0.05					
California Ridge (2014)	62	0.03					
California Ridge (2015)	33	NA					
California Ridge (2021)	8	3.1					
California Ridge (2022)	183	NA					
Cardinal Point (2020)	4	NA					
Cardinal Point (2021)	41	NA					
Cardinal Point (2022)	27	NA					
Crescent Ridge (2005 - 2006)	10	NA					
Ford County (2022)	63	NA					
Green River (2022)	140	NA					
Hoopeston (2018)	9	NA					
Hoopeston (2019)	41	NA					
Hoopeston (2020)	44	NA					
Hoopeston (2021)	11	NA					
Hoopeston (2022)	4	NA					
Minonk (2013 - 2014)	15	0.8					
Pilot Hill (2017)	70	NA					
Pilot Hill (2018)	70	NA					
Pioneer Trail (2012 - 2013)	18	NA					
Pioneer Trail (2013 - 2014)	9	NA					
Pioneer Trail (2017)	6	NA					
Pioneer Trail (2022)	4	NA					
Radford's Run (2019)	17	NA					
Radford's Run (2020)	28	NA					
Rail Splitter (2012 - 2013)	5	0.84					
Top Crop I and II (2012 - 2013)	32	1.35					
Twin Groves (2009)	39	NA					
Twin Groves (2010)	10	NA					
Twin Groves I & II (2007 - 2009)	35	NA					

Table 4.	Illinois wind facilities with publicly available bird carcass count and bird fatality						
	estimates used in percent composition analysis.						

MW = megawatt

Table 4 (continued). Illinois wind facilities with publicly available bird carcass count and bird fatality estimates used in percent composition analysis.

Project Name	Citation
Anonymous Illinois (2013 - 2018)	Kritz et al. 2018
Bishop Hill (2013)	Ritzert et al. 2013, Simon et al. 2014
Bishop Hill (2014)	Shoener Environmental 2015a
Bishop Hill (2015)	Shoener Environmental 2015c
California Ridge (2013)	Gruver et al. 2014
California Ridge (2014)	Shoener Environmental 2015b
California Ridge (2015)	Stantec Consulting Services Inc. (Stantec Consulting) 2021

Project Name	Citation
California Ridge (2021)	Stantec Consulting 2022
California Ridge (2022)	Ritzert et al. 2023a
Cardinal Point (2020)	Cardinal Point LLC 2023
Cardinal Point (2021)	Cardinal Point LLC 2023
Cardinal Point (2022)	Cardinal Point LLC 2023
Crescent Ridge (2005 - 2006)	Kerlinger et al. 2007
Ford County (2022)	Stucker et al. 2023
Green River (2022)	Brown et al. 2023
Hoopeston (2018)	Iskali and Pham 2019
Hoopeston (2019)	Rodriguez et al. 2020
Hoopeston (2020)	Rodriguez et al. 2021
Hoopeston (2021)	Rodriguez et al. 2022
Hoopeston (2022)	Rodriguez et al. 2023
Minonk (2013 - 2014)	Ritzert et al. 2014
Pilot Hill (2017)	Good et al. 2018
Pilot Hill (2018)	Iskali et al. 2019
Pioneer Trail (2012 - 2013)	ARCADIS U.S. 2013
Pioneer Trail (2013 - 2014)	ARCADIS U.S. 2014
Pioneer Trail (2017)	Stantec Consulting 2017
Pioneer Trail (2022)	Stantec Consulting 2023
Radford's Run (2019)	Ecology and Environment 2020
Radford's Run (2020)	Ecology and Environment 2020
Rail Splitter (2012 - 2013)	Good et al. 2013a
Top Crop I and II (2012 - 2013)	Good et al. 2013b
Twin Groves (2009)	Johnson et al. 2010
Twin Groves (2010)	Johnson et al. 2011
Twin Groves I & II (2007 - 2009)	Johnson et al. 2009

 Table 4 (continued).
 Illinois wind facilities with publicly available bird carcass count and bird fatality estimates used in percent composition analysis.

The all-bird fatality estimates (birds/MW/study period) from publicly available Illinois projects were multiplied by the 202 MW associated with the Project, to come up with a general range of annual project-wide all-bird fatality estimates for the Project of 6.1–626 birds/Project/year. The percent composition of black-billed cuckoos based on Illinois data was then multiplied by this range of project-wide all bird fatality estimates. As shown in Table 5, using the state-wide information, a range of approximately 0–5.8 black-billed cuckoo take/year is estimated for the Project. Given the fact that only one BBCU has been found during three years of intensive surveys at the Project, the Applicant is not expecting that the Project would result in take of black-billed cuckoos on the higher end of that range. The Applicant is therefore applying for an ITA to take up to 56 black-billed cuckoos taken per year.

Table 5.Estimated take of black-billed cuckoo at the Sugar Creek Wind Project, Logan County,
Illinois.

Estimated All-			
Bird Fatality Rate	Estimated Species	Range of Black-	Estimated Take of Black-
at Project (all	Composition of	billed Cuckoo Take	billed Cuckoo over 28 Year
birds/year)	Black-billed Cuckoo	per Year at Project	Term
6.1–626	0.92%	0–5.8	56 (estimated average of 2/year)

4.5 Management of the Affected Area

The Project is already built and operational, and the Applicant will continue to maintain existing turbines and Project infrastructure, including existing gravel access roads and pads through 2052. No impacts to wooded habitat will occur during operation of the Project, and continued operation of the Project will not affect the ability of the black-billed cuckoo to use wooded habitat adjacent to the turbines and other components of the Project.

4.6 Measures to Minimize and Mitigate Effects

4.6.1 Avoidance and Minimization – Project Design and Operation

During Project development and operation, the Applicant implemented measures to avoid and minimize effects to wildlife, including the black-billed cuckoo:

- The area disturbed by pre-construction site monitoring and testing activities and installations was minimized to the extent practicable. This measure minimized potential for disturbance to birds, such as the black-billed cuckoo, that were utilizing the Project area, as well as their habitats.
- The number and length of roads, power lines, fences, and other infrastructure was minimized to the extent practicable, thus minimizing wildlife habitat fragmentation (including fragmentation of potential black-billed cuckoo wooded habitat).
- The electrical collection system was placed underground to the extent practicable. This measure eliminated collision risk and electrocution hazards for birds using the Project area and allowed habitat to regenerate.
- Aboveground power lines were designed in accordance with Avian Power Line Interaction Committee (2006) guidelines to minimize electrocution risk to birds.
- Two permanent un-guyed meteorological towers were installed at the Project. This measure reduces the collision risk for birds using the Project area.
- Lighting was minimized to that which is required by the FAA.
- Turbines were sited as far away as practicable from any "natural" areas likely to have higher bird activity or diversity.
- Tree clearing was minimized by utilizing existing roads and minimizing the size of clearings needed around turbines, to the maximum extent practicable. This measure minimized conversion of natural areas (including woody vegetation that could provide black-billed cuckoo habitat) to Project facilities (habitat loss).
- Project personnel were advised regarding speed limits on roads, and travel was restricted to designated roads to minimize wildlife mortality due to vehicle collisions, including minimizing the potential for collision with black-billed cuckoos, and to avoid impacts to vegetation.
- Best management practices for fire prevention were implemented during construction to minimize wildfire potential. This measure minimized potential loss or alteration of habitat for nesting, roosting and foraging birds such as the black-billed cuckoo.
- Federal and state required measures for handling toxic substances were followed to minimized the risk of impact to water and wildlife from spills.

- The number of storm water control features (sediment retention ponds) were minimized and the ponding of water following construction was eliminated. These measures were intended to minimize on-site attractants to birds such as the black-billed cuckoo.
- All turbines will be feathered below wind speeds of 5.0 m/second (m/s; 16.4 ft/s) from sunset to sunrise when temperatures are above 10 degrees (°) Celsius (C; 50° Fahrenheit [F]) from August 1 October 15 and all turbines will be feathered below the manufactured cut-in speed of 3.0 m/s (9.8 ft/s) from sunset to sunrise when temperatures are above 4° C (40° F) from March 15 July 31 and October 16 March 14. While this measure is generally employed to minimize collision risk for bats, reducing the amount of time when blades are actively spinning may also reduce bird collision risk.
- O&M staff were trained regarding the importance of minimizing impacts to wildlife. This measure helps increase awareness and reduces the inadvertent creation of hazardous conditions (e.g., accidently leaving lights on in a nacelle or other facility area).

No additional avoidance or minimization measures are proposed at this time because (1) the siting and construction measures already committed to by the Applicant have minimized, and will continue to minimize, impacts to the black-billed cuckoo; (2) no specific collision risk patterns have been detected and therefore there is no basis for effective design of potential minimization measures such as curtailment; and (3) impacts to the species have been low and are predicted to be low during the term of the permit.

4.6.2 Mitigation

In addition to implementation of avoidance and minimization measures summarized in Section 4.6.1, the Applicant has committed to a monetary contribution of \$25,000 submitted to the Illinois Wildlife Preservation Fund to assist with management of, or bring conservation benefit to, the black-billed cuckoo.

4.7 Monitoring

4.7.1 Intensive Carcass Monitoring

Post-construction bald eagle carcass monitoring for the Project began in November 2020 in accordance with the Project's ECP and BBCS. Monthly eagle carcass monitoring occurred from 2020 to 2023 (Ritzert et al. 2022a, 2023b, and 2023d). Post-construction bat carcass monitoring for the Project began in spring 2021, consistent with the Project's HCP, and as required by the Project's USFWS ITP and IDNR ITA. Three years of intensive bat carcass monitoring occurred from 2021 to 2023 (Ritzert et al. 2022b, 2023c, and 2023e [in prep]). The PCM conducted at the Project also recorded all bird species fatalities, including any black-billed cuckoo.

Monitoring will continue at the Project through coordination with the USFWS regarding the Project's ECP for the federally protected bald eagle, HCP, USFWS ITP, and IDNR ITA for federally listed bats, per Table 6. The frequency and intensity of subsequent monitoring is anticipated to provide relevant information on black-billed cuckoo take at the Project in the spring migration period.

4.7.2 Incidental Monitoring

Project personnel are trained on wildlife issues, protection, and considerations at wind projects and how to respond to the discovery of a carcass or injured animal. An incidental reporting process was developed for operations personnel that requires the documentation and reporting of animal carcasses detected within the Project area. Operations personnel are prohibited from touching the carcass and are required to immediately photograph the carcass and report it to the Applicant's environmental staff. Once the field report is submitted, the environmental staff are required to assess each carcass report, deferring to a biologist when necessary, and report all state-listed endangered or threatened species to the IDNR within 48 hours of positive species identification.

4.8 Adaptive Management

4.8.1 Adaptive Management Goals

The goals of the adaptive management plan are to enable the Project to respond to issues and unanticipated events identified by monitoring data collected over the term of the permit. Certain trigger events and subsequent changes to the avoidance, minimization, and mitigation plan have been defined as a part of the adaptive management plan, to guide the adaptive process.

4.8.2 Adaptive Management Plan

The events that would trigger changes to the avoidance, minimization, and mitigation plan presented herein would be documented take of black-billed cuckoo above the anticipated level, which is expected to average up to two birds/year over the 28-year term of the permit.

If any black-billed cuckoo carcasses are detected at the Project, the following actions will be taken.

- 1) IDNR will be notified within one business day of positive identification.
- 2) The carcass will be examined, and information will be included in the Project's database.

If more than two black-billed cuckoos are found within a single year, the following measures will be implemented:

- 1) The Applicant will confer with the IDNR to determine, based on the available data, the circumstances under which the carcasses occurred.
- 2) If a specific cause for the carcasses can be identified and it is attributable to the Project, the Applicant will develop specific additional onsite and/or operational mitigation measures in consultation with IDNR to address those causes:
 - a) The Applicant will conduct follow-up post-construction monitoring during the subsequent year in the season(s) in which the carcasses were discovered to assess whether onsite mitigation measures were successful at reducing mortality.
- 3) If there continues to be no spatial, weather, or temporal pattern to when and where blackbilled cuckoo carcasses are found, no mitigation measures will be taken based on one year with higher than anticipated take levels. However, if two additional monitoring periods

occur where three or more black-billed cuckoo carcasses are detected, the Applicant and IDNR will determine the need to pursue an amendment to the Project's ITA.

Table 6. Post-construction monitoring (PCM), Incidental Take Permit (ITP), and Incidental Take Authorization (ITA) compliance monitoring for black-billed cuckoo at Sugar Creek Wind Project, Logan County, Illinois.

Protocol (Year[s])	Date	Plot Type (Number of Turbines Searched)	Search Interval	Results	
Eagle PCM (2021 ¹ , 2022 ² , 2023 ³)	November – October	Road and pads out to 100 m at 57 turbines	Monthly	No black-billed cuckoos documented	
Intensive Bat PCM (2021) ⁴	April 1 – July 31	Road and pads out to 100 m at 57 turbines	Weekly	No black-billed cuckoos documented	
	August 1 – October 15	Road and pads out to 100 m at 42 turbines Cleared plots (40m [131 ft]) at 15 turbines	2x/week	No black-billed cuckoos documented	
Intensive Bat PCM (2022) ⁵	April 1 – July 31	Road and pads out to 100 m at 57 turbines	Weekly	One black-billed cuckoo documented on May 11, 2022	
	August 1 – October 15	Road and pads out to 100 m at 42 turbines Cleared plots (60-70m [197-230 ft]) at 15 turbines	2x/week	No black-billed cuckoos documented	
Intensive Bat PCM (2023) ⁶	April 1 – July 31	Road and pads out to 100 m at 57 turbines	Weekly	No black-billed cuckoos documented	
	August 1 – October 15	Road and pads out to 100 m at 42 turbines Cleared plots (60-70m [197-230 ft]) at 15 turbines	5x/week	No black-billed cuckoos documented	
Eagle PCM (Year 4, 5)	November – October	Road and pads out to 100 m at 57 turbines	Monthly	NA	
Annual Bat PCM (Years 3 – 14 & 17 – 30)	August 1 – October 15	Road and pads out to 100 m at 57 turbines	Weekly	NA	
Check-in Bat PCM (Years 15, 16)	April 1 – July 31	Road and pads out to 100 m at 57 turbines	Weekly	NA	
	August 1 – October 15	Road and pads out to 100 m at 42 turbines Cleared plots (60-70m [197-230 ft]) at 15 turbines	2x/week		
Adaptive Management (for 2 years following adaptive management response)	Season triggered	Road and pads out to 100 m at a minimum of 6 turbines and up to 100% of turbines; determined based on response implemented.	3x/week	NA	

¹ Monitoring conducted by Western EcoSystems Technology, Inc. (Ritzert et al. 2022a)

² Monitoring conducted by Western EcoSystems Technology, Inc. (Ritzert et al. 2023b)

³ Monitoring conducted by Western EcoSystems Technology, Inc. (Ritzert et al. 2023d [in prep])

⁴ Monitoring conducted by Western EcoSystems Technology, Inc (Ritzert et al. 2022b)

⁵ Monitoring conducted by Western EcoSystems Technology, Inc (Ritzert et al. 2023c)

⁶ Monitoring conducted by Western EcoSystems Technology, Inc. (Ritzert et al. 2023e [in prep])

4.9 Verification of Adequate Funding

The Applicant has already funded and completed three years of intensive monitoring at the Project and will continue to fund monitoring at intervals as committed to in this Conservation Plan for the life of the Project. Prior to each year of follow-up monitoring, the Applicant will provide the IDNR with a letter certifying that a monitoring contract has been executed with a firm qualified to conduct monitoring in accordance with the approved monitoring plan. Funding may be in the form of bonds, certificates of insurance, escrow accounts, or other financial instruments adequate to carry out all aspects of the Conservation Plan.

5 ALTERNATIVES CONSIDERED

5.1 No Action Alternative

The No Action alternative in this case would consist of the Project not being developed, constructed, or operated. The Project has been built and operational since November 2020. This option is considered to be a non-viable alternative.

5.2 Construction and Operation Alternatives

Since the Project is already constructed and operational, no construction alternatives were considered. The Project was sited to avoid and minimize impacts to the black-billed cuckoo by placing all turbines in cultivated fields and avoiding and minimizing impacts to wooded habitat. Placing turbines elsewhere in the counties would not be expected to reduce the risk to the black-billed cuckoo.

Over three years of post-construction monitoring, one black-billed cuckoo carcass was discovered in agricultural fields during the spring migration period. As described in Sections 4.1 and 4.2, it is not possible to identify specific location or time periods of risk to the black-billed cuckoo, and therefore the Applicant concluded that operational modifications are not an appropriate alternative.

6 EFFECTS DETERMINATION

The continued operation of the Project will not impact the likelihood of the survival of the blackbilled cuckoo in Illinois for the following reasons:

- 1. Project operation is expected to result in 0–2 black-billed cuckoo fatalities/year (compared to estimated breeding population of 380,000 in the U.S. and breeding population of 3,300 in Illinois).
- 2. Project operation will not impact black-billed cuckoo breeding habitat and will not affect the black-billed cuckoo's ability to use adjacent wooded habitat during breeding or migration.
- 3. As stated in Section 2.1, the black-billed cuckoo life history is characterized by a short life span and relatively high reproductive output, with breeding occurring every year of a

female's life. In species with this type of life history, survival of individuals is not the driver of population trends. Instead, impacts to fecundity, such as direct impacts to nests and nest success have more influence on population dynamics (Stahl and Oli 2006). Furthermore, population trends of North American birds with similar life history strategies are not discernibly affected by collision mortality such as that anticipated at the Project (Arnold and Zink 2011).

In conclusion, the low level of anticipated annual take of primarily migrating individuals from Project operation is not anticipated to affect the black-billed cuckoo population that migrates through or breeds in Illinois.

7 IMPLEMENTING AGREEMENT

An implementing agreement has been prepared for the Project that outlines the parties responsible for implementation of this Conservation Plan and the responsibilities of each party. The implementing agreement is found in Appendix A.

8 REFERENCES

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Appendix A. Implementing Agreement for the Sugar Creek Wind Project Black-Billed Cuckoo Conservation Plan

Implementing Agreement Conservation Plan for Black-Billed Cuckoo

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 ITA. Upon approval of the Conservation Plan and issuance of the ITA, Sugar Creek Wind One LLC (Applicant) 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. The Applicant will oversee all avoidance, minimization, and monitoring efforts identified within the Conservation Plan. Furthermore, The Applicant will be responsible for planning, contract execution, and construction supervision for the entire project.

The Applicant will implement this Conservation Plan in coordination with the IDNR. The Applicant will be responsible for the plan's implementation, planning, and coordination with IDNR as specified in the plan as required in the ITA. The Applicant 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 schedule for implementation of monitoring, mitigation, and adaptive management is detailed in the Conservation Plan. The Applicant will report any black-billed cuckoo carcasses to IDNR within 24 hours once positive species identification has been determined or within 72 hours for suspected carcasses.

The Applicant will obtain the required federal and Illinois permit(s) to conduct the monitoring plan. All federal and state laws, regulations, permits, and commitments will be adhered to. A copy of the US Fish and Wildlife Service (USFWS) Incidental Take Permit (ITP; ESPER0047644) for the federally listed as endangered Indiana bat (*Myotis sodalis*) and northern long-eared bat (*M. septentrionalis*) is provided in Appendix C

The Applicant hereby certifies that is has authority and funding to continue operating this project and to implement all proposed conservation measures included in this Conservation Plan for the state-listed species covered by the ITA. The Applicant 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.

The Applicant reserves the right to relinquish the ITA prior to expiration by providing 30 days advance written notice to the IDNR. The Applicant may surrender the ITA by returning it to the IDNR along with a written statement of its intent to surrender and cancel the ITA. The ITA shall be deemed void and canceled upon receipt of the permit by the IDNR. The Conservation Plan may be amended or modified with the written consent of both the Applicant and IDNR. The terms the Conservation Plan and ITA are not intended to run with the land, and will not bind the existing owners of covered lands or subsequent purchasers of the project or covered lands unless such parties agree in writing to become bound by the Conservation Plan and ITA.

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

Mark Kozak Senior Manager, Environment 354 Davis Road, Suite 100 Oakville, Ontario, L6J 2X1

The undersigned certify that they have the legal authority to carry out the obligations and responsibilities set forth in this agreement and Conservation Plan.

Date: 06/04/2024 Signature:

Adam Loudon President Sugar Creek Wind One LLC

2



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 OneLLC 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@algonguinpower.com.

Regards,

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

algonquinpowercompany.com | T: 905-465-4500 | F: 905-465-4514 | 354 Davis Road, Suite 100, Oakville, ON L6J 2X1

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) <u>only</u> 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 <u>GIS shapefile</u>. 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"

<u>Land Control Statement:</u> 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 team with an option to extend for up to two (2) additional periods of ten (10) years.

<u>Easement Status:</u> 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. <u>Attach all biological survey reports.</u>

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 <u>timeline</u> 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 <u>impact each of the species' life cycle stages</u>.

See HCP, Section 5.0 – Effects of the Proposed Action

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

A) plans to <u>minimize the area affected</u> by the proposed action, the estimated <u>number of</u> <u>individuals</u> of each endangered or threatened species that will be taken, and the <u>amount</u> <u>of habitat</u> 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/reestablishing 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 <u>all measures to be implemented to avoid, minimize, and mitigate</u> 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 **applicants 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 <u>species and habitat monitoring</u> 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 projectarea.
- 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 quality as an adaptive management plan.

• See HCP, Section 6.4 – Adaptive Management

F) <u>verification that **adequate funding** exists</u> 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 <u>"no-action" alternative"</u> 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 longeared 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. 5) An **implementing agreement**, which shall include, but not be limited to (on a separate piece of paper containing signatures):

A) the <u>names and signatures</u> of all participants in the execution of the conservation plan;

B) the <u>obligations and responsibilities</u> of each of the identified participants with schedules and deadlines for completion of activities included in the conservation plan and <u>a schedule for preparation of progress reports</u> to be provided to the IDNR;

C) certification that each participant in the execution of the conservation plan has the <u>legal</u> <u>authority</u> to carry out their respective obligations and responsibilities under the conservation plan;

D) <u>assurance of compliance</u> 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 <u>federal authorizations for a taking</u> 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 is 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 acknowledges and agrees that it is responsible for the implementation of this Conservation Plan and the terms and conditions of the ITA.

halle ashman Signature:

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



Sugar Creek Wind One LLC 354 Davis Road, Oakville, Ontario, Canada L6J 2X1

Table of Contents

1.0	INTRODUCTION	4
1.1	OVERVIEW AND BACKGROUND	4
	1.1.1 Applicant Information	4
	1.1.2 Project Overview	4
	1.1.3 Purpose and Need	4
1.2	REGULATORY SETTING	6
	1.2.1 Endangered Species Act	6
	1.2.2 National Environmental Policy Act	7
	1.2.3 National Historic Preservation Act	7
	1.2.4 Illinois Endangered Species Protection Act	8
	1.2.5 Local Regulations	8
1.3	SCOPE OF THE HABITAT CONSERVATION PLAN	8
	1.3.1 Permit Duration	8
	1.3.2 Covered Area	9
	1.3.3 Covered Species	9
~ ~		•
2.0		9
2.1	PROJECT DESCRIPTION	
	2.1.1 Site Selection	9
~ ~		10
2.2	COVERED ACTIVITY - OPERATIONS	
2.3	MITIGATION	12
3.0	ENVIRONMENTAL SETTING AND BIOLOGICAL RESOURCES	12
3.1	ENVIRONMENTAL SETTING	12
0.1	3 1 1 Land Cover	12
	312 Topography	13
	313 Geology	15
	314 Soils	15
	3.1.5 Hvdrology	
	3.1.6 Wildlife in the Permit Area	
3.2	PRE-CONSTRUCTION SURVEYS	
0.2	3.2.1 Bat Habitat Assessment	
	3.2.2 Acoustic Monitoring	
33	COVERED SPECIES	20
	3.3.1 Indiana Bat	20
	3.3.2 Northern Long-eared Bat	27
	C C	
4.0	ALTERNATIVES CONSIDERED	30
4.1	NO-ACTION ALTERNATIVE (TAKE AVOIDANCE FOR BATS ALTERNATIVE)	30
4.2	5.0 M/S CUT-IN SPEED ALTERNATIVE (PROPOSED SCENARIO)	31
5.0	EFFECTS OF THE PROPOSED ACTION	32
51		
0.1	DIRECT EFFECTS	

	5.1.2	Mortality	32	
5.2	INDIRECT		33	
5.3	EFFECTS	ON CRITICAL HABITAT	34	
54	INCIDENT		34	
0	5.4.1	Scope of the Incidental Take Permit.	35	
	5.4.2	Take Estimate for the Covered Species	35	
	5.4.3	Impacts of Estimated Take	38	
60			12	
6.1			בדי אר	
0.1			40 12	
0.2		IS TO ACHIEVE DIOLOGICAL GOALS AND ODJECTIVES	43 12	
	0.2.1	Mitigation for Direct Bat Mortality	43	
6.2			44 51	
0.3	NORTALI 6 2 1	Reckground and Coole		
	632	Dermits and Wildlife Handling Procedures	51	
	633	Monitoring Protocols	52	
	634	Field Methods	53	
	635	Data Analysis Reporting and Consultation	57	
64				
0.4	641	Adaptive Management Triggers and Responses	59	
	6.4.2	Reporting and Notification	64	
7.0			64	
7.0			04	
7.1				
1.2		J CIRCUMSTANCES	04	
	7.2.1	Listing of New Species	05 66	
	723	Changed Technology/Techniques	00	
72			67	
7.5			07 60	
1.4		MIATION COSTS AND FUNDING ASSURANCES	00	
	7.4.1	Monitoring	70	
	7.4.2	Mitigation Measures	71	
	744	Changed Circumstances	77	
	7.4.5	Administrative Costs	72	
	7.4.6	Contingency Fund	72	
8.0			72	
0.0				
9.0	LITERATU	JRE CITED	75	

LIST OF TABLES

Table 3-1. National Land Cover Data within the Sugar Creek Wind Permit Area, Logan	
County, Illinois	13
Table 3-2. Bat species and their potential to occur within the Sugar Creek Wind Permit	
Area, Logan County, Illinois (IDNR 2017, BCI 2018)	17
Table 3-3. Indiana bat population estimates for the Ozark-Central Recovery Unit	
(USFWS 2017b, 2019)	26
Table 5-1. Summary of Take Estimation.	37
Table 6-1. Summary of proposed monitoring protocols and schedule.	51
Table 6-2. Predicted detection probability (g) for bats during each phase of monitoring at	
the Sugar Creek Wind Project.	53
Table 6-3. Summary of proposed adaptive management triggers and responses for	61
Table 7-1. Funding assurances budget	69

LIST OF FIGURES

Figure 1. Project Location and Preliminary Layout	5
Figure 2. Land Cover	14
Figure 3. Bat Habitat Assessment	18
Figure 4. Ozark-Recovery Unit	25

LIST OF APPENDICES

Appendix A – Bat Surveys, Studies and Reports Appendix B – Mitigation Plan

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.

Introduction October 7, 2021



Figure 1. Project Location and Preliminary Layout

Introduction October 7, 2021

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.

Introduction October 7, 2021

- 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

Introduction October 7, 2021

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.

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

- <u>Indiana Bat:</u> 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 longeared 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.

Project Description and Covered Activities October 7, 2021

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.

<u>Tower:</u> 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.

<u>Nacelle:</u> 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

Project Description and Covered Activities October 7, 2021

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.

<u>Rotor:</u> 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.

Environmental Setting and Biological Resources October 7, 2021

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 preconstruction 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.

Environmental Setting and Biological Resources October 7, 2021

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.

Environmental Setting and Biological Resources October 7, 2021



Figure 2. Land Cover

Environmental Setting and Biological Resources October 7, 2021

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.

Environmental Setting and Biological Resources October 7, 2021

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).

Environmental Setting and Biological Resources October 7, 2021

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).

Environmental Setting and Biological Resources October 7, 2021



18

Environmental Setting and Biological Resources October 7, 2021

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 longeared 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.

Environmental Setting and Biological Resources October 7, 2021

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 longeared 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.

Environmental Setting and Biological Resources October 7, 2021

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).

Environmental Setting and Biological Resources October 7, 2021

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).

Environmental Setting and Biological Resources October 7, 2021

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 site¹, 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

¹ 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.

Environmental Setting and Biological Resources October 7, 2021

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).

Environmental Setting and Biological Resources October 7, 2021



Figure 4. Ozark-Recovery Unit

Environmental Setting and Biological Resources October 7, 2021

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).

State	2009	2011	2013	2015	2017	2019
Illinois	53,353	57,212	66,817	69,924	81,143	78,403
Missouri ¹	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
Total	265,940	271,373	282,131	287,616	300,757	276,317

Table 3-3. Indiana bat population estimates for the Ozark-Central Recovery Unit (USFWS2017b, 2019).

¹A 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 ≥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)

Environmental Setting and Biological Resources October 7, 2021

- 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 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.
Environmental Setting and Biological Resources October 7, 2021

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).

Environmental Setting and Biological Resources October 7, 2021

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 longeared 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 longeared 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

Alternatives considered October 7, 2021

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).

Alternatives considered October 7, 2021

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.

Effects of the Proposed Action October 7, 2021

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, 1ithin 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,

Effects of the Proposed Action October 7, 2021

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 barotrauma². 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

² 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.

Effects of the Proposed Action October 7, 2021

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

Effects of the Proposed Action October 7, 2021

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).

Effects of the Proposed Action October 7, 2021

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 year³.

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 year⁴.

 $^{^{3}}$ 1.0 divided by 0.53

^{4 0.3} divided by 0.53

Effects of the Proposed Action October 7, 2021

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).

Take Estimation Method	Unminimized Take Estimates	Minimized Take Estimates
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

Table 5-1. Summary of Take Estimation.

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.

Effects of the Proposed Action October 7, 2021

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.

Effects of the Proposed Action October 7, 2021

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 (λ =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

Effects of the Proposed Action October 7, 2021

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 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.

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

Effects of the Proposed Action October 7, 2021

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 (λ =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 longeared 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 bats. 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 (lowa) and 806,715 (Wisconsir; USFWS 2016b). Even if all 39 to 87 female northern long-eared bat debits came from the smaller population in lowa, 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 cavehibernating bats throughout eastern North America. There has been a sharp decline in the northern longeared 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

Conservation Plan October 7, 2021

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.⁵ The term "maximum extent practicable" is not defined in the ESA, nor is it defined in any agency regulations.⁶ 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.⁷ 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

⁵ See 50 C.F.R. § 17.22(b)(2)(B).

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

⁷ Id.

Conservation Plan October 7, 2021

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

Conservation Plan October 7, 2021

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).

Curtailment 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:

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

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.

Conservation Plan October 7, 2021

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:

<u>Site 1:</u> 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

Conservation Plan October 7, 2021

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 Rangewide 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 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 prohibitting 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 longeared 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 Rangewide 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

Conservation Plan October 7, 2021

unchecked. To address these threats and ensure the habitat persists, the following actions are proposed: placement of a permanent conservation easement prohibitting 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 oakhickory 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 expands 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 prevelant 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 prohibitting 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.

Conservation Plan October 7, 2021

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/acre⁸ 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
- 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:

⁸ 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).

Conservation Plan October 7, 2021

- 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 in 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:

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

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 norther 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.

Conservation Plan October 7, 2021

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, ads follows:

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

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).

Conservation Plan October 7, 2021

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.

Species	ecies Monitoring Permit Year Number of T Phase Searched		Number of Turbines Searched	Search Interval	Search Period
	Intensive	Years 1 – 3 Years 4 – 14 & 17 – 30	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		57 roads and pads (100- meter radius)	1x/week	Aug 1 – Oct 15
Bats	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

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

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.

Conservation Plan October 7, 2021

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.

Conservation Plan October 7, 2021

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–	Spring, Summer (Apr 1 to July 31)	0.114 (Ba = 25.9745, Bb = 201.7603)
3)	Fall (Aug 1 to Oct 15)	0.219 (Ba = 98.0485, Bb = 349.1677)
Annual Monitoring (Years 4–14 and 17-30 [57 roads and pads])	Fall (Aug 1 to Oct 15)	0.114 (Ba =25.9745, Bb = 201.7603)
Check-in Monitoring	Spring, Summer (Apr 1 to July 31)	0.114 (Ba = 25.9745, Bb = 201.7603)
(Years 15 and 16)	Fall (Aug 1 to Oct 15)	0.219 (Ba = 98.0485, Bb = 349.1677)
Adaptive Management (Years 1-30) as needed	Season Triggered	0.172* (Ba = 239.0233, Bb = 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- feet-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

Conservation Plan October 7, 2021

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 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.

Conservation Plan October 7, 2021

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

Conservation Plan October 7, 2021

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.

Conservation Plan October 7, 2021

6.3.4.1.8 Estimation of the Probability of Carcass Availability and Detection (π)

Searcher efficiency and carcass removal rates will be combined to represent the overall probability (π) 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 π , 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.

Conservation Plan October 7, 2021

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 that 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.

Conservation Plan October 7, 2021

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 (λ) and to estimate the total fatalities (M) for Indiana bats and northern long-eared bats.

The average annual fatality rate (λ) 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):

- <u>Short-term Trigger</u>: is the annual average take rate (λ) 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.

Conservation Plan October 7, 2021

- 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.
- <u>Reversion Trigger</u>: is the annual average take rate (λ) 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.

Conservation Plan October 7, 2021

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	$\lambda_{\text{IBAT}} \le 1.3$ and $\lambda_{\text{NLEB}} \le 0.9$ AND M $\le 39 \text{ IBAT}$ and M $\le 27 \text{ NLEB}$	$\alpha = 0.1$ for λ $\alpha = 0.5$ for M	No changes, continue implementing the minimization (Section 6.2.1) and mitigation (Section 6.2.2) measures outlined in the HCP (and summarized below): • Fall cut in speed of 5.0 m/s • Spring, summer, and late fall cut-in speed of 3.0 m/s • Mitigation of 101.3 acres
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	$1.3 < \lambda_{\text{IBAT}} < 3.0$ or $0.9 < \lambda_{\text{NLEB}} < 2.0$ AND 39 IBAT $\leq M_{\text{Projected}} \leq 90$ IBAT or 27 NLEB $\leq M_{\text{Projected}} \leq 60$ NLEB	α = 0.1 for λ α = 0.5 for M	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)

Conservation Plan October 7, 2021

	Second Level: The average annual take rate is above the Permitted Take, and projected take over the 30-year permit term is above the Permitted take	$\lambda_{\text{IBAT}} \ge 3.0$ or $\lambda_{\text{NLEB}} \ge 2.0$ AND MProjected ≥ 90 IBAT or MProjected ≥ 60 NLEB	$\alpha = 0.1$ for λ $\alpha = 0.5$ for M	OR 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. Increase mitigation to account for the higher level of take (if needed) AND Repeat Intensive Monitoring for 2 years (if deploying technology or changing cut-in speed) AND EITHER Deploy additional technology (e.g., deterrent technology, smart curtailment, or other such technologies as they become proven and available) OR 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.
Reversion Trigger	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.	λ < 0.65 IBATand $λ < 0.45 NLEBANDMProjected < 39 IBATandMProjected < 27 NLEB$	α = 0.01 for λ α = 0.5 for M	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). AND Repeat Intensive Monitoring for 3 years

Conservation Plan October 7, 2021

Long-term Trigger	The actual calculated take to-date exceeds the Permitted Take.	M ≥ 90 IBAT or M ≥ 60 NLEB	α = 0.5	Raise cut-in speeds to 6.9 m/s during identified period of risk.
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Implementation and Funding Assurances October 7, 2021

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.

Implementation and Funding Assurances October 7, 2021

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

Implementation and Funding Assurances October 7, 2021

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.

<u>Response</u>: 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.

<u>Response</u>: 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.

Implementation and Funding Assurances October 7, 2021

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)):

Implementation and Funding Assurances October 7, 2021

- 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 6th, 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

Implementation and Funding Assurances October 7, 2021

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 monitorin Years 1-3	bat ng 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 ba monitorin Years 4-1 30	at lg 14 & 17-	\$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 monitorin Years 15 spring/su periods)	bat ig -16 (fall and immer	\$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 mitig ation	Initial	N/A	\$768,800	Redacted and executed Mitigation Agreement with Service Provider	101.3 acres, \$7,589 per acre

Implementation and Funding Assurances October 7, 2021

Task		Per year	Total (adjusted for inflation where applicable)	Funding Source and timing of Funding	Major Assumptions/Cost Basis		
	Mitigation True-up (adaptive managem ent)	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 Circumst ances 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.

Implementation and Funding Assurances October 7, 2021

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 postconstruction 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.

Implementation and Funding Assurances October 7, 2021

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.

List of Preparers October 7, 2021

8.0 LIST OF PREPARERS

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

<u>Company</u> Algonquin Power / Liberty Power Apex Clean Energy, Inc. Stantec Consulting Services Inc.

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Appendix A October 7, 2021

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 (*Lasionycteris 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 were 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.

	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

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

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

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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.

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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

		EPFU	LANO	LABO	LACI	MYGR	MYLU	MYSO	NYHU	PESU	UNKN
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 *Lasiurus borealis* by Program EchoClass v. 3.1.

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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

	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+

Table A-1. Details of Detector Sites



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

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Site 1a

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Figure A-2. Site 1b



Figure A-3. Site 2a


Figure A-4. Site 2b



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.

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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.
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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.

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



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October 4, 2017



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TABLE OF CONTENTS

INTRODUCTION	. 1
STUDY AREA	. 1
METHODS	4
RESULTS	5
CONCLUSIONS	7
LITERATURE CITED	9

LIST OF TABLES

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).	. 4
Table 2. Sample site characterization within the study area at the Sugar Creek Wind Project	
in Logan County, Illinois	. 6

LIST OF FIGURES

Figure 1. Overview of the Sugar Creek Wind Project in Logan County, Illinois	3
Figure 2. Sample sites and suitable habitat for federally listed bat species at the Sugar	
Creek Wind Project in Logan County, Illinois.	8

LIST OF APPENDICES

Appendix A. Representative Site Photos

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.

Land Cover Type	Acres	% Composition
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
Total	17,752.42	100

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).

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.

0:44	Dominant Tree Orig	Tree Circ	Snags	Nearest Water Source	Connected to Suitable	Suitable Habitat
Site	Dominant Tree Spp.	Tree Size	Present	Description	Habitat?	Present?
Sc 1	Platanus occidentalis, Tilia americana, Gleditsia triacanthos, Populus deltoides, Juglans nigra	Mostly mature, some immature	Yes	Sugar Creek	Yes	INBA & NLEB
Sc 2	Platanus occidentalis, Tilia americana, Gleditsia triacanthos, Populus deltoides, Acer saccharinum, Fraxinus pennsylvanica, Juglans nigra	Mostly mature, some immature	Yes	Sugar Creek	Yes	INBA & NLEB
Sc 3	Platanus occidentalis, Acer saccharinum	Immature, some mature	Yes	Sugar Creek	Yes	NLEB only
Sc 4	Platanus occidentalis, Tilia americana, Gleditsia triacanthos, Populus deltoides, Acer saccharinum, Juglans nigra	Immature, some mature	Yes	Sugar Creek, small drainage to Sugar Creek	Yes	INBA & NLEB
Sc 5a	Gleditsia triacanthos, Acer saccharinum, Salix nigra, Quercus spp.	Small, Immature	No	Small ephemeral tributary to Salt Creek intersects woodlot	Yes	NLEB only
Sc 5b	Gleditsia triacanthos, Acer saccharinum, Salix nigra, Quercus spp.	Mature, some immature	Yes	Small ephemeral tributary to Salt Creek intersects woodlot	Yes	INBA & NLEB
Sc 6	Gleditsia triacanthos, Platanus occidentalis, Tilia americana, Quercus rubra, Juglans nigra, Acer saccharum	Mature, some immature	Yes	Small ephemeral tributary to Salt Creek intersects woodlot	Yes	INBA & NLEB
Sc 7	Gleditsia triacanthos, Acer saccharinum, Quercus rubra	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	Juglans nigra, Quercus rubra, Acer saccharum	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

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

* 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 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

July 20 – November 4, 2016



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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[®] 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[®] (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 (± standard error) bat activity level of 9.70±1.10 bat passes per detector-night. Raised detectors at met tower stations recorded a mean of 14.86±1.25 bat passes per detector-night. Detectors at forest edge stations recorded a mean bat activity level of 42.91±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

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REPORT REFERENCE

Hale, B., and T. Brown. 2016. Bat Acoustic Study for the Sugar Creek Wind Energy Project, Logan County, Illinois. Draft Report: July 20 – November 4, 2016. Prepared by Western EcoSystems Technology, Inc. (WEST), Bloomington, Indiana.

TABLE OF CONTENTS

INTRODUCTION 1
STUDY AREA 1
Overview of Bat Diversity in the Project Area 4
METHODS
Bat Acoustic Surveys 4
Survey Stations 4
Data Collection and Call Analysis6
Statistical Analysis
Federally Listed Bat Acoustic Analysis7
RESULTS
Spatial Variation
Temporal Variation10
Met Tower Stations10
Forest Edge Stations
Species Composition15
DISCUSSION16
REFERENCES

LIST OF TABLES

Table 1. National Land Cover Database land cover types within the Sugar Creek Wind Energy Project, Logan County, Illinois.	4
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	4
Table 3. Number of bat passes recorded at fixed met tower stations and forest edgestations during the bat acoustic study conducted in the Sugar Creek Wind Project inLogan County, Illinois, from July 20 – November 4, 2016.	8
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	.12

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. ..12

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	.14

- 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......15

LIST OF FIGURES

Figure 1. Topographic map showing the location of the Sugar Creek Wind Project in Logan County, Illinois.	. 2
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).	. 3
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.	. 5
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	. 7
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.	. 9
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.	. 9
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.	10

- 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.....14

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).

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
Total	17,749.2	100

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

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 statelisted: 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 potentia	al to occur in
the Sugar Creek	Wind Project	area, Logan	County, Illinois	, based on	distribution,
ranges, and habita	at preferences ¹ .				

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

¹Potential of occurrence according to Feldhamer et al. 2015

² 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[®] (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).

County, Illinois, from July 20 – November 4, 2016.						
SM3BAT Station	Microphone Location	# of High- Frequency Bat Passes	# of Low- Frequency Bat Passes	Total Bat Passes	Detector- Nights	Mean Bat Passes/ Night [*]
SCMET1g	Ground	69	779	848	107	7.93±0.92
SCMET1r Raised 663		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
Overall MET Ground		603	1,473	2,076	214	9.70±1.10
Overall MET Raised		1,090	1,873	2,963	194	14.86±1.25
Overall All MET		1,693	3,346	5,039	408	12.28±1.05
SC1	Ground	1,902	1,110	3,012	107	28.15±3.70
SC2	Ground	4,346	1,825	6,171	107	57.67±6.55
Overall Forest Edge		6,248	2,935	9,183	214	42.91±4.61

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.

± 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).





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.

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

¹ 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
All Bats	07/20/2016	07/26/2016	29.96



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

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

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.

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.

Date (month/day/year)	SM3BAT Station/Location	# of NLEB Calls
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 treeroosting 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



Wind Energy Facility

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	Poforonco	- Eacility Location	# Bat	Poforonco
Facility, Eucation	MW/year	Kelelelice	Facility, Location	MW/year	Relefence
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

Table of Contents

Ι.	Introduction	1
II.	Purpose of Management Plan	1
III.	Goal of Management Plan	2
IV.	Species Information	2
A.	Target Species Life History	2
В.	Existing Threats	3
v.	Mitigation Site Information	3
VI.	Mitigation Site Selection & Baseline Status	3
VII.	Management Plan	4
VIII.	Adaptive Management	5

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 1353rd 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 1353rd Lane in Clayton, IL. The approximate center point of the Mitigation Site is provided below.

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

Driving directions from Kellerville, IL are as follows:

- 1. Head south on E 3000th St/County Rd 3000 E toward N 1200th Ave/County Rd 1200 N for 315 feet.
- Turn right at the 1st cross street onto N 1200th Ave/County Rd 1200 N and continue west for 4.4 miles.
- 3. Turn right onto E 2575th St and continue north for 1.0 miles.
- 4. Turn slightly right as E 2575 St becomes N 1353rd 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 onequarter 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 whitenose 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 1353rd 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

<u>Contents</u>

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



EXHIBIT A-1

GENERAL VICINITY MAP





EXHIBIT A-2

MAP OF MITIGATION SITE





EXHIBIT A-3

USGS TOPOGRAPHIC MAP





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)

ENDOWMENT PAYMENT SCHEDULE YEARS 1-30

				EXPECTED
		YEAR 3 &	PAYMENT	ENDOWMENT
YEAR	EVERY 2 YEARS	EVERY 7 YEARS	SCHEDULE	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		<i></i>	\$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		v/////////////////////////////////////	\$0.00	\$33,957.00
Year 11	\$635.55	<i>/////////////////////////////////////</i>	\$635.55	\$34,509.95
Year 12			\$0.00	\$35,717.80
Year 13	\$635.55	Y/////////////////////////////////////	\$635.55	\$36,332.37
Year 14		\$11,327.05	\$11,327.05	\$26,276.95
Year 15	\$635.55	777777777777777777777777777777777777777	\$635.55	\$26,561.09
Year 16		<i>\////////////////////////////////////</i>	\$0.00	\$27,490.73
Year 17	\$635.55	///////////////////////////////////////	\$635.55	\$27,817.36
Year 18		<i></i>	\$0.00	\$28,790.97
Year 19	\$635.55		\$635.55	\$29,163.10
Year 20		Y/////////////////////////////////////	\$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	<i>\////////////////////////////////////</i>	\$635.55	\$20,015.14
Year 24			\$0.00	\$20,715.67
Year 25	\$635.55	<i>/////////////////////////////////////</i>	\$635.55	\$20,805.17
Year 26		******	\$0.00	\$21,533.35
Year 27	\$635.55	Y/////////////////////////////////////	\$635.55	\$21,651.47
Year 28	VIIIIIII	\$11,327.05	\$11,327.05	\$11,082.22
Year 29	\$635.55	777777777777777777777777777777777777777	\$635.55	\$10,834.55
Year 30		<i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	\$0.00	\$11,213.76

ENDOWMENT PAYMENT SCHEDULE CALCULATIONS 1,2

CATEGORY	SPECIFIC ACTIVITY (Briefly Describe)	EVERY 2 YEARS	EVERY 7 YEARS
	Biennial Qualitative Monitoring	\$260.55	-
Task 1	Wages (3.5 hrs.)	\$175.00	-
I dSK 1	Travel Cost (114 miles)	\$65.55	-
	Supplies/Miscellaneous	\$20.00	-
	Vegetation Monitoring 3	-	\$385.55
Task 2	Wages (6 hrs.)	-	\$300.00
1036 2	Travel Cost (114 miles)	-	\$65.55
	Supplies/Miscellaneous	-	\$20.00
Task 3	Report and Work Plan Prep	\$250.00	\$250.00
TdSK 5	Wages (5 hrs.)	\$250.00	\$250.00
	Report and Work Plan Submission &	\$125.00	\$200.00
Task 4	Coordination		
	Wages (2.5 hrs., 4 hrs.)	\$125.00	\$200.00
Task 5	Adaptive Management 4	-	\$10,741.50
TOTALS		\$635.55	\$11,327.05

1 All disbursements will be adjusted for inflation by Endowment Holder upon payment per the Recipient Agmt. 2 The hourly wage for such projects is \$50 on average.

3 This task also occurs during Year 3.

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

LEGEND



Anticipated Payment Schedule

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 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. <u>Performance of Land Management Activities.</u> 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;
- 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. <u>Funding for Land Management Activities.</u> 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 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 Landowment F

- 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. <u>Review and Reporting Requirements.</u> 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 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.

- 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

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: pcwpgrlt@gmail.com
USFWS Lead:	Kraig McPeek Field Supervisor Rock Island, Illinois Field Office 1511 47 th 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 Ву: _____ Date: _____ RECIPIENT **GREAT RIVERS LAND TRUST** Date: _____ By: _____ SPONSOR MAGNOLIA LAND PARTNERS LLC _____ Date: _____ By: Mark Bernstein, Managing Partner ACKNOWLEDGED: USFWS **U.S. FISH AND WILDLIFE SERVICE** Ву: _____ 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 an 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 investmentgrade 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 that 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-toyear 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

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)

ENDOWMENT PAYMENT SCHEDULE YEARS 1-30

				EXPECTED
		YEAR 3 &	PAYMENT	ENDOWMENT
YEAR	EVERY 2 YEARS	EVERY 7 YEARS	SCHEDULE	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		Y/////////////////////////////////////	\$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	<i></i>	\$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	V/////////////////////////////////////	\$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	<i>/////////////////////////////////////</i>	\$635.55	\$21,651.47
Year 28		\$11,327.05	\$11,327.05	\$11,082.22
Year 29	\$635.55	V/////////	\$635.55	\$10,834.55
Year 30		X/////////	\$0.00	\$11,213.76

ENDOWMENT PAYMENT SCHEDULE CALCULATIONS 1,2

CATEGORY	SPECIFIC ACTIVITY (Briefly Describe)	EVERY 2 YEARS	EVERY 7 YEARS
	Biennial Qualitative Monitoring	\$260.55	-
Task 1	Wages (3.5 hrs.)	\$175.00	-
I dSK 1	Travel Cost (114 miles)	\$65.55	-
	Supplies/Miscellaneous	\$20.00	-
	Vegetation Monitoring 3	-	\$385.55
Task 2	Wages (6 hrs.)	-	\$300.00
1036 2	Travel Cost (114 miles)	-	\$65.55
	Supplies/Miscellaneous	-	\$20.00
Task 3	Report and Work Plan Prep	\$250.00	\$250.00
TdSK 5	Wages (5 hrs.)	\$250.00	\$250.00
	Report and Work Plan Submission &	\$125.00	\$200.00
Task 4	Coordination		
	Wages (2.5 hrs., 4 hrs.)	\$125.00	\$200.00
Task 5	Adaptive Management 4	-	\$10,741.50
TOTALS		\$635.55	\$11,327.05

1 All disbursements will be adjusted for inflation by Endowment Holder upon payment per the Recipient Agmt. 2 The hourly wage for such projects is \$50 on average.

3 This task also occurs during Year 3.

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

LEGEND



Anticipated Payment Schedule

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 \leq 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 thee 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

<u>Contents</u>

- 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 1353rd 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:

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Illinois Mortgage 2010R-12478 Illinois Mortgage 2015R-00948

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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

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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 .:

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NONE	<u>3</u> ?		
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Other Liens I	Book/Page/Document No.:	:	.1
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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, in bankruptcy proceedings, in the United States District Court of the C searched the Statewide Illinois Tax Lien Registry web site.	nor do I certify as to judgments or entral District of Illinois; nor have lag
Taxes:	2
Taxes for the years 2019 & 2020 are not yet due and pay 2018 taxes in the amount of \$2,868.70 are paid. Taxes for the 5 years prior appear paid in full.	able. g
Ownership search begin date: February 28, 1961 at 3:10 Ownership search end date: at May 13, 2020; 4:30 P.M	P.M
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Respectfully submitted,

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Jim D. Grégory 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.

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State - State

EXHIBIT A

The Southeast Quarter (SE¼) 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 (SE¼);

ALSO EXCEPT all that part now being used for cemetery purposes;

All situated in the County of Adams, in the State of Illinois.

No.2390 Miled this 2Min., day of February A.D., 1961 at 3110 otolook P.M.

QUIT CLAIM DEID

The Granfors, Roger. G. Goertz, an helr of the setete 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.

all interest in the following described Reat Estate:

Print of a high second heads a

The Southeast Quarter of Section Thirty (30), in Township One (1) South of the Base Line, Range Five (5) West of the Fourth Principal Heridian, 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 Tine, 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, hereby releasing and waiving all rights under ond by virtue of the Homestead Exemption Lows of this State

. موجود ما ساده ده ما مود هو توجود ال و موجود ما در و موجود ما در الم ده موجود مود . Doted this Boges D. Jolly (SEAL) Boger Q. Ogerta Merico Signed, Sealed and Belivered in the Presence of

Willow Courty (SEAL) HI IMA GOOTEE

STATE OF ILLINDIS, County of AVENUE

In the State aforesaid, do hara service that have a state of the said collars, a Notary Public in and for said collars, in the state of the said collars a state of the sa

the rest of the rest of the same perion a line of the rest of the
Olie Grantors. dechased, and and, each as: th	Howard E. Goartz, an Hair of the satate of Albart John Goartz, Wands Goartz, the wife of Howard E. Goartz, Sach in their own right. a spouse of the other
the sum of	\$10.00)0011ars.and.other.valuabla.consideration \$10.00)0011ars.and.other.valuabla.consideration WEYS and QUIT CLAIMS to
all interest in the	following described Real Estate:
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STATE OF ILLINOIS, \$5. County of Adoms, George J. Lewis I,

day of

(SEAL) Venta Hae Wende Goartz.. XINHARXX 11 -1

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, a Notary Public in and for sold County, ... Howard E. Coartz, an hair. of the estate of in the State aforesaid, do hereby certify that Albert John Coartz, deceased, and Wanda Coartz, the wife of Howard E. Coartz, each In their own right, and much, as, the spouse of the other



personally known to me to be the some person st. ..., whose name..s. .. , subscribed to the foregoing instrument, as having are executed the same, oppeared before me this day in person and acknowledge they ed that signed, sealed and delivered the sold initiament including the real walver of the right of homestead, of the state and free and voluntary act, for the use and purpose ? GIVEN, Under My Hand and Hatania

No.2392 Filled this 28th., day of February A.D. 1981, at 3112 0 61 001 2 QUIT CLAIM DESE

The Granters, Harla Hardy, an hair of the satata of Albart John Qoertz, decealed, and Harold Hardy, the Husband of Harts Hardy, each in their own right and each as the spouse of the other,

fundament of the County of Adams and State of Illinois, for and in consideration of hushand and wife, pot as tenents in common, but in Joint tenency with right of survivorable.

all interest in the following described Real Estate:

1238 .

The Southeast Quarter of Section Thirty (30) in Township Que (1) South of the Base Line, Range Five (5) West of the Fourth Principal Heridian, except the following described tracts Beginning at a point on the Section line of the Esst-side of the Southeast Quarter of the Southeast Quarter of seld 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,

It is hereby at sample but been as to be surger the Physical and are and allow variable construction and the mean party constructs to a war upply (XXXXX) in the inclusion of a subscription of the subscription of by shand, and which and as itemants to compute but in form the part of a compute state of a

S. S. March & S. March

A STATE AND A MARKATER AND AND AND E . situated in the County of Adams, in the State of Illingis, hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of this State

Masie Hard Signed, Sealed and Delivered in the Presence of (SEAL) 1 4) 1² Hot I.e. Hardy... SEADOX

STATE OF ILLINOIS, County of Adams,

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	Filed this 28th., day of Tobrian A.P., 1961 at 5118 Highed at
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.000.12 % .	CBCCCCSSIL-Automatical and a second second second second second second second second second second second second
· · · · ·	of the County of Adoms and State of Illinois, for and in consideration a
' the sum of	Ten. (\$10.00). Dollars. and other. valushie consideration
in hand po	Id, CONVEY S and QUIT CLAIM S to John A Powers with right of
husband	AND WITH A NOT AR ANIMAR JII SWINDIA WAY, OF AND IS SHARE AND AND AND AND AND AND AND AND AND AND
BULVIVO	in the following described Real Estate:
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Dated this 212t day	of
Signed, Sealed and Delivered in the Presence of	Bessle H. Coertz SPAKK
	(SEAL)

STATE OF ILLINOIS, County of Adams,

34. . . .

417/23 this 28th., day of February A.D., 1961 at 3114 o'clopk P.M 10.2391 Filed TATAL BURGER BURGER STREET, ST anti-menter the second s Whe Grantor, S., John L., Powers, and Donna. LA. Powers, husband and wife in each inthalr. own. right and each as the spouse of the others respectively of the County of Adams and State of Illinois, for and in consideration of in hand pold, CONVEY .. and WARRANT .. to ... AyrLL.A. Elkus. and Harlan. Elbus .. husband ... end wife, not as tenents in common, but as joint tenents, 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 Northeasterly to the place of beginning, being one-half acre more or less, situated in the County of Adams, in the stars of ulling stress the sting and waiving all rights under and by virtue of the Homestead Exemption Lows of this state of this state of the Homestead Exemption Lows of this state of the BUYERS ASSUME THE TRACE FOR THE 4 FAB 1961 Dated this 28.772 day of HUN FEBRUARY A. D. 19(6), Signed, Seoled and Delivered in the Presence of Monna I. a suitered STATE OF ILLINOIS,) County of Adoms)A husband and wife. the second s personally known to me to be the same person A whose name A Instrument; as having executed the same, appeared before me this day in terms and the same the same instrument in the same and the same is the same instrument including the same and the same is the same instrument including the same and the same is the same

A'X	(ITOINE, III 5. 117, 53167, III. 450-2
14. 19.	Document No. 12098 filed for Record in Recorder's Office Adams
Z	WARRANTY DEED
	THE GRANTOR, S,CYRIL.A., ELBUS, and MARIAN ELBUS, husband and wife, each
	Individually and as_spouse of the other,
	good and valueble 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 Princi- pal 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;
	bergiver releasing
	the Homestead Exemption Laws of this State of Illinois.
	Dated this day of November 2
	Signed, Sealed and Delivered in the Presence of Cyril A. Elbus (SEAL
	Marian Elius - ISEAN
	Marian Elbus (SEA)
	County of Adams, A
	1, o Notory Public in and for said County, in the Stul
	oforesaid, do hereby certify thatLYTIL A. Elbus and Marian Elbus, husband and wire,
	personally known to me to be the same person S whose name S are subscribed to the foregoin
	instrument, as having executed the same. appeared before me this day in person and acknowledged that . they
	issigned, sealed and delivered the said instrument including the release and waiver of the rig
	GIVEN under my Hand and _Notarial Seal, this.
	NOTAR, Day of November, A. D. 1961.
	Notory Public.
	The Jax and the hear 19_2/_ and subsequent years shall be sent to

1

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No. 19472 Filed on the 26th day of September 1972 at 1:50 P.H.

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 $\mathcal{TE}(\mathcal{U}, \mathcal{CO})$ DOLLARS,

In hand paid, CONVEY.8..... and QUIT CLAIM. 8..... to <u>Robert E. Crooks</u>

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 Adam	ns, in the State of Illinois	, hereby releasing and	ł waiving all rights	under and by
virtue of the Homestead Exem	ption Laws of this State	of Illinois.		

Dated this	22nd	day of	September	A. D. 19
		(SEAL)	× Mapry M. C	rooks ISEAL
		(SEAL)		(SEAL
		(SEAL)		
		(SEAL)		ISEAL
ATE OF ILUNOI	3, } ss.		· · · · · · · · · · · · · · · · · · ·	

her free and voluntary act,

for the uses and purposes therein set forth.

GIVEN Under My Hand and <u>Notarial</u> Seal, this <u>23</u> and day of <u>September</u> A. D., 19.72 Kandra Dorolin

Clayton, Illino

40 .2

Notary Public The tax statements for the year 19...... and subsequent years shall be sent to

NAME Robert E. Crooks ADDRESS

No. 58751 Filed on the 21st day of June 1988 at 8:44 A.M.

WARRANTY DEED----

THE GRANIORS, 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 ----- mony sex in hand paid, CONVEY_____ and WARRANI 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:

THIS IS A SPLIT OR DIVISION OF AN EXISTING PIECE

"OFFICIAL SEAL" CORRINE RESTNER

Notary Public, Stigle al Illinois Ada**as Co**unty My contaision expires 11/16/90

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 public highway, thence along the south side of the public highway Northeasterly 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 Cou	inty of Adam	ns, in the State o	l Illinois, hereby releasing	and waiving all rights under and by	virtue of the Homestead Exemption
Lows of this State	of Illinois.				
Grantees	herei	<u>agree</u> a	ind assume to	pay general real	estate taxes for
the year	1988,	and all	subsequent y	ears thereto.	
Dated this		14th	day of	June	AD 10 88

(SEAL)

(SEAL)

personally known to me to be the same person

DOCUMENTARY STAMPS

The tax statements for the year 19.88 and subsequent years shall be sent to

June

NAME Dennis L. & Susan N. Tresch Address

STATE OF ILLINOIS, COUNTY OF ADAMS, Iss. , Counce J. Keatuer o Notory Public in, and for soid founty and State aforesoid, DO HEREBY CERTIFY, that Robert E. Crooks, a divorced person not now married, and never having remarried,

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<u>24, 1986</u>

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QUINCY, IL. 62301 a standard a state

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2(91) (SEAL)

Buyer, Seller or Representative

(SEAL)

Croop

is

KOTARY PUBLIC Exempt under provisions of Paragraph

Section 4, Real Estate Transfer Tax Act.

Gerald L. Timmerwijke

Robert E. Crooks

whose nome

subscribed to the foregoing instrument, oppeared before me this day in person and ocknowledged that $\frac{1}{2}$ $\frac{1}{10}$ signed, sealed and delivered the said instrument as $\frac{1}{10}$ free and voluntary oct, for the uses and purposes therein set forth, including the release and waiver of the right of homestead.

Dote DEED PREPARED BY

A.D. 19 88

auro

No. 200310194 Book 620 Page 10194 Adams County, State of Illinois RECORDED Jul 3, 2003 9:08 AM Fees \$25.00

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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 $\frac{234}{100}$ day of June, 2003.

MTSesur

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.

usar YI Treset

Susan N. Tresch, formerly Susan N. White

2

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.

OFFIC SEAL NOYARV D COMMINISION ED

Notary Public

No. 200310195 Book 620 Page 10195 Adams County, State of Illinois 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 <u>Clayton, IL 62324</u>

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

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 Susan N. Tresch, formerly Susan N. White

STATE OF ILLINOIS)) SS COUNTY OF ADAMS)

I, <u>Scort Schoonauer</u>, 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.

2003.	Given under my hand and official seal, this 2.8 day of $40aE$,
	OFFICIAL SEAL SCOTT SCHOONOVER NOTARY PUBLIC - STATE OF ILLUNOIS MY COMMISSION EXPIRES: 09-23-08 Notary Public	

No. 200310195 Book 620 Page 10195

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

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: R E C O R D E D Jul 3, 2003 9:10 AM Fees \$25.00 Doc. No.:
Step 1: Identify the property and sale information. 1 N. 13:53-d 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	Vol.: Larry D. Ehmen, County Recorder Page: Received by: 9 Identify any significant physical changes in the property since
 3 Write the parcel identifying numbers and lot sizes or acreage. * Parcel identifying number a 10-0-0322-000-00 (split) 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*): X Warranty deed Quit claim deed Executor deed Trustee deed Other (specify): Yes X No Will the property be the buyer's principal residence? 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*) 	January 1 of the previous year and write the date of the change. (Mark with an "X.")Demolition/damageAdditionsMajor remodelingNew constructionOther (specify): Date of significant change*:/Year 10 Identify only the items that apply to this sale. (Mark with an "X".) aFulfillment of installment contract-year contract
a	 Buyer is a real estate investment trust Buyer is a pension fund Buyer is an adjacent property owner Buyer is exercising an option to purchase* Trade of property (simultaneous)* Sale-leaseback 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 .Yes X 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 b Ш 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). 62 18 19 Illinois tax stamps -- multiply Line 18 by 0.50. 19 31.00

20 County tax stamps -- multiply Line 18 by 0.25.

21 Add Lines 19 and 20. This is the total amount of transfer tax due.

* See instructions. PTAX-203 (R-7/00) ID:3100

This form is authorized in accordance with 35 ILCS 200/31-1 et seg. Disclosure of this information is REQUIRED. This form has been approved by the Forms Management Center. IL-492-0227 15.50

46.50

20 \$

21

s

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

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 Jate: 01/25/2008 \$10.00 State Surcharge Paid

Georgia Voin, Adams County Clerk/Recorder

- Adams County Abstract

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 (SE¼) 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-Ouarter (SE¼), 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

Dated this	24+4	day of	NANUARY	· · ·	_, A.D. 2006
•••			Jusan	m frese	L
			Susan N. Tresch		· .
		•			

STATE OF ILLINOIS

COUNTY OF ADAMS

I, $\underline{\bigcirc} AMes \underline{\bigcirc} \underline{\bigcirc} AegoAy}$, 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 244h day of \sqrt{ANUARY} , 2006

"OFFICIAL SEAL' JAMES D. GREGORY Notary Public, State of Illinois My Commission Expires 03/08/08

)) SS

)

Notary Public

Plea can	PTAX-203 Illinois Real Estate Transfer Declaration se read the instructions before completing this form. This form be completed electronically at www.revenue.state.il.us/retd.	No. 200600778 Book 706 Page 778Adams County, State of IllinoisCounty:R E C O R D E DJan 25, 2006 3:48 PM Fees \$452.00Date:Jan 25, 2006 3:48 PM Fees \$452.00Date:10.00 State Surcharge PaidDoc. No.:10.00 State Surcharge PaidVol.:10.00 State Surcharge Paid
Ste	p 1: Identify the property and sale information.	Georgia Volm, Adams County Clerk/Recorder
1	N 1200th Avenue	
-	Sireat address of property (or 911 address, if available) Clayton Concord	Received by:
	City or village Township	
2 3	Write the total number of parcels to be transferred. 1 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	 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/damageAdditionsMajor remodeling New constructionOther (specify); Date of significant change*;/
		Monih Year
4	d	 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
Ű	Quit claim deedExecutor deedTrustee deed	c Transfer of less than 100 percent interest* d Court-ordered sale*
6	Yes X No Will the property be the buyer's principal residence?*	e Sale in Ileu of foreclosure
7	Yes X No Was the property advertised for sale or sold	f Condemnation
	using a real estate agent?*	g Auction sale
8	Identify the property's current and intended primary use.	h Seller/buyer is a relocation company
	Current Intervied (Mark only one Item per column with an "X.")	Seller/Duyer is a minimized international distribution of government agency
	Vacant land/lot	L Buyer is a neasion fund
	b Hesidence (single-family, condominium, townnome, or ouplex,	Buyer is an adjacent property owner
	c Mooile nome residence	m Buyer is exercising an option to purchase*
	a Apartment building (dunis or less) here or units	n Trade of property (simultaneous)*
	f Office	o Sale-leaseback
	a Retail establishment	p Other (specify)*:
	h Commercial building (specify)*:	
	i Industrial building	
	j <u>X</u> Karm	
	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," "i," "g," "h," 1," or "k," complete Form PTAX-203-A, Illinois Real Estate Transfer Declaration Supplemental Form A.

FOHILA.	•	-1-1	ć	.277.600.00
11 Full actual consi	deration"	10-	¥	0.00
12a Amount of perso	nal property included in the purchase"	128	\$	0.00
12h Was the value of	a mobile home included on Lines 11 and 12a?	12b	Ye	es <u>X</u> No
120 mas did salue of	a from the still This is the net consideration for real property.	13	\$	<u>277,600.00</u>
13 Subtract Line 12	a non Line 11, mis is the net to the consideration for you property.			
14 Amount for othe	real property transferred to the seller (in a situation a system gap		٠	0.00
as part of the ful	actual consideration on Line 11"	14	<u>ې</u>	0.00
15 Outstanding mo	toage amount to which the transferred real property remains subject *	15	\$	0.00
16 If this transfor is	everyon use an "X" to identify the provision.*	16	b	km
	t and if from Line 10. This is the not consideration subject to transfer tax.	17	\$	277,600.00
17 Subtract Lines 1	4 and 15 from Line 15. This is the net consideration subject to manore, take	19	·	556
18 Divide Line 17 b	y 500. Round the result to the next hignest whole number (e.g., 61.002 rounds to 62),	10	A	278.00
19 Illinois tax stam	os — multiply Line 18 by 0.50.	19	••	120.00
20 County tax stam	ns — multiply Line 18 by 0.25.	20	ş	139.00
Add Lines 10 on	d 00. This is the total amount of transfer tax due.	21	\$	417.00
Z1 Add Lines 19 80				
See instructions.	This form is authorized in accordance with 35 ILCS 200/31-1 et seq. Disclosure of this information is RECUIRED This form has been approved by the Forms Management Center. IL-492-0227			Page 1 of 4
P (A Y 2013 / 13 - 7/11)				-

PTAX-203 (R-7/00)

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 (½)interest in the following described real estate, towit:

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 Illinols.

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 244h day of VANDARY, 2006. (SEAL) CHAD M. MARKERT

No. 200600779 Book 706 Page 779 Adams County, State of I. Linois R E C O R D E D Jan 25, 2006 3:50 PM Fees \$245.00 Rental Housing Support Program \$10.00 State Surcharge Paid Date: 01/25/2006 Georgia Volm, Adams Gounty Clerk/Recorder Georgia Volm, Adams Gounty Clerk/Recorder (The Above Space For Recorder's Use Only)

WARRANTY DEED - Page 2

) SS.

STATE OF ILLINOIS

I, $\underline{J_{AMES}} \geq \underline{G_{RGR}}$ 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 #44h 2006. day of √ NOTARY PUB "OFFICIAL SEAL JAMES D. GREGORY Notary Public, State of Illinois

Permanent Index Number: PIN#10-0-0322-000-00

My Commission Expires 08/08/08

Mail tax statements to:

Mr. Gerald E. Lierly, Jr. 2466 Hwy 24, Camp Point, 111. 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 for can be completed electronically at www.revenue.state.il.us/retd. Step 1: Identify the property and sale information.	Do not Wille 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: R E C O R D E D Jan 25, 2006 3:50 PM Fees \$245.00 Rental Housing Support Program \$10.00 State Surcharge Paid Date: 01/25/2000 Vol.: Page: County Clerk/Recorder
Street address of property (or 011 address, if available) Clayton Concord City or village Township	Received by:
 Write the total number of parcels to be transferred	 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/damageAdditions Major remodeling New constructionOther (specify): Date of significant change*: / / Year 3. 10 Identify only the items that apply to this sale. (Mark with an "X.") Rulfillment of installment contract — year contract
Month Year	initiated*:
 5 Type of deed/trust document* (Mark with an "X.'): <u>X</u> Warranty deed Quit claim deedExecutor deedTrustee 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 Intervied (Mark only one item per column with an "X.") a Vacant land/lot b Residence (single-family, condominium, townhome, or duple c Mobile home residence d Apartment building (6 units or less) No. of units: f Office g Retail establishment h Commercial building (specify)*:	 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 a nadjacent 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.

PTAX-203 (R-7/00)

JIC	p 2. Calculate the amount of transfer tax due.			
Not	e: Round Lines 11 through 17 to the next highest whole dollar. If the amount on Line 11 is over \$1 mil Line 8 above is marked "e," "f," "g," "h," "i," or "k," complete Form PTAX-203-A, Illinois Real Estate Tra Form A.	lion and Insfer D	the property's current use eclaration Supplemental	1 OU
11	Full actual consideration*	11	\$139,930.50	
12a	Amount of personal property included in the purchase*	12a	\$0_0	
126	Was the value of a mobile home included on Lines 11 and 12a?	12b	Yes XNo	
13	Subtract Line 12a from Line 11. This is the net consideration for real property.	13	\$139,930.50	
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.	bk	m
17	Subtract Lines 14 and 15 from Line 13. This is the net consideration subject to transfer tax.	17	\$139,930.50	
18	Divide Line 17 by 500. Round the result to the next highest whole number (e.g., 61.002 rounds to 62).	18	2.80	
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	\$ 70.00	
21	Add Lines 19 and 20. This is the total amount of transfer tax due.	21	\$ <u>21.0.00</u>	
*Se	e instructions. This form is authorized in accordance with 35 ILCS 200/31-1 et see, Disclosure of this information			

This form is authorized in accordance with 35 ILCS 200/31-1 et seg. 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 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:



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.

his 29th day of November, 2010. (SEAL) MARKERT

CONSIDIATI CINOSI (CODI 2008/08/7) PASE 10F

(SEAL)

GERALD E. LIERLY, JR.

STATE OF ILLINOIS) Adams > SS. COUNTY OF BROWN)

Christop Land Schuert, I, 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 29th day of November, 2010.

OFFICIAL SEAL CHRISTOPHER D SCHUERING NOTARY PUBLIC - STATE OF ILLINOIS MY COMMISSION EXPIRES:04/17/14

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-2 Illinois Rea Transfer D	03 al Estate eclaration	Co Da	uniy: te:	2 ADAMS CO ADAM	010R-12 GEORGIA VO DUNTY CLER IS COUNTY, RECORDED 12/2010 12	477 DLM K/RECORD ILLINOIS ON 208 PM	ER
Plea can	ase read the instructions before co be completed electronically at www.	mpleting this form. This form evenue.state.if.us/retd.			GIS	REC FEE: 15 RECORDER F	.00 EE: 1.00	
Ste	p 1: Identify the property an <u>N 1353Ad LN</u> . Street address of property (or 911 address, if a <u>Clayton</u> City or village Write the total number of parcels to	vallable) Concord 155W, Township be transferred. 1	Pa Re 9	i.: ge: 	GIS STAT CO RHSP y significant p	COUNTY FEI E REV STAMI REV STAMP: HOUSING F	E: 19.00 P: 319.50 159.75 EE: 10.00	property since
3	Write the parcel identifying numbers a Parcel identifying number a 10-0-0322-000-00 b c d Write additional parcel identifiers and	Ind lot sizes or acreage.* Lot size or acreage 1/38,8 acres lot sizes or acreage in Step 3.	10	January 1 (Mark with an Demo New Date of sig Identify on	of the previou "X") blitlon/damage construction nificant chang ly the items th	eAddit Othe e*:Mo nat apply to t	vrite the da ions r (specity): nth his sale. (M	te of the change. Major remodeling
4 5 6	Date of deed/irust document:Mc Type of deed/irust document* (Mark withQuit claim deedExecutorOther (specify); Ves. X. No Will the property be	1 / 2010 mth Year an "X."): X Warranty deed deed Trustee deed		a Fu ini b Sa c Tri d Co	If illiment of ins it at ed*: ale between re ansfer of less ourt-ordered s	stallment co plated individ than 100 pe pale*	ntract — ye _ fuals or cor rcent Intere	ar contract porate affiliates est*
8	Yes X No Was the property set using a real estal identify the property's current and in Current intended (Mark only one item per a Vacant land/lot b No Was the property set using a real estal identify the property's current and in Current intended (Mark only one item per a Vacant land/lot b No Was the property set using a real estal identify the property's current and in Current intended (Mark only one item per a Vacant land/lot b No Was the property set using a real estal intended (Mark only one item per a Vacant land/lot b No Was the property set using a real estal intended (Mark only one item per a No Was the property set using a real establishment building (Ge Apartment building (Ge Apartment building (Ge Commercial building 1 Industrial building	advertised for sale or sold e agent?* tended primary use. r column with an "X.") y, condominium, townhome, or duplex) co units or less) No. of units: ver 6 units) No. of units: (specify)*:		g	ale in neu or io ondemnation lotion sale eller/buyer is a lyer is a real e lyer is a pens lyer is an adja lyer is exercis ade of propert ale-leaseback ther (specity)*:	a relocation of financial ins estate invest ion fund acent proper ing an optio by (simultane	company titution* or (ment trust ty owner n to purcha sous)*	yovernment agency Ise*
	Image: Second state Image: Second state Imag							
Ste Not	e: Round Lines 11 through 17 to the Line 8 above is marked "e," "f," "g," Form A.	If transfer tax due. next highest whole dollar. If the n," it," or "k," complete Form PI	amo AX-2	ount on Line 203-A, Illine	e 11 is over \$ is Real Estate	l million and 9 Transfer D	I the proper eclaration S	ty's current use on Supplemental
11 12a 12b 13 14	Full actual consideration* Amount of personal property includ Was the value of a mobile home in Subtract Line 12a from Line 11. Thi Amount for other real property tran	ed in the purchase [*] cluded on Lines 11 and 12a? s is the net consideration for re sferred to the seller (in a simult	al pr	operty. bus exchan	gə)	11 12a 12b 13	\$Yes	319,240.00 0.00 X_No 319,240.00
15 16 17 18 19	as part of the full actual consideration Outstanding mortgage amount to v if this transfer is exempt, use an "X Subtract Lines 14 and 15 from Line Divide Line 17 by 500. Round the r Illinois tax stamps — multiply Line Couply tax stamps — multiply Line	on on Line 11" which the transferred real prope to identify the provision.* 13. This is the net considerates ut to the next highest whole 18 by 0.50. 18 by 0.25	rty re it lon numi	emains sub subject to ber (<i>e.g.</i> , 61.(ject * transfer tex. XX2 rounds to 62),	14 15 16 17 . 18 19 .20	\$b \$b \$b	0.00 0.00 <u>k</u> m 319,240.00 639 319.50 159.75
20 21 *o-	Add Lines 19 and 20. This is the to	na by 0.20. Ital amount of transfer tax du	18,		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	-∝cv 21	\$	479.25
30 PTA	This form is authorize X-203 (R-7/00)	in accordance with 35 ILCS 200/31-1 arm has been approved by the Forms M	etse anage	q. Disclosure o ment Center.	ruis information [L-492-0227	J		Page 1 of 4



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 BGM406 (08/10)

No(s). 7722477300

This Mortgage, dated <u>November 29, 2010</u>, 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 <u>1st Farm Credit Services, FLCA</u> (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 <u>Adams</u>, 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 <u>\$141,000.00</u> evidenced by 1 promissory note(s), as follows:

Date of Note(s)	Face Amount(s)	Maturity Date(s)
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 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.

STRATICUSS COD 275-041 PACED

M. Hugh

ACKNOWLEDGMENTS

STATE OF ILLINOIS)) ss. (Individual)	
COUNTY OF ADAMS	_)́	
On <u>November 29, 2010</u> , befor JEFFREY M. HUGHES and DIANE M to me known to be the person(s) desc as their free act and deed. OFFICIAL SEAL CHRISTOPHER D SCHUERING NOTARY PUBLIC - STATE OF ILLINOIS MY COMMISSION EXPIRES:04/17/14	Name: Mark Wernowsky Chosteple-2	strument, and acknowledged the same
My Commission Expires4/17/14	Commissioned in <u>Adams</u>	County rtgagee herein by:
Pamela S. Skeen	2000 Jacobssen Drive,	Normal, IL 61761 (Citv/State/ZIP)
		· ·

Loan No. 7722477300

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 (06/13)

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 <u>\$60,000.00</u> evidenced by <u>1</u> promissory note(s), as follows:

Date of Note(s)	Face Amount(s)	Maturity Date(s)
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 tiens 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 tille 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.

Complete Improvements. To complete in a reasonable time any improvements now or later under construction on the premises.
 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 new 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 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 reamontize 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 tille 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 tille 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 **Diane M Hughes** STATE OF ILLINOIS (Individual)) \$5.

COUNTY OF ADAMS

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On <u>Jeb 5, 2015</u>, before me personally appeared: <u>JEFFREY M. HUGHES and DIANE M. HUGHES</u>, 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.

"OFFICIAL SEAL KRISTINA FESSLER NOTARY PUBLIC, STATE OF ILLINOIS My Commission Expires 6/17/2017

INTERNATION OF A STATE AND AND A

essler Notary Public County, Illinois My Commission Expires June 17.201

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,

ADDA STERNING AND ZOTA AND AND ADD

(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.)

No. 13466 Filed on the 22nd day of February 1983 at 4:20 P.M.

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OIL & GAS LEASE Producers 88 Rev. A (1974) III. Ind. Mich.

the search server

5 04 D. 649

This AGREEMENT made this	16th	day of	February	
ROBERT E. CROOKS, A Divorced	Man (in Adams	Co., IL) and	<u>not having remarri</u>	ed
519 Northwest Cross Street,				
· · · · · · · · · · · · · · · · · · ·				

of Mt. Sterling, Illinois 62353, herein called lassor (whether one or more), and

HENRY ENERGY CORPORATION, 1201 North Watson Road, Arlington, TX 76011 - - - - - - - . as Lessoe

1. Lessor, in consideration of _____ Ten and More _____ Doing bergin in routi _____ Doing (<u>\$10</u>, and More _____) in hand paid, receiptof which is here acknowledged, and of the roysellies herein provided and of the agreements of the tesses herein contained, hereby grants, tesses and lets exclusively unto lesses for the purpose of investigating, exploring, prospecting, dilling, mining and operating for and producing oil, idjuid hydrocarbons, all gass, and their respective constituent produces, injecting gas, waters, other livids, and air into subsurface strata, taying pipe lines, storing oil, building and 'maintaining tanks, power stations, telephone lines, and other structures and things thereon to produce, save, take care oil, treat, manufacture, process, store and transport said oil, liquid hydrocarbons, gases, and their respective constituent produces and other structures and their respective constituent said oil, liquid hydrocarbons, gases, and their respective constituent produces and other structures and their respective constituent produces and other structures and their respective constituent produces and other structures and their respective constituent produces and other structures and their respective constituent produces and other structures and their respective constituent for and transport said oil, liquid hydrocarbons, gases, and their respective constituent produces and other structures and their respective constituent produces and other structures and their respective constituent for a country. State of <u>1111015</u>, to will: <u>1110015</u>, to will:

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Section 30: SE‡ except ½ acre described as: Beginning at a point on East line said SE‡ where Public Hwy. crosses and in center of said Huy., thence South 10 rods, th. West 23 rods to said Pub. Huy., thence along South side said

Pub. Hwy. Northeasterly to Point of Beginning. ______, Township <u>1 South ____</u> ange <u>5 Nest __</u>, and containing <u>159,50</u> acres, more or less, and all accretions lhareto. in Section _30.

and a date of a dat hyper, these spons one regularing the protect at the fact of the local RP. Rp., these spons one can be added and the local rp. Rp. these

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inter the der

IN WITNESS WHEREOF, we sign the day and year first above written.

Wilcesses:	Lessor's signatures:
•	Poly & Carl
· · · · · · · · · · · · · · · · · · ·	Robert E. Crooks S.S.# 338-20-8082 (SEAL)
	•
- 472 /	- (SEAL)
······································	
	ACKNOWLEDOMENT
STATE OF ALLINOIS	developed a Notary Public In and for the Couply of Brown
COUNTY OF BROWN	Ing therein in the State aforeseld, Do Hereby Certify, That
ROBBRE E. SROOKS, A Divorced Man (in Ada	ams Co., 1L) and not having remarried
E.W	
presonally known to me to be the same person whose name	aubicribed to the foregoing instrument engeneral before the birth
E person, and ecknowledged, the he signed, sealed and delive	ared the said instrument including the release and unknown of the state of
/ harnestead, ashilds - free and voluntary act and deed, for the us	and antionant liberain and forth
Given under my band and potarial seat, this 16th	dev of February 83
Why mint my p asy	AD. 19 05
My Comministich Siglices 11 124 9 19 56	- Mary & Balan
w ²	/ Notary Public
	ACKNOWLEDGMENT
STATE UP 1, the und	Jaraigned a Notary Public in and for the County of
	ing inerem in the State Moresald, Do Hereby Certify, That
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personally known to me to be the same person	_ subscribed to the foregoing instrument, appeared before me this day in
person, and acknowledged that signed, sealed and delive	ared the said instrument. Including the release and walver of the right of
homesissed, as free and voluntary act and deed, for the us	es and ourposes therein set forth.
Given under my hand and polarial sast this	deviat in the
	. 049 01 A.D. 19
My Commission expires	
• • • • • • • • • • • • • • • • • • • •	Notary Public
STATE OF	
COUNTY OF	CORPORATION ACKNOWLEDDNENY
On this	
the understanded a Noteny Public to and for sold equals	owy of before me
President of the	IM#
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 a	of the said was thereto affixed by its authority.
Winess my hand and Notorial Seat at	
My commission expires	·
This leave was prenered by Jack N. Green 2560	Notary Public
	River Hills bate WE Stanking IL 62263
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1/036	filed on	the 12th day of July 1983 at 8:40 A	.н.
•	,	OIL AND GAS LEASE	

Producers 88 Rev. B (1974) 10. Ind. Mich. (PAID-UP)

THIS AGREEMENT made this 29th day of June

No.

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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: 1. Lessor, for and in consideration of <u>Ten and OVC</u> Dollars (\$10 & OVC), 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, waters, 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, tretal, 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 ______ 11111018 ______, to wilt

See "SXHIBIT "A", attached hereto and made a part hereof for a detailed description of the leased lands and the ammendments to this lease.

Royalties to be paid by the Lessee are 3/16th. in lieu of 1/8th. as hereinbelow stated.

and containing <u>159.50</u> 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 S1x (6) months from this date (called "primary term"), and as long thereafter as oil. Ilipid hydroxelous, gas or their respective constituent products, or any of them is produced from said land or land with which said land is probled, provided, however, that for injection purposes this kase shall continue in full force and effect only as the subsurface strata or stratas into which such injections are being made, together with such such are provided as may be necessary or desirable to continue such are the subsurface provides as may be necessary or desirable to continue such are the subsurface of the subsurface provides as may be necessary or desirable to continue such a fections.

3. The toyalties to be paid by lesses are: (a) on oil, and on other liquid hydrocarbons saved at the well, one-righth 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 casunghead gas and all gaseous substances, preduced from said and and spid or used off the premises or in the pipeline to, which the wells may be connected, (b) on gas, including casunghead gas and all gaseous substances, preduced from said and and spid or used off the premises or in the pipeline to, which the wells may be connected, (b) on gas, including casunghead gas and all gaseous substances, preduced from said and and spid or used. provided that on gas sold at the, wells the possitis the rower preduces thereform, the market value at the mouth of the well of one-eighth of the gas passoid or used, provided that on gas sold at the, wells cas well's what be case well's what include from such sale; and (c) if at any time, while there is a gas well or wells on the above lapd (and for the purposes of this clause (c) the term "gas well' shall include wells explaide of preducing natural gas, conclensate, distillate or any gareous substance, and wells classified as gas wells by any governmental authority) such wells results are shult in, and if this lesses is not continued in force by yours on the profit, then it shall nevertheless continue in force of the premises in paying quantities within the never any assignee hereunder may pay or tender an advance annual royality payment of One dollar (S) (00) aving guantities within the meaning of paragraph 2 tereof for one (1) year from the date such payment is made, and in like manner subsequent advance annual royality payment well or wells or and a sing quantities within the meaning of paragraph 2 tereof for one (1) year from the date such payment is made, and in like manner subsequent advance annual royality payments may be made or tendered and this leave shall continue in forc

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 bill embranes acres pills a tolerance of temper cent (10%) thereof, and units pooled for gas or condensate shall not exceed or hundred forty (6%) contiguous acres pills a tolerance of temper cent (10%) thereof, provided, however, that if any Federal or State kay. Eventuely, earlier, role or regulation shall presente a spacing patient for the development of the field or allocate a producing allowable on acreage per viel, then any such units may embrare as much additional acreage as may be so presented or as may be used in whet allocation or allowable. Lessee shall even thing an instrument identifying and describing the pooled acreage. Such units may be designated either before or affect the completion of wells. Duling operations were upon or wells be located on its proved, and covered by this level or of on the use event of the earlie acreage pooled into allowable on a strange the readed on a may part of the event of the allocation on the treated to all purposes, event the payment of royalites on production from the pooled anti, as if twee mended in this lease. In lieu of the togalites herein provided, lessors shall excerce on provided on this lease to poole on the unit of the togality support.

5. If, prior to discovery of oil liquid hydrocarbons gas or their respective constituent products, or any of them, on sust land os on land peopled therewith, lessee should drill and abardon a dry hole or holes therewith and respective constructed products, or any of them, the production thereof, should eave term any cause, this kaye shall must terminate it lessee commences additional drilling or tensoring operations within strytechi days thereafter. If, at the expiration of there with instrytechi days thereafter. If, at the expiration of the primary term, oil, injud hydrocarbons, gas or their respective construction products, or any of inem is not being produced on suid land or land pocked therewith but lessee is their engaged in operations for iterating of any were or were in the respective construction of the or two or were there or two or two is there exist and no terms in the respective days, and, it they result on structure of whether on the scine or successive welly with no terestation of more than virtual to be concervitive days, and, it they result in productor, so long thereafter as of, were frame or successive wells with no existing or or structure than wirts to be concervitive days, and, it they result in productor, so long thereafter as of, were frame or successive wells with no existent on out-accert line and within two hundred free t200 ft.) of and dramming the leased premises, were agrees to drill under the same or sumfar circumstances. The judgment of the lessee, when not translutiently exercised, in carrying out the purposes of the lease shall be von listed.

6. Lessee shall have free use of oil, gas and water from soid land, except water from lessor's wells and ponds, for all operations bereunder, including representing, pressure maintenance, exciting, and secondary recovery operations, and the toyalty shall be computed after deducting any so used. Lessee shall have the tight at any time during in riter the expiration of this leave to remove all property and fixtures placed by lessee suit and and, except water from lessor's wells placed by lessee on suit and ord, mainding the right to draw and remove all casing. When required by lessor, lessee will "any all pipelines below ordinary" plow depth. Lessee shall be to all anges caused by its operations to growing crops, marketable tunber and lense on said and. No well shall be drilled within two hundred leet (NAUT) of an analysis caused by its operations to growing crops, marketable tunber and lense on said and. No well shall be drilled within two hundred leet (NAUT) of an its redere to beam own on said land without lessor's consent. Lessor shall have the privilege, at his tick and expense, of using gas thom any well producing gas only on said land to heating and inside lights in the principal dwelling house therein, us of any surplus gas not needed for operations hereinder.

healing and insue agains in the principal averang noise encrement on any surprux gas not needed on operations in constructions. 7. The rights of either party hereunder may be assigned to whole or in part and the provisions hereof shall extend to the heaty executions, addiministrators, successors, and assigns, but no change or division in oware/ship of the land or royalites, 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 royalites, however accomplished, shall operate to enlarge the obligations of binding upon lessee for any purpose until such person acquiring any interest has literashed lessee with the instrument or instruments, or certained copies thereof, constituting his chan 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 envers 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 lessre, the time of such delay of interruption shall not be counted against lessee. Lessee shall not be held hable in damages for failure to comply with any express or implied covernant of this lease if commissince is prevented by, or if such failure is the result of any State, Federal, or Municipal law, ordinance, leaseutice inder, rule or regulation

9. Less — reby warrants and agrees in defend the title to start land, and agrees that lesses, at its option, may discharge any tax, morigage, or other hen upon said land, as in the event lesse dues so, it shall be subrogated to such len with the right it enforce same and apply invalues. Account herein the entire termination of lesses's rights under the warranty in the event of future of title, it is agreed that, it lesses owns an interest in the oil and 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

Lease prepared by Harold A. Talbert

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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:

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.

SIGNED FOR IDENTIFICATION:

Pobert C Crochs



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NO.	64454 Billed on the Ol		Robert CROOKS
	04434 FILEG ON UNE 31	IST day of January 1989 at 111	3 P.M.
~			12 KW 7343
	ADAMS E RIG	ELECTRICAL CO-OPERATITE HT-OF-WAY EASEMENT	
		Map N	lumber
KNOW ALL MEN	BY THESE PRESENTS, that the	e undersigned <u>ROBERT_CROC</u>	<u>145</u>
(unmerried) (husband sell and convey unto	and wife) for a good and valuable Adams Electrical Co-Operative, a	le consideration, the receipt whereof is hereb an Illinois Corporation, whose post office ad	y acknowledged, does hereby grant, dress is Camp Point, Illinois 62320,
and to its successors State of Illinois, and	or assigns, the right to enter up more particularly described as fo	on the lands of the undersigned, situated in bliows:	the County of ADAMS
SOUTHEAST	-14 OF SectION	1_30	
situated in Township Fourth Principal Meric	1.50WTH	of the Base Line, Range	EST of the
And to place, cons oads or highways abu or control by chemica time all dead, weak, ie:	struct, operate, repair, maintain, tting said lands an electric trans I means, to the extent necessary t ining or dangarous trees that are	, relocate and replace on the above described smission or distribution line or system, and t to keep them clear of said electric lines or sy tall enough to strike the wires in failing.	l lands and/or in or upon all streets, o cut and trim trees and shrubbery, stem and to cut down from time to
And in addition th and to go on, across excavations and fills up The undersigned (ereto the right to place undergrou and upon the easement for the poin the premises in furtherance o covenants that he, is the owner	und conduit, cable or wires under, through a he purpose of maintaining said condult, c of this purpose.	nd upon the hove described lands, able or with and make necessary
encumbrances and lien	s of whatsoever character except	those held by the following persons:	e saig isings are free and clear of
		an an an an an an an an an an an an an a	
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ADAMS ELECTRICAL CO-OPERATIVE	LEO
Right-of-Way Easement	LATE OF ILLINOIS
	105572 200 SEP 15 A 9 30
Property Owner(s)	VOLUME 14
Permanent Index Number(s)	PAGE 2697 ENTY RECORDER
10-0-0322-000	adam - Efection
Map Number 45-30-002	This space for Recorder's use only
KNOW ALL MEN BY THESE PRESI (Grantors) for a good and valuable considerat and convey unto Adams Electrical Co-Operati Point, Illinois 62320, and to its successors or the County of $200 \text{ M} \text{ S}_{}$, State of Ill $158 \text{ Games}_{}$ Mille	ENTS, that the undersigned <u>050.0</u> <u>7785CM</u> ion, the receipt whereof is hereby acknowledged, does hereby grant, sell ive, an Illinois Corporation (Grantée), whose post office address is Camp assigns, the right to enter upon the lands of the undersigned, situated in linois, and more particularly described as follows: <u>01. 2024 in the S. Fredday of Source 30.0</u>
situated in Township S. of	the Base Line, Range 5ω of the Fourth Principal Meridian.
And to place, construct, operate, repair, all streets, roads or highways abutting said la trim trees and shrubbery, or control by chemi or system and to cut down from time to time a	maintain, relocate and replace on the above described lands and/or is or upon nds an electric transmission or distribution line or system, and to cut and cal means, to the extent necessary to keep them clear of said electric lines is described upon the strike the

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 h	is hand and seal this 14 day of sept. , \$ 2000
Signed, sealed and delivered in the presence of:	1 still
	Xusan Il / kerch (L.S.)

(L.S.)

(Witness)

(Please Notarize on Other Side of Page)

STATE OF ILLINOIS) SS. COUNTY OF Can Lashbook I, _ In and for said County, in the State aforesaid, do hereby certify that Susa Rescl 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 signed, sealed and delivered the said instrument as the free and voluntary act for the uses and purposes therein set forth, including the release and waiver of the right of

Given under my hand and notarial seal this 14th day of <u>lept</u>. A.D. 19____.

OFFICIAL SEAL SHBROOK OF REINOU 88104 Impress Notary Seal Here

homestead.

a. L. Freshbrook

Prepared by and Return Recorded Document to: ATTENTION: <u>ADAMS ELECTRICAL CO-OPERATIVE</u> P O BOX 247 CAMP POINT, IL 62320-0247 Form FmHA-IL 442-20 (11-01-94)



Adams County Clerk/Recorder Book: 709 Page: 5292

Authorized By: ie Valum Date Recorded: 4/24/2009 8:57:25 AM

U.S. Department of Agriculture Farmers Home Administration

RIGHT-OF-WAY EASEMENT

KNOW ALL MEN BY THESE PRESENTS:

> ABS Water Co-operative

Recording Fee: \$25.00

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 1/4), 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

A-10, SK 31

Map 8114 (Tritsch)

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 $\underline{30}$ day of $\underline{30}$ day of $\underline{30}$ day.

(SEAL) Gerald E. Lierly, Jr.

2158 N 1200 K Address: 2466 HWY 24, Camp Point, IL 62320

Contact Phone #: 217 430 7020

STATE OF Illinois) SS: COUNTY OF Adams

ACKNOWLEDGMENT

I, <u>Kristing</u> 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 30th day of December, 2008. OFFICIAL SEAL KRISTINA SCHMITT Kustin Selmet TARY PUBLIC - STATE OF ILLINOIS OMMISSION EXPIRES:05/15/11

My commission expires: <u>5-15-2011</u>

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. <u>Prohibited Uses</u>.
 - (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.
- (1) 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 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. <u>Grantee's Duties.</u>
 - (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. <u>Costs of Enforcement.</u>

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, 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 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 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 1353rd Lane Clayton, IL 62324

To Grantee: Great Rivers Land Trust PO Box 821 Alton, IL 62002

To USFWS: USFWS Illinois Field Office 1511 47th 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 away 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.

 Recording. Grantee shall record this Conservation Easement in the Official Records of the County in which the Conservation Area is located and may rerecord 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.

Approved as to form:

GRANTOR: [Notarization Required]			
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

|--|

NAME: _____

TITLE: _____

Authorized Representative

DATE: _____

EXHIBIT A PROPERTY LEGAL DESCRIPTION AND MAP

Property 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.

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 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, 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 rightof-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 rightof-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.



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	Project		INBA Habitat	Acres	INBA Gain	NLEB Gains
Species	Length	Lambda	Туре	Protected	(females)	(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 USFWSapproved 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 <u>info@mitigation.org</u>

Report by John Lovseth, Ph.D., Certified Forester 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 preformed 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 1353rd 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 (<u>http://maps.isgs.illinois.edu/ilhap/</u>) 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=33cebcdfdd1b4c3a8b51 d416956c41f1) 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 (<u>https://www.epa.gov/superfund/deleted-national-priorities-list-npl-sites-state#IL</u>) 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_valu e=&fac_search_type=Beginning&postal_code=&location_address=&add_search_type=B eginning2&city_name=&county_name=Adams+&state_code=IL+&program_search=mu lti&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.netronline.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_va lue=&fac_search_type=Beginning+With&postal_code=&location_address=&add_search_type=Beginning+With&city_name=&county_name=Adams+&state_code=IL&naics_ty pe=Equal+to&naics_to=&univ_search=0&univA=FULL_ENFORCEMENT&univB=LQ G&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&fa c_value=&fac_search_type=Beginning+With&postal_code=&location_address=&add_se arch_type=Beginning+With&city_name=Clayton&county_name=Adams&state_code=IL &TribalLand=0&TribeType=selectTribeALL&selectTribe=noselect&tribedistance1=onL and&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/leakingust.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 ≤ 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

ESI	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
Total/Species	244	221	147	23	70	2,327	8	1,640	235	346	3,130
EDELL Entopious	funduna (hir	a brown bot		Looiumuo	haraalia (a	actors red			a ainarau	(heer he	

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 (Mytois sodalis) NYHU=Nycticeius humeralis (evening bat); PESU=Perimyotis subflavus (tri-colored bat)

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

Table 2. MLE output of the likelihood of nightly species presence.

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 (Mytois 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	А	Р	А	Р	Р
2-Jul	Р	Р	А	Р	Р
3-Jul	Р	А	А	Р	Р



ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

3851 S. Jefferson Avenue Springfield, MO 65807 Phone: 513-451-1777 Fax: 513-451-3321

Date	MYGR	MYLU	MYSE	MYSO	PESU
4-Jul	Р	Р	А	Р	Р
5-Jul	А	Р	А	Р	Р
6-Jul	А	Р	А	Р	Р
7-Jul	А	Р	А	Р	Р
8-Jul	Р	Р	А	Р	Р
9-Jul	Р	Р	А	Р	Р

Please let us know if there are any questions. Sincerely,

Patrick Moore, CWB pmoore@envsi.com Enclosures

EXHIBIT F-2

FORESTED HABITAT ASSESSMENT



Forest Description for the Hughes Property Address: 2595 N. 1353RD Lane, Clayton, IL 62324 Adams County, Illinois

Surveyed 8/11/2020



Prepared for Magnolia Land Partners, LLC Philadelphia – Chicago <u>info@mitigation.org</u>

Report by John Lovseth, Ph.D., Certified Forester john.lovseth@principia.edu

> 1 Maybeck Place Elsah, Illinois 62028 August 12, 2020



Table of Contents

Table of Contents
List of Tables
Methods
Site Description
Forest Overview
Site Measures
Stand Characteristics4
Species Occurrence and Abundance
Fire History
Logging History
Invasive Species
Bat Habitat Analysis
References
Photographs of Hughes Property9

List of Tables

Table 1: Forest metrics overview	.4
Table 2: General stand information.	.4
Table 3: Basal area and stem density	.4
Table 4: A table of species' importance value	. 5

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 creating using SilviaTerra's Canopy online software and upload to a mobile devise 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 setting 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 in 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

boxelder	1.4	3.03	2.6
black cherry	1.4	3.03	3.2
white ash	1.4	3.03	1.5
sugar maple	1.4	3.03	0.2
common hackberry	1.4	3.03	29.1
honeylocust	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.
1 0000 1.11	inore	of species	importance	rance.

	Density	Rel Density	Frequency	Rel Frequency	Dominance	Rel Dominance	Importance Value
northern red oak	20.1	10.38	57.14	18.18	8.6	18.18	15.58
American elm	32.2	16.63	42.86	13.64	4.3	9.09	13.12
shagbark hickory	29.8	15.37	28.57	9.09	2.9	6.06	10.17
hophornbeam	26.8	13.87	28.57	9.09	2.9	6.06	9.67
American basswood	18.2	9.39	14.29	4.55	4.3	9.09	7.68
common hackberry	29.1	15.03	14.29	4.55	1.4	3.03	7.54
shingle oak	17.8	9.17	14.29	4.55	2.9	6.06	6.59
post oak	4.2	2.17	14.29	4.55	5.7	12.12	6.28
white oak	2.1	1.09	14.29	4.55	4.3	9.09	4.91
black walnut	2.5	1.28	14.29	4.55	2.9	6.06	3.96
honeylocust	3.2	1.67	14.29	4.55	1.4	3.03	3.08
black cherry	3.2	1.67	14.29	4.55	1.4	3.03	3.08
boxelder	2.6	1.35	14.29	4.55	1.4	3.03	2.98
white ash	1.5	0.80	14.29	4.55	1.4	3.03	2.79
sugar maple	0.2	0.12	14.29	4.55	1.4	3.03	2.56

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 cohor 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.



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.	\checkmark		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 residentail development have been identified as potential threats the 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 perrennial stream flows adjacent to the restoration acres, and small perrenial 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 undesireable 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.		\checkmark	The project is located in the Grand Prarie 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.	\checkmark		The Grand Prairie and Western Forest- Prairie Divisions area djacent 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.	\checkmark		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.	\checkmark		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.	V		Negligable 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.		\checkmark	No potential hibernacula features were noted on the Mitigation Site
Parcel is within swarming distance of a documented bat hibernacula feature.	\checkmark		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